Seeking TWG Input November 16, 2010

Grand Canyon Monitoring and Research Center – USGS

Knowledge Assessment II

FY 2011

Proposed KA II Steps & Timeline

1. Review outcome from 2005 KA I with TWG (NOV 2010)

2. Revisit Critical Questions from Strategic Plan related to flow and non-flow treatments with respect to resources of interest

3. Seek TWG input about information needs/priorities (JAN 2011)

4. Elicit 1st round expert opinions from scientists individually, then allow them to discuss views prior to 2nd round (Workshop I – spring 2011)

5. Review outcome of Workshop I with TWG at Workshop II (summer 2011)

6. Draft sections of KA II report (fall 2011) – emphasizing causal influence of experimental flow & nonflow treatments vs. resource responses (e.g. HFE synthesis)

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Processing Expert Input

Step 1 – Pose a question pertaining to a flow or nonflow treatment that has been a focus of the AEAM process (or perhaps, organismal interaction – say, native & nonnative fish), then ask experts to provide their opinion, on the basis of current data, models, literature, etc. about how certainly they believe the treatment influences a given resource, (0.75 to 0.85). They are also asked to assign a <u>median</u> value (perhaps 0.82 in this example) and state their level of confidence in their estimate (80%).

Step 2 - After individual expert opinion is obtained, experts may defend their input and discuss the various aspects of the question among themselves as a group.

Step 3 - Following debate over the various perspectives and available information, the experts may change their input up or down on the basis of discussion about available data, models, literature and arguments made during discussion.

Step 4 – Expert input is then averaged to assign a level of certainty about the given question – this can be done for all treatments & resources to develop updated matrices

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Other Approaches?

Causal Mechanism Handbook – use method for defining causal relationships between flow & non-flow treatments and 11 GCDAMP goals (see handout from group at University of Canberra, Australia)

Defer to Science Advisors – request that SAs determine certainty about causal relationships across resources of critical interest for a select few treatments that are of priority concern in FY2011-12

BDN – see "The use of Bayesian networks to guide investments in flow and catchment restoration for impaired river ecosystems" by STEWART-KOSTER et al. (*Freshwater Biology* (2010) 55, 243–260)

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Documentation of KA II?

FY 2012 – special oral presentation session at OCT 2012 *Colorado River Basin Science & Resource Management Symposium*
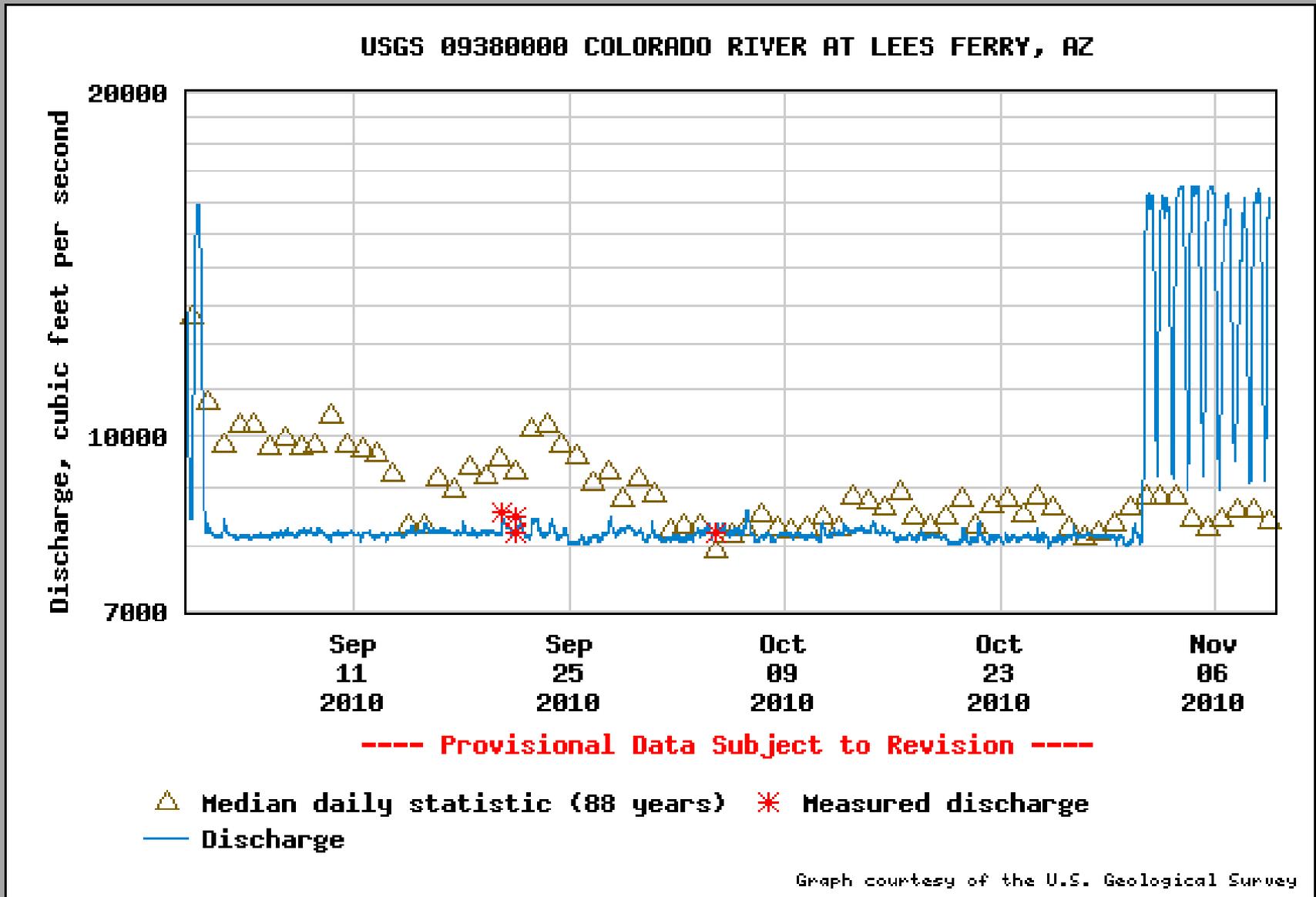
USGS Circular – chapter book with information from the KA II on flow and non-flow treatments & resource responses synthesized across relevant resources of interest (each chapter might be similar to HFE synthesis in condensed format of 10-20 pages)

One of more Fact Sheets – summarizing the outcome of the KA II for one or more treatments/resources

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Glen Canyon Dam Operations from Sep 1 – Nov 9, 2010

USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ

---- Provisional Data Subject to Revision ----

△ Median daily statistic (88 years)   ✳ Measured discharge
—— Discharge

Graph courtesy of the U.S. Geological Survey

Preliminary Data

Lower Marble Canyon Turbidity Sep 1 – Nov 9, 2010
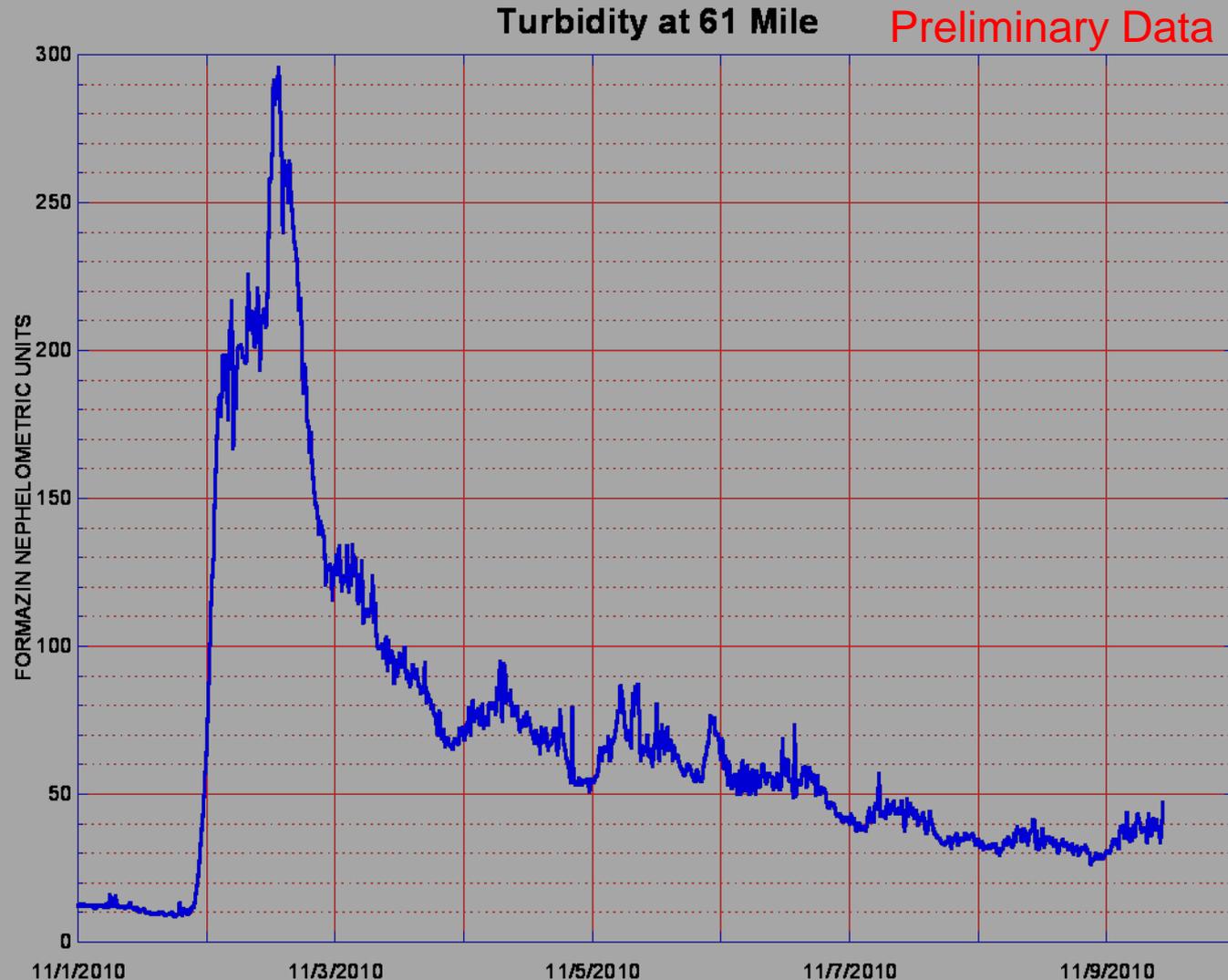

TURBIDITY AT 61 MILE — Preliminary Data
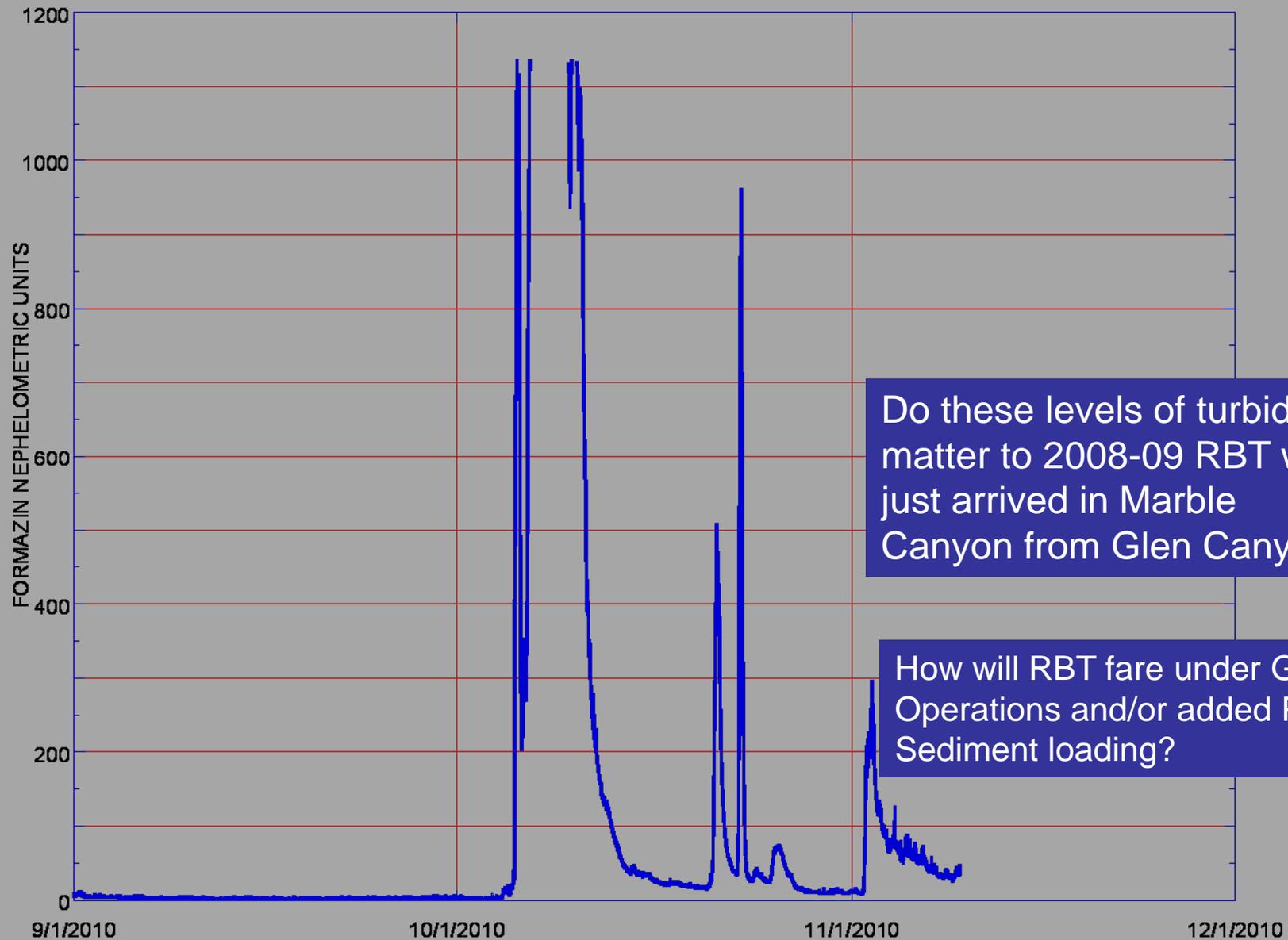
Do these levels of turbidity matter to 2008-09 RBT who just arrived in Marble Canyon from Glen Canyon?

How will RBT fare under GCD Operations and/or added Paria Sediment loading?

Lower Marble Canyon Turbidity Nov 1 – Nov 9, 2010

Do these levels of turbidity matter to new RBT that out-migrated from Glen Canyon?

Shows influence of GCD operations on turbidity following Paria River sediment inputs

Turbidity at 61 Mile — Preliminary Data

Grand Canyon Mile 87 Turbidity Nov 1 – Nov 9, 2010

How do these levels of turbidity affect RBT in eastern Grand Canyon?

Turbidity at 87 Mile

Preliminary Data

LCR becomes a factor below RM 61 as well as cumulative inputs below