

PROPOSED PROGRAM ESTIMATES
GRAND CANYON ADAPTIVE MANAGEMENT PROGRAM

<u>Program Area</u>	<u>FY1998</u>	<u>FY1999</u>	<u>FY2000</u>
I. Bureau Administration of AMWG	147,000	147,000	153,000
II. Bureau Administration of TWG	64,000	64,000	116,000
III. Bureau Support			
A. Support Services	283,000	283,000	264,000
B. Programmatic Agreements	800,000	800,000	800,000
IV. Bureau / Native American Support	50,000	50,000	50,000
V. GCMRC Program and Operating Cost			
A. Operations, Personnel, Contract Services	1,929,000	1,930,000	2,063,000
B. Physical Resources Science, including Logistics	1,175,000	1,175,000	1,075,000
C. Biological Resources Science, including Logistics	1,390,000	1,390,000	1,474,000
D. Cultural Resources Science, including Logistics	388,000	390,000	353,000
E. Socioeconomic Resources Science Program	63,000	63,000	75,000
F. Information Technologies Program	408,000	408,000	323,000
G. Lake Powell Program	250,000	250,000	250,000
H. Remote Monitoring Technology	0	0	1,000,000
I. Independent Review Panels	246,000	243,000	247,000
TOTAL	7,193,000	7,193,000	8,243,000

**PROPOSED PROGRAM ESTIMATES
GRAND CANYON ADAPTIVE MANAGEMENT PROGRAM**

PROGRAM AREA	FY 1998	FY 1999	FY 2000
I Bureau Administration of AMWG			
Support	53,000	53,000	0
Meetings	16,000	16,000	0
Overhead, Travel, etc.	<u>78,000</u>	<u>78,000</u>	<u>0</u>
Subtotal	147,000	147,000	153,000
II Bureau Administration of TWG			
Support	26,000	26,000	0
Meetings	10,000	10,000	0
Overhead, Travel, etc.	<u>28,000</u>	<u>28,000</u>	<u>0</u>
Subtotal	64,000	64,000	116,000
III Bureau Support			
A. <u>Support Services</u>			
Salaries	154,000	154,000	0
Overhead, Travel, etc.	<u>129,000</u>	<u>129,000</u>	<u>0</u>
Subtotal	283,000	283,000	264,000
B. <u>Programmatic Agreements</u>			
NPS Glen & Grand Canyons Rec. Area Archaeol.	295,000	295,000	0
Tribal Agreements: Hopi, Hualapai, Southern Paiute Consortium, Navajo, Zuni	440,000	440,000	0
Data Recovery/Stabilization at Furnace	0	0	0
PA Administration/Reclamation			
Upper Colorado Region Support	35,000	35,000	0
Overhead, Travel, etc.	<u>30,000</u>	<u>30,000</u>	<u>0</u>
Subtotal	800,000	800,000	800,000
IV Bureau / Native American Support			
Bureau of Reclamation Appropriation	50,000	50,000	50,000

PROGRAM AREA	FY 1998	FY 1999	FY 2000
V GCMRC Program and Operating Costs			
A. <u>Operations, Personnel, Contract Services</u>			
Salaries (includes 21% Bureau CPA)			
GCMRC Operations	609,512	609,512	0
Physical Resources	78,690	78,690	0
Biological Resources	232,950	232,950	0
Cultural Resources	95,182	95,182	0
Information Technologies	281,884	281,884	0
Lake Powell Program	<u>148,781</u>	<u>148,781</u>	<u>0</u>
Total Salary	1,447,000	1,447,000	2,063,000
Travel	70,000	70,000	0
Contract Support (Clerical & Survey)	55,000	56,000	0
Administrative Support	50,000	50,000	0
Space	135,000	135,000	0
Equipment	100,000	100,000	0
Supplies	55,000	55,000	0
TWG Support			
Travel	4,000	4,000	0
Salary and Services	<u>13,000</u>	<u>13,000</u>	<u>0</u>
Subtotal	1,929,000	1,930,000	2,063,000
B. <u>Physical Resources Science</u>			
Contracts			
Little Colorado River Model Development	30,000	25,000	0
Geomorphic Synthesis	100,000	100,000	0
Ungaged Tributaries	49,000	30,000	0
Fine-Grained Sediment Deposits	173,000	110,000	0
Mainstream Sediment Transport & Streamflow	531,000	500,000	0
Conceptual Modeling	75,000	50,000	0
Protocol Evaluation for Physical Resources	<u>42,000</u>	<u>85,000</u>	<u>0</u>
Total Contracts	1,000,000	900,000	0
Logistics	<u>175,000</u>	<u>275,000</u>	<u>0</u>
Subtotal	1,175,000	1,175,000	1,075,000

PROGRAM AREA	FY 1998	FY 1999	FY 2000
<u>C. Biological Resources Science</u>			
<u>Contracts</u>			
Aquatic Food Base	166,000	178,000	0
Native Fish	483,000	507,000	0
Trout	125,000	125,000	0
Wetland and Riparian Vegetation	78,000	80,000	0
Avifauna	76,000	81,000	0
Kanab Ambersnail	44,000	44,000	0
Conceptual Modeling	70,000	50,000	0
Data Integration Report	20,000	0	0
GCMRC In-house Studies	<u>128,000</u>	<u>125,000</u>	<u>0</u>
Total Contracts	1,190,000	1,190,000	0
Logistics	<u>200,000</u>	<u>200,000</u>	<u>0</u>
Subtotal	1,390,000	1,390,000	1,474,000
<u>D. Cultural Resources Science</u>			
<u>Contracts</u>			
Geomorphic Impact Modeling	80,000	80,000	0
Flow Impact on Cultural Resources	70,000	70,000	0
Synthesis of Cultural Resources	50,000	0	0
Conceptual Modeling	30,000	15,000	0
Unsolicited Tribal Proposals	58,000	90,000	0
Tribal Technology	0	10,000	0
Protocol Assessments	0	25,000	0
Conceptual Modeling Research Projects	<u>0</u>	<u>0</u>	<u>0</u>
Total Contracts	288,000	290,000	0
Logistics (includes \$50,000 for BOR PA)	<u>100,000</u>	<u>100,000</u>	<u>0</u>
Subtotal	388,000	390,000	353,000
<u>E. Socioeconomic Resources Science Program Operations</u>	63,000	63,000	75,000
<u>F. Information Technologies Program</u>	408,000	408,000	323,000
Data Base			
<u>G. Lake Powell Program</u>			
Revenue	200,000	200,000	0
CRSP Appropriations	<u>50,000</u>	<u>50,000</u>	<u>0</u>
Subtotal	250,000	250,000	250,000
<u>H. Remote Monitoring Technology</u>	0	0	1,000,000
<u>I. Independent Review Panels</u>			
Review	238,000	238,000	0
Overhead, Travel, etc.	<u>8,000</u>	<u>5,000</u>	<u>0</u>
Subtotal	246,000	243,000	247,000
TOTAL	7,193,000	7,193,000	8,243,000

***Grand Canyon Monitoring and
Research Center***

Physical Resources Program

FY 2000

Total Budget: \$700,000

- 1-Extend Synthesis – Glen Canyon Reach [\\$50,000],
(Modification of USU Agreement (Schmidt et al.) for One Year)**
 - 2-Conceptual Model – Physical Sub-Model [\\$50,000],
(Modification of Ecometric Inc. (Korman) Contract for One Year)**
 - 3-Monitoring Protocols – Field Testing + Capital Investments [\\$250,000],
(RFPS, In-House and Collaborative Efforts with Existing Cooperators)**
 - 4-Verify Tributary Models – Paria and Little Colorado Rivers [\\$20,000],
(Modification of USGS Agreement (Topping et al.) for One Year)**
 - 5-Monitor Streamflow/Sediment Transport – Sand Budget, [\\$320,000],
(Modification of USGS Agreement (Anderson et al.) for One Year)**
 - 6-Monitoring of Debris Fans and Rapids – Change Detection [\\$10,000],
(In-House Activity)**
- Total \$700,000**

1-Extend Synthesis – Glen Canyon Reach [\$50,000],
(Modification of USU Agreement [Schmidt et al.] for One Year)

- ***Mapping of Historical Sandbar Changes (Remote Sensing)***
- ***Bureau of Reclamation Channel Changes (X-Sections)***
- ***Interpretation of Lees Ferry Gage Record (Sand Transport)***
- ***Integration with Lees Ferry to Phantom Ranch Synthesis***

**2-Conceptual Model – Physical Sub-Model [\$50,000],
(Modification of Ecometric Inc. Contract for One Year)**

- Better Estimated Sand Storage in Main Channel**
- Improved Sand Exchange [Main Channel and Eddies]**
- Introduction of Stochastic Hydrologic Forecasts**
- Development of Physical Geomorphology Sub-Model**
- Improved Linkage with Socio-Economic Sub-Model**

**3-Monitoring Protocols – Field Testing + Capital Investments
[(\$250,000), (RFPs, In-House and Collaborative Efforts with
Existing Cooperators)**

-Field Test - Monitoring of Channel-Margin Bars (volumes)

-Field Test - Monitoring of Sand in Pools (volumes)

-Pilot Test – R/S Change Detection in Sand Bars/Fans

-Capital Investment in New Bathymetric Technology

-Design and Construction of New Hydrography Vessel

-Draft Long-Term Monitoring Plan for Physical Resources

**4-Verify Tributary Models – Paria and Little Colorado Rivers
[\$20,000], (Modification of USGS Agreement [Topping et al.] for
One Year)**

**-Compare Model Estimates with Measured Loads for
Sediment Transport (Sand and Silt/Clay)**

**-Design Long-Term Monitoring Protocols for Model
Verification Based on Physical Parameters**

-Develop User Guides and Linkages with Gage Records

-Refinement of Real-Time Sediment Input Estimates

**6-Monitoring of Debris Fans and Rapids – Change Detection
[\$10,000], (In-House Activity)**

- Annual Assessment of Impacts from Tributary Debris Flows**
- Assess Reworking of Controlled Flood Flows on Navigation**
- Reworking of Aggraded Debris Fans and Rapids**
- Develop Protocols for Assessing Coarse Sediment Budget**
- Integration of Tributary Influences with Biologic Processes**