

Approved 6-12-07



San Juan River Basin Recovery Implementation Program
Hydrology Committee Meeting
December 5, 2006

Member/Alternates Present

Pat Page, Chairman
Ron Bliesner

Steve Cullinan
Rick Cox
Aaron Chavez (Alternate) for Randy Kirkpatrick
Bill Miller
John Simons
Dave Frick
Steve Harris
John Whipple
Earle Dixon for John Leeper
Chuck Lawler

Program Management

David Campbell

Joann Perea-Richmann

Other Interested Parties

Dave King
Lynn Miller
Rodger Ferreira
Timothy Jones
Steve Lynch
Michael Howe
Mike Roark
Marie Stewart
Stephanie Moore

Representing

U.S. Bureau of Reclamation
Keller-Bliesner Engineering (Bureau of
Indian Affairs)
U.S. Fish and Wildlife Service, Region 2
Water Development
Water Development
Southern Ute Indian Tribe
U.S. Bureau of Reclamation
Jicarilla Apache Nation
Water Development
State of New Mexico
Navajo Nation
Southern Ute Indian Tribe

Representing

Program Coordinator
U.S. Fish and Wildlife Service, NM
Ecological Services, Region 2
Program Support Assistant,
U.S. Fish and Wildlife Service, NM
Ecological Services, Region 2

U.S. Bureau of Reclamation
U.S. Geological Survey, Dept of Interior
U.S. Geological Survey, Dept of Interior
Public Service Company of New Mexico
U.S. Bureau of Indian Affairs
U.S. Bureau of Indian Affairs-NIIP
U.S. Geological Survey, Dept of Interior
U.S. Geological Survey, Dept of Interior
DBS &A representing CO Albuquerque

1. Introductions and review and approval of agenda items

2. USGS Stream Gaging Activities

Pat asked the USGS on the status of the Archuleta right-away, was an agreement put in place. Mr. Roark stated that the land was divided into trusts between several people. Therefore he didn't know where to go with this.

Marie Stewart, USGS, made a presentation on the gage data and recording efforts on the San Juan River. Key points of the presentation are:

- ❖ San Juan at Archuleta gage is good. It drifts at high flows.
- ❖ San Juan at Farmington experiences some shifting. A new cableway has been installed. This gage requires more measurements at low flows because the rock riffle is changing, mostly following runoff.
- ❖ San Juan at Shiprock has been relocated because of high vandalism. No measurement above 900 cfs.
- ❖ San Juan at Four Corners has been measured with a new \$7,000 acoustic Doppler current profiler.

The data report can be obtained over the internet at <http://pubs.usgs.gov/wdr/2005/wdr-nm-05-01>. Committee members were provided a CD of the data. Data is reported in real time at 15 min – 60 min intervals. It is transmitted to USGS on 4 hour intervals.

Equipment Upgrades for stations

Without upgrades to 90 gages in New Mexico by 2009, real-time data will not be collectable. For example, the

Archuleta gage upgrade includes a new bubbler and high-baud upgrade at an estimated cost of \$8,189.

Three ISC gages will need high-baud rate upgrades. Without upgrade by 2009, the real time data will not be collected. The 3-gage rule for flow recommendation minimum release requires real-time data for three of four gages on the San Juan River. USGS will be sending funding requests to USBR and ISC. There are 90 gages in NM requiring upgrade. The Program is not a likely funding source.

Pat Page expressed Reclamation's frustration with shifts in the Archuleta gage. Sometimes releases are off significantly and shift information is not kept in the measuring station. USGS responded by saying they have 120 days to revise shifted data.

Right-of-way for Archuleta gage:

Obtaining permanent right-of-way for the Archuleta gage has been an action item for two years. USGS stated that the land is owned by a family trust. There is no individual in charge, making it difficult to negotiate. USGS does not typically obtain permanent right-of-way and recommended USBR obtain it. Reclamation accepted responsibility for obtaining permanent right-of-way.

3. Review and Approval of September 12, 2006, Draft Meeting Summary

- John Whipple asked that his requests for CO be added to the minutes prior to approving.

4. Review of Action Item Log (attached to September 12, 2006 Draft Meeting Summary)

- Reviewed and approved

5. Budget and Status Report

- Dave King reported \$88,920 of the budget has been approved and currently

6. Identification of Generation 2/3 (Gen 2/3) Model Issues

Drivers to change from Gen2 to Gen3

1. Gen2 Natural Hydrology ended in 93; no documentation for early flows;
2. Monthly going to daily time-step; Gen3 updated to use daily time-step.

Gen3 used Colorado Natural flow process to generate natural flows this would provide current updated data to operate model;

Issues

1. Do we have accuracy in baseline depletions? How do the baseline depletions compare with historic depletions? Gen2 baseline depletions are significantly less than in Gen3.
 - a. Resolving baseline vs historic depletions
 - b. Riverware is mainstem SJ; Statemod is used for tribs.
 - c. Do we stay with Statemod or move decisions to Riverware. If we (SJRIP) have lost control of how decisions are made then the use of Statemod is inappropriate. This depends on Colorado allowing the SJ version of StateMod to be configured for San Juan Recovery Implementation Program (SJRIP) purposes (different rule set/same data)
2. Process of gage data filling (development of natural flow data)
3. There needs to review data and methodology used in Statemod and Riverware;
 - a. Who should do the review? External to Program. RFP for outsourcing.

Requests from John Whipple:

John Whipple requested that Generation II be run with Navajo Gallup project plus a block of 50,000 ac ft.

John Whipple stated that the depletion guarantee in the Navajo-Gallup Project BA and draft BO should not set a precedence for other projects.

It was asked that Ray Alvarado give a presentation to the committee on the StateMod.

Ron Bliesner suggested that Gen2 hardware be maintained by BoR until Gen3 is ready.

Purpose of the Model

1. Analysis of the impact of project depletions on the SJRIP flow recommendations;
2. Analysis of the flow recommendations on the development of habitat necessary for the recovery of the species;
3. Not a water rights model;
4. Not used as an operations model for projects.
5. FWS views this as a regulatory tool.

7. Update on Flow Recommendations Evaluation (Ron Bliesner gave briefing)

There are four notable changes. In the previous decision tree version, the first test after determining if a spill was probable was to check the number of years since we met the 8,000 and 10,000 cfs flow conditions for 10-days and 5-days respectively. If either condition was not met, then the Animas forecast was tested and the decision continued from there. We discovered that in maximizing high flow days, this test only limited the opportunity to make a release from Navajo that when combined with the Animas flows, would produce high flow days in the habitat range. Since the test was not productive it was removed from the decision tree.

The second change was to test the contents of Navajo reservoir as well as the Animas forecast (Z) prior to making the path 3 or 4/5 decision. In certain situations it is desirable to prevent any more than a minimum release if Navajo contents are below a certain point. This is the 'S' variable in the decision tree. This can result in foregoing a larger release and keeping the water in storage.

The third change is a measure implemented to reduce the likelihood of a spill. For example, the model predicts a spill and sets the release hydrograph in April. Days at 5000 cfs are adjusted to accommodate the predicted spill volume. Once the release has started, the only option for passing more water is to extend the days at peak. At times unanticipated water flows into Navajo and results in a spill because the release is already at capacity. A way around this situation is to transfer some of the water from the peak of the hydrograph to the nose of the hydrograph.

Path 4 in the decision tree calls for a release of the minimum of the predicted spill or the sum of the 'Maximum Release' plus 'Maximum Expansion Water'. The "Maximum Expansion Water" is a volumetric limit that attempts to prevent the maximum release from being expanded beyond a certain point. This limit is currently set to 100,000 ac-ft and allows the peak release to be expanded from 33 days at 5000 cfs to 43 days. The remaining spill volume is put on the nose of the hydrograph or pre-released which reduces the chance of a spill. If the excess water can not be placed on the nose (does not meet criteria), or there is additional excess water that appears late in the release cycle, additional days may still be added that exceed 43 days.

The fourth change is an increase in the minimum release from 1 day to 3 days at peak. This was done to help reduce small spills that occur during the model run.

8. Hydrologic Conditions Discussion (Need additional help)

- Elevation currently at 106,000 ac ft; 200% perception

9. Navajo Reservoir Operations

- 21 day release @ 5,000 cfs; then 250 cfs
- 100% average inflow

10. New Projects – Update from HC Members on any new projects on the horizon

Annual Meeting – Feb.13-14

Summary of Navajo Operations

Migration of Gen2 to Gen3

Evaluation of Operations to generate higher frequency of high flows

11. Adjourn

Next Meeting

June 12, 2007 – Farmington Civic Center, Farmington, NM

HYDROLOGY COMMITTEE ACTION ITEM LOG
(Updated December 5, 2006)

	<i>Action Item</i>	<i>Meeting/ Origination Date</i>	<i>Responsible Party</i>	<i>Due Date</i>	<i>Revised Date</i>	<i>Date Completed</i>
4	Add model runs and other information to the permanent hydrology website: http://uc.usbr.gov	7/25/01	Erik Knight	Ongoing		
5	Model modification briefings.	7/25/01	Reclamation and Keller-Bliesner	Ongoing		
12	Any new data or methods incorporated into RiverWare or State Mod will be shared with the Hydrology Committee.	7/25/01	Keller-Bliesner and Reclamation	Ongoing		
34	Gage error analysis discussion: the Hydrology Committee still needs to determine whether big losses are due to daily deaggregation. The Committee has the option to re-evaluate losses once the 3 rd Generation model is complete. HC decided to live with gage error.	11/27/01	Pat Page need to have a discussion with USGS	Ongoing	Postponed until StateMod analysis is completed	
105	USGS agreed to give a presentation annually to the Hydrology Committee regarding the effectiveness of the gage readings.	8/5/03	USGS	June 13, 2006	Annually	
136	Coordinate documentation for depletion differences for Gen 2 & Gen 3	5-18-04	Ron Bliesner & Dave King	03-01-06		
139	Committee will report any new projects which will be coming up.	5-18-04	Hydrology Committee	Ongoing		

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140	Follow-up on (USGS) gage at Archuleta right-of-way	5-18-04	Pat Page	Pending		
141	Budget Report to include foot notes with explanation of expenditures.	11-9-05	Pat Page, Dave King and (HC comments)	Ongoing		
143	Ron will send Firm Yield Study 1989 Addendum and the model comparison results table to NM and CO on concerns with Gen3 .	09-12-06	Ron Bliesner	12-05-06		
144	BoR will work with NM and CO on their concerns with G3.	09-12-06	Pat Page/John Whipple & Ray Alvarado	12-05-06		
145	CO to provide John Whipple with the statistical relations for regressions to get the natural flows for the period outside of records for diversion points in Gen3	09-12-06	Ray Alvarado	12-05-06		
146	John Whipple requested that Generation II be run with Navajo Gallup project plus a block of 52,000 ac feet.	12-5-06	HC	04-17-07		
147	John Whipple requested something in writing on Navajo Gallup project on the BA and BO notation on depletion; he indicated this does not set on precedence for other projects.	12-5-06		04-17-07		