

Approved June 12, 2007



**San Juan River Basin Recovery Implementation Program
Hydrology Committee Summary
September 12, 2006
Farmington, NM**

Member/Alternates Present

Pat Page, Chairman
John Whipple
Rick Cox
Steve Cullinan
Ron Bliesner

Brian Westfall

Dave Frick
Aaron Chavez (Alternate) for Randy Kirkpatrick
Steve Harris
Ray Alvarado
Chuck Lawler
Earle Dixon
John Simons
Bill Miller

Program Management

Joann Perea-Richmann

Other Interested Parties

Dave King
Michael Howe
Tom Sheldon
Steve Lynch
Stephanie Moore

Representing

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

Representing

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

U.S. Bureau of Reclamation
BIA-NIIP
Southern Ute Indian Tribe
BIA-NIIP
Daniel B. Stephens & Associates, City of Albuquerque

1. Introductions and review and approval of agenda items

2. Review and Approval of June 13, 2006, Draft Meeting Minutes Summary

- Minutes approved

3. Review of Action Item Log (attached to Draft Summary)

- Item 34 – There are ongoing random errors in the readings and the Hydrology Committee (HC) has decided to remove this action item and accept the errors.

4. USGS Stream Gauging and Future Stream Gauging Funding

- Pat Page reported that had been unable to get anyone from USGS to attend the meetings due to shortfall in their staff
- The State of NM Environmental Division is struggling with funding for USGS Water Quality Gauging on San Juan River and requesting \$17,000 a year to monitor water quality as of October 1, 2007. John Whipple was provided the request (attached)
- Ron Bliesner indicated that at the last Biology Committee meeting there were commitments in the Section 7 consultations to monitor water quality data because of potential impact to projects. This was referred back to FWS to see if the monitoring data was collected and available. He suggests that BIA and USGS work together on this, right now Bureau of Indian Affairs (BIA) is collecting that data
- The Hydrology Committee (HC) determined that this needs to be sent to David Campbell and the BC chair for review and action

5. Budget and Status Report (attached)

- Dave King reported there will be approximately \$7,000 Bureau of Reclamation (BoR) carryover
- Pat Page indicated that this will initially be placed into a contingency fund, but he'd like to use the carry-over money for Tech Transfer

6. Discussion of Depletion Differences between Gen2 and Gen3 Models

Outcome of discussion

Ron Bliesner and Brian Westfall gave a briefing (briefing attached)

- Ray Alvarado asked for the power point from today's briefing
- John Whipple asked for a copy of the power point, the Firm Yield Study 1989 Addendum and the model comparison results table because he still had concerns with them
- Memo dated 6-9-06 will be resent to HC to review. This gave the information on depletion differences

7. Update on Flow Recommendations Evaluation

- Keller-Bliesner presented a new Navajo Release Decision Tree and stated that further modifications would be made and sent out, along with the preliminary results of the model runs
- Ron stated if the BC approves then a re-run of tests need to be done to see if there are any differences one or two of the runs
- John Simons indicated that BoR is sensitive to how the San Juan Chama Project is modeled
- Ron stated there are two issues concerning San Juan Chama representation in the Model
 - One is the historical vs baseline depletion above the diversion points. The baseline diversion is greater than historical while they should be essentially the same.
 - The second point is that there is a difference in the diversion values using the upstream end of the tunnels vs the downstream end. Reclamation is working on this issue to determine which is correct.

- Pat Page stated the depletions issues need to be resolved, but feels the committee needs to continue moving forward with Gen3
- John Whipple requested the following information from Colorado (Ray Alvarado) regarding the data used by StateMod:
 1. the statistical data on the monthly flow regressions used to generate natural flows at the San Juan-Chama Project points of diversion;
 2. historic and baseline acres served by diversions above the San Juan-Chama Project points of diversion; and
 3. historic and baseline depletions above the San Juan-Chama Project points of diversion.

8. Hydrologic Conditions Discussion

- John Simons reported the Navajo Reservoir is at 1,417,000 af or 102% of average capacity for the end of August. Shortage conditions are not foreseen.

9. Navajo Reservoir Operations

- End of August 2006 content was 1,417,000 af with a water surface elevation of 6065.36 feet which is 102% of the 30-year average
- Inflows in August 2006 were about 67,000 af which is 106% of average
- The three month inflow forecast for Sept 06-Nov 06 from National Weather Service is about 91,000 af which is 67% of average inflow
- Inflow for the 2007 Water Year is assumed to be about 93% of average, which indicated the maximum Spring Release of 13 days at 5,000 cfs would be made. The Reservoir is predicted to rise within 6.5 feet of the spillway under the scenario
- Releases currently at 600 cfs; target baseflows are close to 800 cfs, and were never less than 650 this past summer

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

- The Jicarilla Apache Nation is working with power plants on a 10-year subcontract
- Draft subcontract will be submitted to Reclamation for review and approval
- Reclamation is currently working with legal personnel on ESA issues

11. Review new action items

- Pat to contact USGS to check their availability for next meeting
- BoR will work with NM and CO on their concerns with Gen3
- Ron Bliesner will send NM and CO their request information on concern with Gen3 as stated in their discussion

Next Meeting

December 5, 2006, 9:00 am – 3:00 pm, Farmington Civic Center, Farmington, New Mexico

2007 Schedule

TBD – Annual Joint Review, Farmington, New Mexico
 April 17, 2007 --Conference Call, 9 am – Noon
 June 12, 2007 --Farmington Civic Center, Farmington, New Mexico
 September 11, 2007 -- Conference Call, 9 am – Noon
 December 4, 2007 -- Conference Call, 9 am – Noon

Adjourn

HYDROLOGY COMMITTEE ACTION ITEM LOG
(Updated June 12, 2006)

	<i>Action Item</i>	<i>Meeting/ Originatio n 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 deagregation. 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		

HYDROLOGY COMMITTEE ACTION ITEM LOG
(Updated June 12, 2007)

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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		
142	Letter from State of NM requesting funds from program to support USGS to be forwarded to Biology Committee	09-12-06	Pat Page	Complete		
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	Provide John Whipple with the differences between historic and baseline depletions	09-12-06	BoR	12-05-06		

From: "Guevara, Lynette, NMENV" <lynette.guevara@state.nm.us>
To: "Steve Austin" <nnepawq@frontiernet.net>, <Joel_Lusk@fws.gov>, "Pat Page (Pat Page)" <PPage@uc.usbr.gov>
Date: 8/28/2006 2:33:39 PM
Subject: Funding options for USGS gages in San Juan River Basin

Hello -

Every year, the New Mexico Legislature gives NMED a limited amount of funding to maintain a cooperative water quality gaging program with the USGS. We had our annual meeting today to discuss the gaging network for Oct 1, 2006 - Sept 30, 2007. We have several goals with our coop gaging network. We typically focus these dollars on maintaining the water quality record at long-term stations. USGS has agreements with several other cooperators around the state, so we coordinate and try to fill in data gaps where other cooperators are not paying for various collections. We also organize the gaging network to answer questions related to our current water quality standards and bureau priorities and on-going projects.

The gages and parameters we have funded in the San Juan River basin for the last several years are attached. We planning to fund these stations this year as well because the City of Albuquerque is funding several locations on the Rio Grande, which frees up our dollars for other stations. I'd like to ask that you and your organizations consider funding mechanisms available to you to pick up part of these SJR basin gaging costs in the future, potentially starting October 1, 2007. Approximately \$17K of our yearly available funding goes towards these four gages for the parameters on the attached spreadsheet. We are fortunate that the City of Albuquerque is kicking in this year for the Rio Grande, but if that funding picture changes, we'll need to reconsider the gaging network and may need to redirect SJR funding to the Rio Grande or other parts of the state.

If you need letters of support and/or explanation of the cooperative nature of the entire NM gaging network to secure funding through your avenues, please let me know and I can provide these items. Thank you in advance for looking for alternative funding options to keep the gage network going -- please do not hesitate to call me.

San Juan Chama Project

**Differences between the G2 and G3
models**

With comparison to the Firm Yield Study

SJCP Depletion Reported June 2006

Model	Depletion
G2	107,514
G3	101,183
Change	-6,331

SJCP Depletion Reported September 2006

Model	Depletion
G2	107,514
G3	104,029*
Change	-3,485

* Corrected errors in 1971, 1972, and 1973 hydrology and resulted in an additional 2,846 ac-ft SJCP depletion.

Which number is most correct G2 or G3?

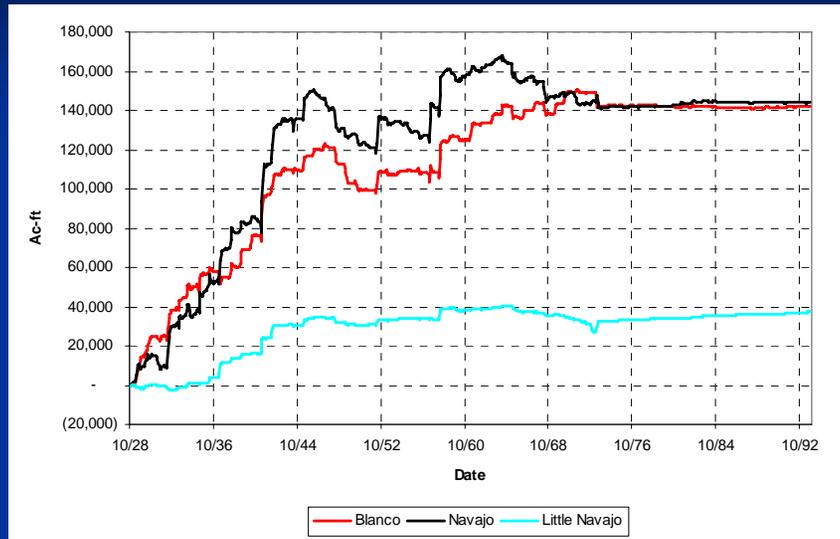
G2 and G3 Natural Flow At Tunnel Diversions

Location	G2 N. F.	G3 N. F.
Blanco	68,843	71,032
Navajo	89,071	91,287
Little Navajo	9,230	9,803
Total	167,144	172,122
Depletion	1,519	5,015
Net	165,625	167,107

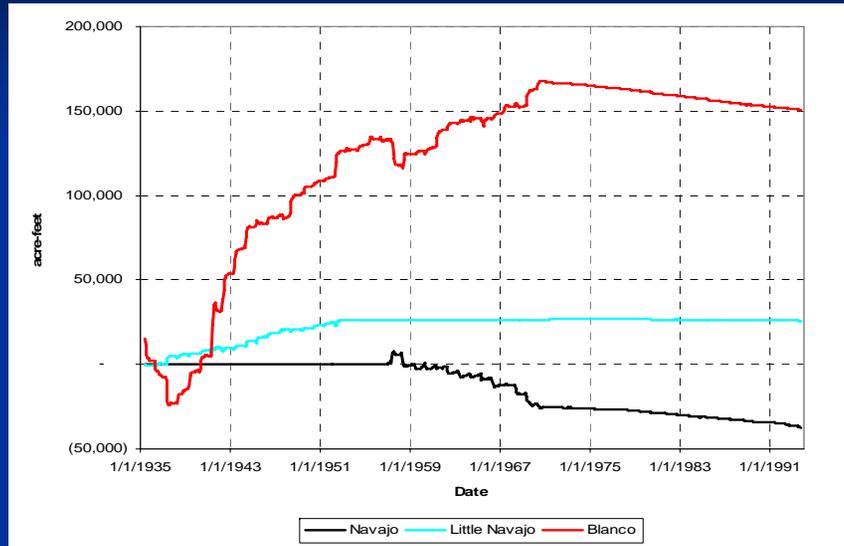
**Created a G3 test model that used
G2 Natural Flows to Drive SJCP**

Item	G2	G2 N. F. in G3	G3
Available to SJCP	167,144	167,144	167,107
G3 Azotea Tunnel Outflow	107,514	106,667	104,029

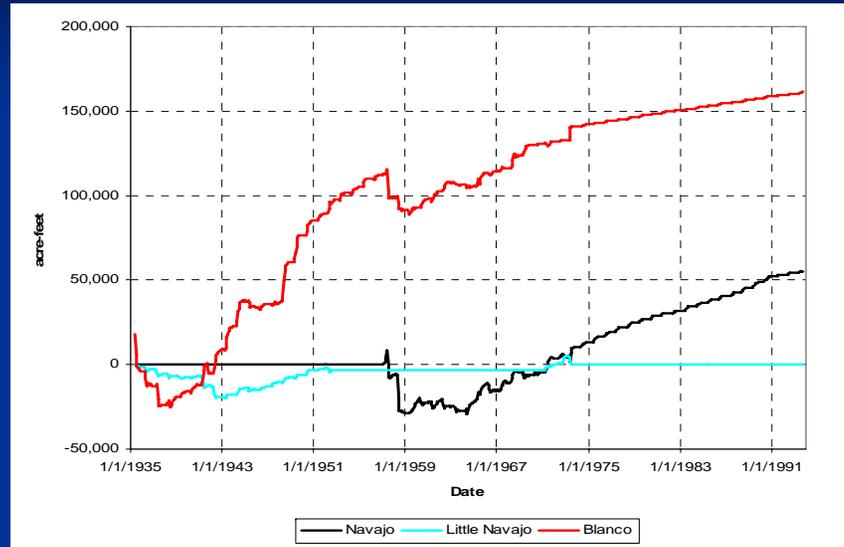
G3 NF – G2 NF Cumulative Difference Plot



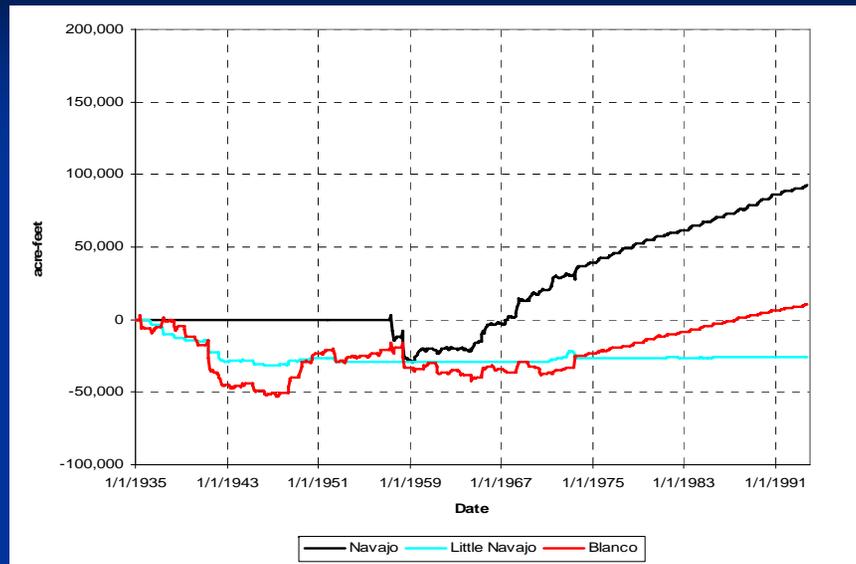
G3 Model Flow – Combined Gage Cumulative Difference



G2 Model Flow – Combined Gage Cumulative Difference



G2 Differences - G3 Differences Cumulative Difference



Comparison to SJCP Firm Yield Study

- Heron Firm Yield 1986 Study
 - 1935 to 1984 = 94,200 ac-ft/yr
- 1989 Addendum
 - 1935 to 1987 = 96,200 (additional hydrology & change in Heron accounting procedures)
- G3 Modeled Heron Outflow
 - 1935 to 1984 = 94,213 ac-ft/yr
 - 1935 to 1987 = 94,325 ac-ft/yr
 - 1929 to 1993 = 94,671 ac-ft/yr

G3 Model Runs Using Firm Yield Study Hydrology

- 1989 Addendum (1935 to 1987)
 - Azotea Tunnel Outflow = 109,532 ac-ft/yr
 - Heron Evaporation = 8,085 ac-ft/yr
 - Heron Outflow = 96,200 ac-ft/yr

- G3 Run using Firm Yield Hydrology (1935 to 1987)
 - Azotea Tunnel Outflow = 108,193 ac-ft/yr
 - Heron Evaporation = 7,280 ac-ft/yr
 - Heron Outflow = 95,790 ac-ft/yr (410 ac-ft/yr difference)

SJCP Summary

- G2 using Natural Flow instead of baseline or model flows for SJCP operation.
- G2 Enforcing Tunnel capacity limit on a monthly basis - not daily.
- G2 depletions are too low as shown by more model flow than gage flow.
- G3 depletion is higher than historical, CO is investigating.
- G3 is probably more correct than G2 with most of the difference being depletion and hydrology issues.
- Difference from Firm Yield Study are nearly all hydrologic – not operation.

Modeling Budget and Expenditure for FY 2006 5/31/2006

Task	Description	Budget	Expended	Balance	% Expended	% Completed
1	Develop, test, and implement new flow recommendations.	\$ 138,563	\$ 56,643	\$ 81,919	41%	41%
2	Maintain data.	\$ 18,538	\$ 16,516	\$ 2,022	89%	89%
3	Maintain model.	\$ 17,232	\$ 16,160	\$ 1,072	94%	94%
4	Maintain software associated with model and data.	\$ 7,584	\$ 3,024	\$ 4,560	40%	40%
5	Model operations for Hydrology Committee and new projects.	\$ 3,942	\$ 3,500	\$ 442	89%	89%
6	Program management and coordination.	\$ 5,592	\$ 4,632	\$ 960	83%	83%
7	Technical transfer.	\$ 6,192	\$ 2,928	\$ 3,264	47%	47%
Other	O&M Travel, RiverWare, etc	\$ 8,610	\$ 5,120	\$ 3,490	59%	59%
	Total to date	\$ 206,253	\$ 108,523	\$ 97,730	53%	53%

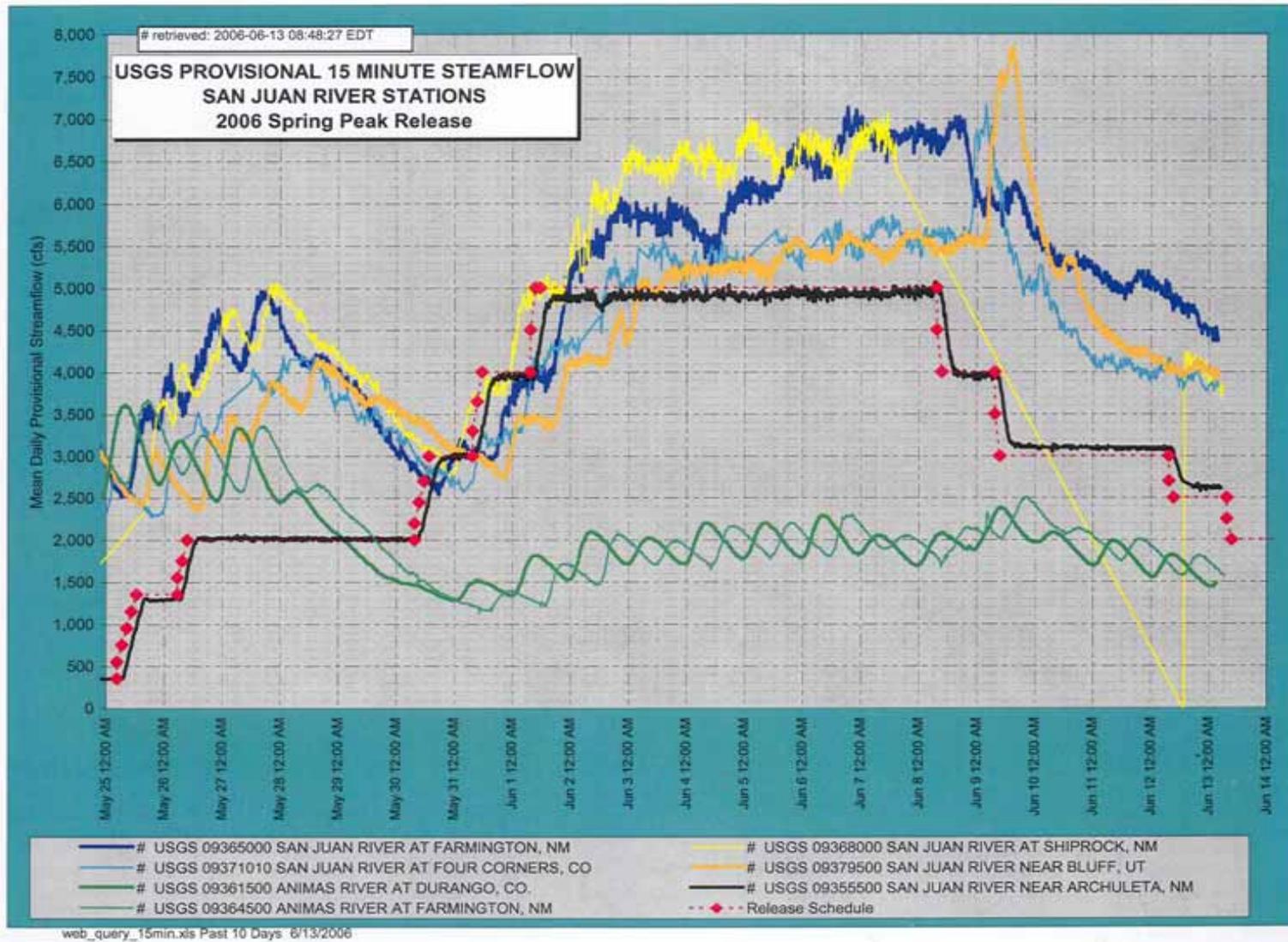
Budget Notes

1. Task 1 is for FY 2004 through 2006 funding. All other tasks are FY 2006.

Task	Description	Task Activities				
1	Develop, test, and implement new flow recommendations.	Completed comparisons of second and third generation data and model runs; adjusted target operations; initiated sensitivity runs related to revised flow recommendations.				
2	Maintain data.	Updated historic data through 2004; Adjusted baseline for Navajo-Gallup; Computed natural flows through 2004; Update NIIP efficiency, incidental loss rate, and ground water distribution and accumulation.				
3	Maintain model.	Updated models through 2004 and added Navajo-Gallup project; Made configuration and depletion reporting adjustments				
4	Maintain software associated with model and data.	Updated TS Tool software and database (Colorado data thru 2004); Updated HEC DSS VUE software; Changed querying of StateMod operations data from StateMod special reports to StateMod binary file queries via TSTool; adjusted StateMod depletion reports via TSTool.				
5	Model operations for Hydrology Committee and new projects.	Conducted special run for NMISC.				
6	Program management and coordination.	Prepared budget updates and participated in meetings.				
7	Technical transfer.	Provided additional training to field personnel on data and model				

Task Notes

1. Data and model maintenance was delayed due to incorporation of Navajo Gallup and team availability.
2. Configuration and depletion reporting adjustments were necessary due to changes made to StateMod subsequent to September, 2003, RiverWare update.
3. NIIP adjustments were necessary due to a misinterpretation of consultant data.



1 Attachment 2: 2006 Spring Release Schedule vs Actual USGS flows.