FY2002 Annual Overflight Description

February 15, 2002

The Grand Canyon Monitoring and Research Center (GCMRC) is proposing the collection of airborne light detection and ranging (LIDAR) data and orthorectified color-infrared digital imagery of the Colorado River corridor from the Glen Canyon dam at Lake Powell to (but not including) Lake Mead. LIDAR and imagery data acquisition includes a 450 kilometer (km) section of the Colorado River plus a total of 36 km of six tributaries. The nominal swath width for each acquisition is 500 meters (m) but is as wide as 1500 m in several areas of small geographic extent. The LIDAR data will be collected at a nominal point spacing of one-meter and will provide 30 centimeter (cm) horizontal and 15 cm vertical topographic accuracy. The imagery data will be collected in stereo with 60 percent forward overlap at a resolution of 18-24 cm and orthorectified and georeferenced to within 0.5 to 2 meters horizontal accuracy.

The collected data will be used for:

1. Monitoring terrestrial, fine-grained sediment movement and storage (e.g., sand bars and river terraces)
2. Monitoring terrestrial, coarse-grained, sediment changes (e.g., cobble bars and debris fans)
3. Mapping terrestrial vegetation types throughout the corridor
4. Characterizing and monitoring terrestrial vegetation habitats for birds and insects
5. Monitoring the quality of camping beaches

In addition, the data sets will be evaluated for:

1. Monitoring aquatic flux and storage of sediment within the main channel
2. Mapping/monitoring aquatic food base and selected water quality parameters
3. Monitoring the effects of runoff and dam releases on archaeological structures

Table 1 provides estimated periodicities for collecting these data sets by project. The data sets will also continue an ecosystem-wide historical record of aerial photography begun in 1990 and of topography begun in 2000.

The GCMRC requests 6-10 days of steady flows at 8,000 cfs for overflight's in low water years and 15,000 cfs for overflight's in high water years. These flows are consistent with the guidelines previously established for projected dam releases in 2002. The projected window of data collection is between May 19 and June 2, 2002 (inclusive). GCMRC feels that 6-10 days is needed to help insure that the overflight can be completed in the event of equipment failure and/or bad weather. However, exceptional circumstances may prevent the overflight from being completed within the 10-day timeframe. At the same time the overflight may be completed in six days if weather and equipment cooperate.

Table 1. Estimated periodicity of overflight data sets by project.

[Note: Periodicities are estimates pending completion of data evaluations being done to determine if they meet accuracy requirements and are more cost effective than field data collection and/or reduce the impact of data collection in the ecosystem.]

Project	Data set required	Estimated periodicity
Monitoring terrestrial, fine-grained sediment movement and storage	LIDAR and black and white or color infrared orthophotography	Bi-annual
Monitoring terrestrial, coarse-grained, sediment changes	Black and white or color infrared orthophotography	Annually
Mapping terrestrial vegetation types throughout the corridor	Color infrared orthophotography	Every five years for system-wide, annually for selected areas
Characterizing and monitoring terrestrial vegetation habitats for birds and insects	Color infrared orthophotography	Every five years for system-wide, annually for selected areas
Monitoring the quality of camping beaches	Black and white or color infrared orthophotography	Annually
Potentially monitoring aquatic flux and storage of sediment within the main channel	Black and white or color infrared orthophotography	Bi-annually
Potentially mapping/monitoring aquatic food base and selected water quality parameters	Color infrared orthophotography	Annually
Potentially monitoring the effects of runoff and dam releases on archaeological structures	Black and white or color infrared stereo photography	Annually