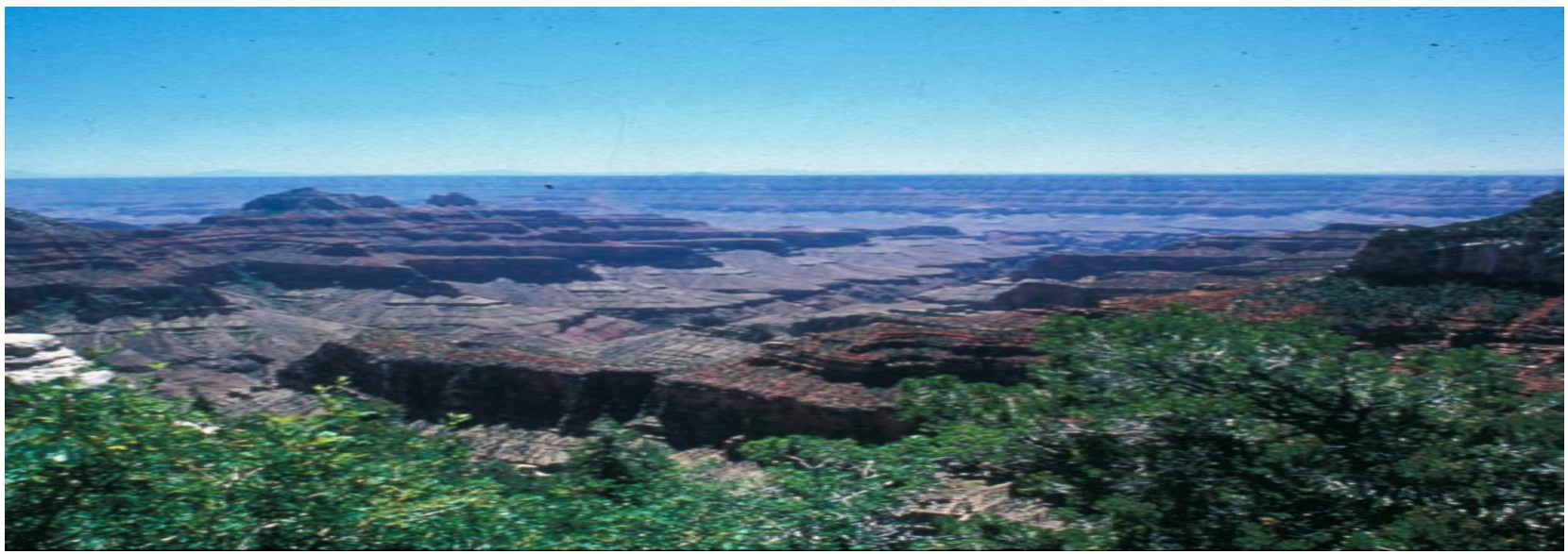
USGS-GCMRC FY-05 ACTUAL EXPENDITURES



FY-05 FUNDING

	FUNDING
USBR & USGS Power Revenue	
Funding for Approved FY-05 Budget	
Initial FY-05	$6,772,000
USGS Appropriations	$1,000,000
Funding for Experimental Flow, Score Report, Science Planning Initiative	
Held over Funds FY-03/04	$1,356,000
Carry over funds from FY-02 – FY-04	$ 276,497
BOR O&M (IWQP Lake Powell)	$ 210,000
Environmental & Resource Compliance	$ 196,559
Average Power Revenue Burden rate (15%)	
Total FY-05 Funding	$9,811,056

USGS
science for a changing world



FY-05 GRAND CANYON MONITORING AND RESEARCH CENTER ACCOMPLISHMENTS AND SHORTFALLS

Interagency Agreement between the Bureau of Reclamation and the US Geological Survey Entitled, Lake Powell Integrated Water Quality Program, No. 05-AA-40-2385

A	IWQP Lake Powell
Workplan Accomplishments:	
A.1.a (Anderse n)	**Monitoring - IQWP – Upstream Monitoring of Lake Powell Water Quality - Funding From Bureau of Reclamation O&M –** Monitoring for Lake Powell water quality has continued with monthly forebay and quarterly reservoir-wide surveys conducted throughout FY 2005. This allowed for the prediction and observation of a hypoxic inflow current from 2005 runoff as it moved through the reservoir and appeared near the dam in July 2005. The influence of this warm and hypoxic plume on late-summer dam releases resulted in the highest release temperatures since 1970 and the lowest dissolved oxygen concentrations on record (16°C and 3.3 mg/L, respectively, on October 8, 2005). The Lake Powell chemical and physical portions of the 40-year WQDB Lake Powell Water Quality Database were complete in October 2005 with a provisional copy of the database delivered to the Bureau of Reclamation. Recently, the biological components of the data base (phytoplankton, zooplankton, and chlorophyll) have been completed and delivery of the updated database is anticipated by the end of March 2006. GCMRC has been working closely with Bureau of Reclamation to provide necessary data for development and calibration of the CE-QUAL-W2 simulation model. Formal monthly web-based reports of Lake Powell water quality conditions were delayed in late 2005 due to increased tailwater monitoring activities and database development but will resume in April 2006. The Bureau of Reclamation has provided funding for all Lake Powell monitoring activities and has provided laboratory analyses, field support, and model development.
A.1.b (Anderse n)	**Monitoring - IQWP – Downstream Monitoring of Quality-of Water for Physical, Biological and Chemical Sampling –** The GCMRC water-quality program in the Glen Canyon Dam tailwater provided documentation of warmer and hypoxic releases during late summer 2005. A telemetry system was installed to provide real-time information of conditions in the tailwater immediately below Glen Canyon Dam. Low dissolved oxygen concentrations in dam releases were alleviated to some extent by a cooperative effort between GCMRC, Bureau of Reclamation, Arizona Game & Fish, and other entities, which identified the reaeration potential of various individual turbine operations. Additional monitors were temporarily installed throughout the Lees Ferry reach to document reaeration and the persistence of operational effects of dissolved oxygen concentrations in this reach. GCMRC provided regular monitoring updates to communicate the results of turbine reaeration on tailwater dissolved oxygen concentrations. Dam releases cooled and dissolved oxygen concentrations increased in November and December as surface mixing progressed and dam releases incorporated the mixed surface layer.
	Additional Accomplishments: None to Report.
	Deferments / Shortfalls / Other: None to Report.

A	**Integrated Quality-of-Water Program**
Workplan Accomplishments:	
A.1.b thru A.1.e (Melis)	***Monitoring*** **- IQWP – Downstream Monitoring of Quality-of-Water w/ Streamflow & Suspended-Sediment Mass Balance + 2004 High-Flow Experimental Results –** Data and presentations: •Temperature and specific conductivity data from GCD to Diamond Creek •Telemetered suspended-sediment data for use in sand mass balance, •Variety of additional high-resolution data related to November 2004, high-flow experiment (sand flux and flow), •Semi-annual reports on status and trends of Colorado River ecosystem fine-sediment balance, •Presentations at AMWG/TWG meetings as well as GCMRC Biennial Science Symposium, •Surface water records for three main channel and three tributary streamgages, •Two oral presentations at fall 2005 AGU meeting. •Reports Published to Date: •SCORE report and three publications for Federal Sedimentation Conference, •Annual data reports from the USGS-WRD Arizona District, •Installation of three satellite telemetry stations along the main channel to transmit data from the laser-acoustic sediment-transport data in real-time, •One proceedings article on new surrogate sediment monitoring techniques for sediment transport.
	Additional Accomplishments: None to Report.
	Deferments / Shortfalls / Other: None to Report.

A	Aquatic & Terrestrial Ecosystem Activities
Workplan Accomplishments:	
A.2 (Melis)	**Research & Monitoring of Coarse-Sediments deposited by debris flows - *Experiment Support Only* –** •Experimental field data from high-flow test (still be analyzed), •One peer reviewed publication by Magirl and others, 2005 (changes in longitudinal profile of Colorado River).
A.3 (Melis)	**Fine-Sediment Storage - *Monitoring and Sediment Experiment Support* –** Data: •LSSF data included in U.S. Geological Survey Open-File Report (in review) •Processing of multi-beam bathymetric data completed for monitoring in 2002 & 2004, plus before and after surveys of channel bed for 2004 high-flow test, •Processing of terrestrial surveying completed for all measurements 2001-2005, •Annual sandbar and campsite surveys have been completed by NAU during FY2001-2004. •Grain-size data for channel and terrestrial sand deposits within FIST reaches. Reports published to date: •Rubin, D.M., 2005, A simple autocorrelation algorithm for determining grain size from digital images of sediment: *Sedimentology*. •One additional peer-reviewed journal article during FY 2005 (Hazel et al., in press).
A.3 (Fairley)	***Experiment*-Sediment Deposition in Arroyos –** This project was an adjunct to the FIST work carried out just prior to and following the November experimental high flow test. NAU cooperators conducted pre -and post-experimental surveys of the arroyo system at Palisades. The results of this study is being written up and analyzed in FY06, and a final report is anticipated in summer 2006.
A.3 (Fairley)	***Experiment* – Monitoring Camping Beaches –** This project was an adjunct to the FIST studies associated with the November 2004 experimental flow. The post-experiment camping beach area change monitoring study was carried out in May, 2005, in conjunction with other post-experiment sand bar surveys. The data is being analyzed and written up in FY06, and the final report is anticipated in summer 2006.
A.4.a (Anderse n)	**Terrestrial Ecosystem Monitoring (TEM) –** Continuation of terrestrial ecosystem monitoring project, but in a limited fashion. Only fall vegetation transects work was funded. Data were collected in September 2005 and draft report is in the process of being written. Anticipated delivery date May, 2006.

Aquatic & Terrestrial Ecosystem Activities

A.4.b (Fairley)	**Terrestrial Ecosystem Monitoring (TEM) Tribal participation –** FY05 was the final year of the four year-long pilot monitoring program known as the Terrestrial Ecosystem Monitoring (TEM) Project. The final report on this project was due in the late summer of FY05. A tribal participation component to this project was established in 2002 to encourage the tribes to participate in the field studies and review and comment on the TEM monitoring results. In FY05, no additional field work was planned, so the tribal participation component involved the tribes in reviewing the final report and developing mechanisms for translating the scientific TEM report into media more suitable for dissemination to tribal members. Three responsive proposals were received from three tribes (Hopi, Hualapai, and Zuni) and were funded. Reports from the tribes were originally due in spring, 2006; however, due to unforeseen delays in finalizing the TEM report for distribution to the tribes and other reviewers, the due dates for the tribal reports are being extended to the end of summer, 2006.
A.5 (Anderse n)	***Experiment* -Kanab Ambersnail – Vasey's Paradise –** Arizona Game and Fish collects enters and delivers data to GCMRC for two trips per year. Both data sets were delivered to GCMRC for FY05.
A.8 (Anderse n)	**Aquatic Food Base, Organic Mass Balance & Food Web Link –** •**Publications on in-stream metabolism**. Kennedy initiated and completed exploratory work on in-stream metabolism in FY04 and reported results at the annual meeting of the North American Benthological Society in May 2005. Kennedy will be working closely with the new foodbase project team to conduct in-stream metabolism measurements in Glen and Grand Canyon during FY06-FY08 and write publications describing their results. •**Development of an organic mass balance sampling program**. New foodbase project team developed an organic mass balance sampling program and will begin sampling in FY06. See also element 2, above. •**Initiate research, design and feasibility analysis for developing long-term monitoring program.** The new foodbase project will be evaluating the utility of various indicators for a long-term monitoring program during FY06 to FY08. This project element will be completed at the end of the new foodbase project in FY08.
A.9 (Anderse n)	**Status/Trends Downstream Fish – *Monitoring* –** Cooperative agreements with Arizona Game and Fish Department, SWCA Environmental Consultants, Inc., and U.S. Fish and Wildlife Service. Supports LCR humpback chub population estimate data, mainstem non-native fish trends, mainstem HBC abundance estimates for aggregations, and small exotic fish sampling in near shore habitats. Each entity provides yearly reports which have been delivered and are in review.
A.10 (Anderse n)	**Status/Trends Lees Ferry Trout – *Monitoring* –** This project is conducted by Arizona Game and Fish Department personnel. It allows for the evaluation of the trout population below Glen Canyon Dam. Most recent data suggest that the population is in decline, especially among the larger size classes. All work was conducted as scheduled and all reports and data were submitted on time.

Aquatic & Terrestrial Ecosystem Activities

A.12 (Anderson)	**Near Shore Warming / Habitat Utilization by Native and Non-native Fishes –** This work was conducted by cooperators. Results suggest that both native and nonnative fishes can take advantage of warming of near shore habitats. The final report has been received and is under review at this time (March 2006). See A. 29.
A.13 (Anderson)	**Experimental Treatment – Kanab Ambersnail Experimental High Flow Compliance Monitoring –** Arizona Game and Fish Department moved and replaced Kanab ambersnail habitat, primarily monkey flower, that occupied habitat below 41k cfs. A poster was presented at the October Science Symposium.
A.17 (Anderson)	***Experimental Treatment* - Mechanical Removal of Nonnative Fishes in the Colorado River –** This work was contracted to the Arizona Game and Fish Department. All work was completed and all quarterly reports were delivered.
A.18 (Anderson)	***Experimental Treatment* – Non-native Diet and Predation Analysis –** This project was completed in FY05 and results were presented by Mike Yard at the Science Symposium in October 2005. Draft reports are in preparation and will be delivered by June 2006.
A.20 (Anderson)	**HCA – Translocation of Native Fishes to Tributaries of the Colorado River; Grand Canyon National Park and Tribal Lands –** Under this project humpback chub were translocated from downstream in the Little Colorado River up above the natural barrier at Chute Fallls. Continuing monitoring suggests that this translocation was successful as the fish have been recaptured and appear to be faring well. This work was conducted by USFWS personnel. All work was conducted on time and the final report is currently (March 2006) under review.
A.23 (Anderson)	**HCA – Fish Monitoring Downstream of Diamond Creek –** A number of cooperators participated in this work, including USFWS, AZGFD, SWCA, and Hualapai tribal members. Results indicate that very few humpback chub are found downstream in the Grand Canyon. All work was completed and reports and data were submitted.
A.24 (Anderson)	**HCA – Monitoring Parasites and Diseases in the Colorado River Ecosystem –** Project was funded in FY05, but field work will begin in June 2006. Product will be a report and recommendations in late 2007.
A.26 (Anderson)	**Implementation of Humpback Chub Panel Recommendations –** This project was originally scheduled to continue into FY 2006, so work was not completed by 1 October 2005. The cooperator, Dr. David Otis of Iowa State University, has actively participated in all required meetings and has been delivering preliminary results on time. Dr. Otis presented some of the results of this work at the Science Symposium held in October 2005.

Aquatic & Terrestrial Ecosystem Activities

Additional Accomplishments:	
A.14 TBD (Anderson)	**Experimental Treatment-Foodbase Impacts of Experimental High Flows (TBD, line 45 on budget) –** Two projects were conducted during the November 2004 BHBF. Kennedy conducted in-stream metabolism measurements before and after BHBF in Glen Canyon and reported results at annual meeting of North American Benthological Society in May 2005 (see A.8.4 above). Mike Yard conducted measurements of organic drift before, during, and after BHBF near LCR confluence and reported results at the Science Symposium in October 2005. Draft reports are in preparation and will be delivered by April 2006.
Deferments / Shortfalls / Other:	
A.4.b (Fairley)	**Terrestrial Ecosystem Monitoring (TEM)Tribal participation –** Only three of five tribes elected to participate in this project, resulting in some unanticipated excess funds that were subsequently redirected to cover cost over-runs in other areas of the budget.
A.8 (Anderson)	**Aquatic Food Base, Organic Mass Balance & Food Web Link –** •**Baseline monitoring of phytobenthic and invertebrate community of Lees Ferry**. This project was never funded in FY05 based on recommendations of the Science Advisors that were received in April 2004. •**Annual report on productivity and relative measures of benthic abundance and composition, linked with water quality data collection**. This project element was to be conducted by the recipient of an RFP. There was a delay in releasing a foodbase RFP because of turnover in GCMRC staff. New foodbase project was awarded at the close of FY05 (September 2005) but work was not initiated until FY06. •**Fact sheet summary**. This project element will be completed by Kennedy (who was a new hire in FY05) near the end of the new foodbase research initiative in FY08. See SCORE report chapter by Kennedy and Gloss on Aquatic Ecology.
A.21 (Anderson)	**HCA – Dam Operations Experiment –** Funding and time had been identified in the FY2005 budget to be directed toward continuing the long-term experimental planning process. Funding was directed to the Independent Reviews account where the additional, unfunded strategic science planning took place. In addition, some of the funds were directed toward publication of the SCORE report.
A.22 (Anderson)	**HCA – Scientific/Recreation Impact Assessment on Humpback Chub Survival and Reproduction –** Work for this line item in the annual plan was not defined and the funds were used to cover experimental flow costs.

A	DASA Activities
Workplan Accomplishments:	
A.31 (Melis)	**Data Acquisition (DASA) – Air Remote Sensing, Sub-Aerial LiDAR Over-Flight Testing –** •Canyon-wide, four band, multi-spectral digital imagery at 25 cm spatial resolution. •Canyon-wide, panchromatic digital imagery at 12.5 cm spatial resolution. •Canyon-wide, digital elevation model at 1 meter spatial resolution. Data: •Before and after high-resolution LiDAR data collected at a resolution of 7 to 14 points per square meter for FIST reaches of Marble Canyon before and after (2 sets) the 2004 high-flow test, •Sub-aqueous LiDAR data within Glen Canyon reach at 2-meter resolution, with multi-beam data for verification of water penetrating capability (CHART system testing).
A.32 (Melis)	***Data Storage*** **(DASA) – Grand Canyon Integrated (Oracle) Database Management System –** •Integrated DBMS, ongoing development.
A.33. a (Melis)	***Analysis*** **(DASA) – Geographic Information Systems: Automated Monitoring Technologies and Applications –** Products: <u>Products derived from multi-spectral digital imagery:</u> •Supported analysis of fine-grained sediment inventory and change detection in FIST reaches: May, 2002-04 and May, 2004-05. <u>Products derived from very high resolution LiDAR:</u> •Draft technical report outlining methodology for automated or semi-automated classification of very high resolution LiDAR into vegetation and non-vegetation components (Davis), •Supported development of bare-earth elevation models for selected FIST monitoring reaches in Marble Canyon: May, 2004, November and December 2004 and May, 2005, •Changes in sub-aerial sand bar morphology based on high resolution LiDAR: May, 2004-06, •<u>Products derived from hydrographic LiDAR and multi-beam sonar.</u> •Report summarizing the applicability of hydrographic LiDAR for monitoring sub-aqueous bathymetry and fine-grained sediment deposits in the CRE (Davis). •Draft technical reports outlining methodology for automated classification and estimation of eddy deposit volumes using multi-beam sonar (Fuller).

DASA Activities

A.33. b (Melis)	***ISP Support* (DASA) – Geographic Information Systems: GIS General Support to Science Programs –** •Staff provided key technical support for 2004, remotely sensed data acquisition associated with High-Flow testing, as well as fulfilling all data requests from cooperators and interested parties.
	Additional Accomplishments: None to report.
	Deferments / Shortfalls / Other: None to report.

B	Socio-cultural Program
Workplan Accomplishments:	
B.2 (Fairley)	**Geomorphic Predictive Model –** This project involved a three year geomorphic predictive modeling effort, with the first two years devoted to data collection and third year to development and testing of the actual model. Funding for the first year of this three-year project was approved by AMWG for FY05, subject to the results and recommendations forthcoming from the geomorphology symposium.
B.3 (Fairley)	**PEP Recommendations-Recreation –** This project was originally intended to support implementation of the highest priority recommendation of the REC PEP. The REC PEP was deferred with AMWG approval from FY04 to FY05. Due to lack of carry over funds from FY04, it was necessary to use the FY05 funds for implementation of the REC PEP. A very successful PEP occurred in June 2005, resulting in a final report dated September 27, 2005.
B.4 (Fairley)	**PEP Recommendations-Socioeconomic –** This project was originally intended to support implementation of the highest priority recommendation of the socioeconomic PEP, which was originally planned for FY04 but then deferred (with AMWG approval) to FY06.
B.5 (Fairley)	**Tribal Monitoring of Experimental Flows –** This project was added to the FY05 budget by AMWG at their August 2004 meeting, at the request of the BIA representative, without explicitly defining the purpose of the funding. The Hualapai Tribe subsequently submitted a proposal to GCMRC to evaluate the effects of the Nov. 2004 experiment downstream of Diamond Creek. This proposal was funded and a report is due in late Spring, 2006.
TBD (Fairley)	**Geomorphology Symposium –** The geomorphology symposium was first proposed in FY04 under the project title "APE definition". GCMRC had planned to carry over the FY04 APE funding to FY05, but budget shortfalls in FY04 prevented carry over from occurring. Subsequently, it was decided that BOR and NPS would co-host the symposium with GCMRC. An account was set up in anticipation that funding would be contributed by NPS and BOR but the funding did not materialize. The symposium was held in February 2005 with 18 presentations, an independent panel of geomorphology experts, and over 40 people in attendance. This was the first time that all prior work related to geomorphology of Holocene deposits in the CRE was brought together, discussed, and applied to cultural resource concerns. By all accounts, the symposium was a huge success. Funding to cover the costs of the symposium ultimately came from the geomorphology modeling account.

Socio-cultural Program

Additional Accomplishments: None to Report.	
Deferments / Shortfalls / Other:	
B.2 (Fairley)	**Geomorphic Predictive Model –** In keeping with AMWG's conditional approval of this geomorphology modeling project, GCMRC did not attempt to implement this project until after the geomorphology symposium had been completed. The geomorphology symposium took place in February 2005. At the conclusion of the symposium, an expert panel recommended moving forward with this project However, by the time the geomorphology symposium was over, the BAHG had initiated FY06 budget deliberations. The BAHG was unwilling to support the second year of funding for this project. Since GCMRC could not in good conscience initiate a three year modeling effort with only one year of approved funding, a decision was made by GCMRC staff to defer this project until support for the entire project could be obtained. A portion of the FY05 funds was subsequently used to cover the geomorphology symposium and to support two part-time contractors to provide GIS and database support for the cultural program; the remaining funds were redirected to cover cost overruns in other areas, such as the unfunded science planning initiative.
B.3 (Fairley)	**PEP Recommendations-Recreation –** Due to lack of carry over funding from FY04, the FY05 funding was used to pay for the Recreation Protocol Evaluation Panel in June, 2005, rather than for implementing the highest priority recommendation of the PEP, as originally intended.
B.4 (Fairley)	**PEP Recommendations-Socioeconomic –** Due to other obligations in FY05, the socioeconomic PEP was deferred again (to fall, 2006). The FY05 funds were obligated to NAU at the end of FY05 in order to preserve them for their intended purpose. NAU will use the funding to assist GCMRC in hosting the socioeconomic PEP in the fall of 2006 and making travel arrangements for non-federal PEP participants.

C	Logistics & Survey Support
Workplan Accomplishments:	
C.1 (Fritzinger)	**Logistics –** GCMRC provides all logistical support for monitoring and research projects conducted by contracted and Principal Investigators (PIs) whose work is administered by GCMRC Program Managers in physical, biological and social-cultural resource programs. GCMRC staff initiate some of their own in-house scientific activities, which require logistical support, including; the Integrated Water Quality Program, administrative trips for groups such as the TWG, AMWG, Science Advisors and program PEP panels. The GCMRC also supports logistical needs for the Bureau of Reclamation's activities conducted by Native American groups under the Programmatic Agreement program and activities conducted to meet Reclamation's needs concerning endangered species. In addition, GCMRC provides logistics support for any contingency plans or experimental floods. GCMRC logistics supported a total of 30 river trips (including 7 high flow experimental trips), plus 8 Little Colorado River missions and 6 Lees Ferry sampling trips. All logistics objectives were met in FY05 including all "last-minute" and complicated support for the November High Flow Test.
C.2 (Fritzinger)	**Survey Operations –** Survey Support duties for 2005 included obtaining a NPS Research and Collecting Permit, organizing and maintaining survey equipment and peripheral devices, updating legacy data and control point data for GIS and database integration, and respond to staff and investigator requests for survey and technical support for GCMRC research projects. In addition, •Worked with NPS archaeologists on updating legacy survey data by providing updated control point information for cultural sites. •Collected site descriptions and photographs for 150 control points for input into control point database. Generating air photo maps for locating the control points without this information. •Organized survey equipment and developed a check out system. •Participated in annual GIS conference – training •Survey Support: o2004/12 Post-flood GPS Rim support for airborne operations o2005/03 Survey support for post flood sediment research o2005/05 GPS Rim support for airborne operations o2005/07 Control Point data collection and outreach with GCY
C.3 (Fritzinger)	**Control Network –** Primary rim control network has been tied to multiple First Order Vertical benchmarks and entered into the Federal National Spatial Reference System which now includes 46 stations near Grand Canyon. A primary network along the river corridor includes 25 stations. The secondary network along the river now includes all NAU sandbar study sites, all FIST reaches and over 200 stations. Photo-identifiable hard points have been collected at 36 sites.

Logistics & Survey Support

Additional Accomplishments:	
C.1 (Fritzinger)	**Logistics –** •VIP/Press trip to view results of the November High Flow Test, 11/22-27/04 •Southern Paiute Consortium Cultural Monitoring, 7/23-8/2/05
C.2 (Fritzinger)	**Survey Operations –** Additional Survey Support for November High Flow Test: •Evaluate Photogrammetry and LiDAR as alternative mapping techniques •Map Palisades archaeological resources •Evaluate Omnistar GPS for use in canyon. Evaluated new mapping technologies (LiDAR and oblique photogrammetry for use in the canyon) and begin to learn how to process this data.
C.3 (Fritzinger)	**Control Network –** Nine (9) of the primary rim stations are now designated as "Height Modernization Survey Stations" by the National Geodetic Survey. Geodetic professionals are gaining interest in using the Grand Canyon as a test bed for quality height determination. The 2004- 41K Test Flow was performed during FY2005 and occupied approximately 25% of the year on data collection and processing of reach based, fine-grained sediment storage data.
Deferments / Shortfalls / Other:	
C.2 (Fritzinger)	**Survey Operations –** This item was not completed during FY2005 because of complications with the dataset as well as responsibilities redirected toward research during the flood. •Progress on updating FIST legacy data for GIS integration.
C.3 (Fritzinger)	**Control Network –** We have yet to evaluate the magnitude of gravimetric effects in order to compare geoid slope, deflection of the vertical, orthometric correction and hydraulic slope. While geoid slope and deflection of the vertical have been modeled along the corridor, we do not yet have enough data to determine accurate orthometric heights and must rely solely on ellipsoidal heights up to this point. We will be collecting gravity measurements in FY2006.

D	Information Office
D.1 Thru D.3 (Liszewski)	**Workplan Accomplishments:** The Information Office completed all products and deliverables as expected per the FY2005 workplan including, but not limited to, providing primary scientific data per the GCMRC library and website via publications, tabular and spatial data, photographs, slides and video media. The program supported both scientific and administrative functions via coordination of peer reviews, accessible cataloged digital media, integration of the GCMRC computing environment, upgrade of computer security and personnel support. The GMCRC website upgrade was completed and full functionality provided in FY2005.
	Additional Accomplishments: None to report.
	Deferments / Shortfalls / Other: None to report.

E	Administration & Management
E.1 thru E-7 (Hamill)	**Workplan Accomplishments:** Contracts, cooperative, interagency and management agreements for monitoring and research activities were processed and awarded; program support was provided with advice provided to TWG, AMWG and public and professional researchers. Program Managers oversaw staff and fully participated in TWG/AMWG meetings and reviews with the Independent review panels and knowledge assessment workshops playing increased roles as the Science Planning Initiative was launched.
	Additional Accomplishments: The SCORE report was completed; the Science Planning Initiative was begun and GCMRC interviewed and hired a new Chief and Biology Program Manager in FY2005.
	Deferments / Shortfalls / Other: None to report.

Interagency Agreement between the Bureau of Reclamation and the US Geological Survey entitled Interagency Acquisition with the Glen Canyon Monitoring and Research Center for Environmental Resource and Compliance Work, No. 02-AA-40-6750

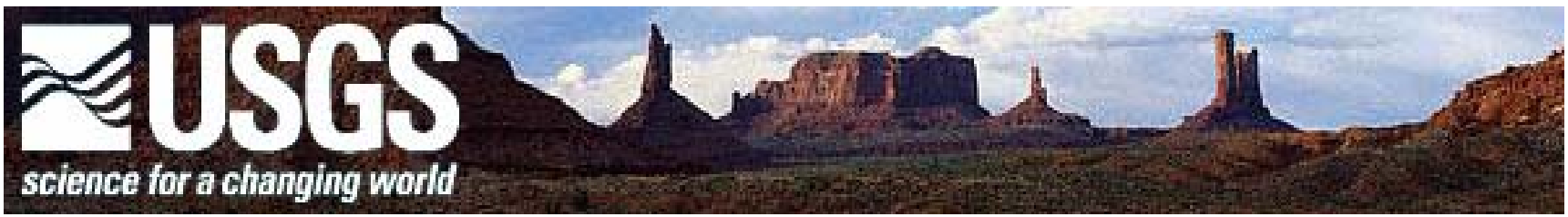
A	Environmental & Resource Compliance Agreement
A.29 (Andersen and Melis)	**Water Temperature Model Development; Organic & Invertebrate Drift Exchange between Mainstem and Backwaters; and Comparison of Nearshore Native Fish Rearing Habitats under Steady and Fluctuating Flows** **Workplan Accomplishments:** Three projects were funded in FY05 and data collection was initiated in September 2005. Reports are in process with draft delivery scheduled for May 2006.
	Additional Accomplishments: None to report.
	Deferments / Shortfalls / Other: None to report.

GCMRC Integrated Science Programs as of 9/30/05

Programs	Approved Budget	Actual Funded	Total Burden	Obligations/ Expenditures	Burden +Oblig/Exp-Funded
IWQP – Lake Powell	$ 210,000	$ 236,172	$ 54,825	$ 181,347	0
Integrated Quality-of-Water	$ 924,500	$1,702,908	$220,343	$1,482,565	0
Aquatic & Terrestrial	$3,955,000	$4,633,905	$439,105	$4,194,800	0
DASA	$ 488,000	$ 281,647	$ 69,042	$ 212,605	0
Sociocultural	$ 250,000	$ 174,089	$ 25,800	$ 148,289	0
Survey	$ 308,000	$ 337,467	$ 77,312	$ 260,155	0
Information	$ 437,000	$ 449,913	$101,899	$ 348,014	0
Admin & Tech Support	$1,409,500	$1,798,396	$405,574	$1,392,822	0
Environmental & Resource Compliance	$ 196,559	$ 196,559	$ 14,755	$ 68,930	$112,874
TOTAL PROGRAMS	$8,178,559	$9,811,056	$1,408,655	$8,289,527	$112,874

BURDEN/OVERHEAD

- Bureau Portion
- Salaries (Accounting Clerk (1/2 time), Admin Assist (1/2 time), Administrative Officer (1/2 time), SBSC Dir (1/4 time), Deputy Dir (1/4))
- Administrative Supplies
- Rent, Utilities & Security
- Telecommunications
- Administrative Equipment (Copiers, Fax Machines)



SPECIAL RATE

- Special Rate Breakdown **$2,689,120**
  - **U.S. Army Corps of Engineers**
  - **AZ Game and Fish**
  - **Arizona State University**
  - **Bureau of Reclamation (Harpman)**
  - **Ecometric Research**
  - **Hualapai Tribe**
  - **Northern Arizona University**
  - **SWCA**
  - **Todd Geological Consulting**
  - **University of California**
  - **Utah State University**
  - **U.S. Fish and Wildlife Service**