Members/Alternates Present: Representing:
Pat Page, Chairman U.S. Bureau of Reclamation
Ray Alvarado State of Colorado
Ron Bliesner U.S. Bureau of Indian Affairs
Dave Frick Jicarilla Apache Nation
Mike Hamman Jicarilla Apache Nation
Steve Harris Water Development Interests
John Leeper Navajo Nation
Bill Miller Southern Ute Indian Tribe
John Simons U.S. Bureau of Reclamation
Bernadette Tsosie Navajo Nation
Pat Turney State of New Mexico
Brian Westfall U.S. Bureau of Indian Affairs
Others present: Representing:
Dave King U.S. Bureau of Reclamation
Chuck Lawler Southern Ute Indian Tribe
Marilyn Greenberg, Program Assistant U.S. Fish and Wildlife Service
Shirley Mondy, Program Coordinator U.S. Fish and Wildlife Service

Introductions and Review and Approval of Agenda Items
Pat Page welcomed the conference call attendees, who then introduced themselves. The agenda was approved without changes or additions.

Review of April 1, 2003, Draft Meeting Summary
This meeting summary was approved as amended.

Review of Action Item Log (attached to 04/01/2003 Draft Meeting Summary)
The action item log was reviewed and updated.

Model Documentation Outline
Dave King emailed the model documentation outline on June 3, 2003. Dave King expects to have the model documentation posted to the model website in late June or early July, 2003. Committee members are asked to get comments regarding the draft model
**documentation outline to Dave King by June 13, 2003.** A draft user manual is on the website for anyone’s review (seeking in house comments only at this time).

**Budget, Schedule, and Status Report**

Pat Page and Dave King clarified dates and schedules on the budget and status reports. Dave King stated that it is likely that all technical work will be completed in FY03; however documentation may carry over into FY04. Money is available in FY04 for model operation and maintenance that can include model documentation work as well. Model operation and maintenance is part of the continued/ongoing model programming.

Ray Alvarado inquired about going over budget for model development. Dave King explained that it is still speculative as far as how much time will be needed for analysis and that they may be able to complete everything on time and on budget. Pat Page stated that we still have 3 - 4 months to continue work on the model and documentation.

Ray Alvarado questioned and received clarification that if the model work goes over budget, it is due to unforeseen circumstances. The scope of work was well-defined originally; unforeseen circumstances just delayed the process.

Currently the budget is balanced with percent complete tasks. Most Committee members felt that additional money is not needed for model documentation in the FY04 scope of work.

Pat Page explained that if the FY04 money budgeted for model runs is not needed for the estimated 3 consultations per year (to include 5 model runs per consultation, with 2 additional runs allotted for the Coordination Committee [17 total model runs]), it can be given back to the Program for other needed tasks, but it cannot be carried over to the next fiscal year.

Dave King stated that if disaggregation and the natural flow regime are resolved pretty easily, the model will be completed by the end of September. Dave King will be working on the model full time from June until the model is complete.

**FY04 Draft Scopes of Work: Model Maintenance and Streamflow Improvement**

**Model Maintenance:** It was agreed that “and documentation” be added under objective #2. Shirley Mondy suggested that the estimated consultations and model runs projected per year be included in the scope of work. One Committee member suggested that item # 6 is Program administration rather than model operation and maintenance. Shirley Mondy suggested that this budget item be taken out and added to Tom Chart’s Program Management scope of work. Pat Page stated that the new FY04 budget total, without this item, would be $73,250. **Pat Page will add the documentation under objective #2, add the specifics about the estimated/projected model runs that are budgeted for FY04, and will take the administration tasks out of this scope of work. This will also be noted in the out year funding.** It was moved and seconded that this amended budget be approved by the Hydrology Committee.

**Streamflow Improvement:** Pat Page introduced the USGS Gaging Scope of Work and explained that the additional gaging trips were charged to the Program, while normal gaging trips were a cost share agreement between USGS and Reclamation. **Pat Page will invite Mike Roarke to the August Hydrology Committee meeting to get an update report on the effectiveness of additional gage readings. Pat Page will also call USGS and verify that**
the FY04 budget for the additional gage readings will cover the work. Pat will clarify with the Albuquerque Reclamation office whether there is a reporting requirement implicit in their contract with USGS. Pat Page will add this to the scope of work this week. It was moved and seconded that this scope of work be approved as amended.

Trigger for Declaring “Extreme Conditions” – Response To Request For Criteria and Thresholds Used in Determining Extreme Conditions
Pat Page explained that Tom Nesler, State of Colorado Biology Committee member, had requested a written response regarding the criteria and thresholds used by the Hydrology Committee to create their FY03 trigger for extreme conditions. It was suggested that two or three Hydrology Committee members draft a response. Pat Page and Steve Harris agreed to clarify the 2003 decision and get it out to the Hydrology Committee for review. Shirley Mondy stated that it was important to clarify for the Coordination Committee why the Hydrology Committee determined that 2003 was an extreme year. At the next Hydrology Committee meeting, a subcommittee will be formed to develop definitions and parameters to use for defining extreme conditions for future years.

Due to extreme conditions this year, the Hydrology Committee recommends that the Program support the shortage sharing agreement for 2003. This motion was seconded and approved by the Hydrology Committee.

Navajo Reservoir Operations, Shortage Sharing Update, Hydrologic Conditions Update
Pat Page explained that the shortage sharing agreement has been endorsed by all 10 parties. The Office of the State Engineer, the Service, and Reclamation are not signatories to the shortage sharing agreement, but do support the plan. A letter from the Reclamation Regional Director’s Office will be sent to the Navajo Unit Contractors, and all parties involved in the agreement, stating that Reclamation acknowledges the agreement and will incorporate this in the 2003 operations.

Pat Page also explained that the agreement incorporates limiting water users diversions and sharing equally in the shortages. Prior to this, there has not been any river administration. This agreement was adopted in lieu of strict river administration this year which would likely lead to litigation.

Pat Turney stated that the latest measurement equipment installation date is mid-July, satellite systems are ready to be switched on as soon as the rest of the equipment comes in and gets installed. Pat Turney stated that Wallis Island downlink raw satellite data is available. The State Engineer’s Office will not be adding the analyzed data to a website. Ron Blesner asked whether there might be a weekly email report disseminated to other users? Pat Turney was unaware of whether any of this information would be disseminated outside the State Engineer’s Office.

John Simons discussed the most probable inflow forecast. He stated that inflows are higher than predicted for May, yet the April-July volume is essentially the same. Reclamation is estimating that 120,000 af will likely be in storage in Navajo Reservoir by the end of September, 2003. Pat Page added that Reclamation is currently releasing 450cfs out of Navajo Dam, and hopes to maintain that through mid-June. The shortage sharing agreement states that the
release will be 500 cfs starting in June, however, after discussions with the San Juan Flyfishing Federation, the minimum release will be 450 cfs this summer. The target base flow will be computed using the three gage method developed by the Biology Committee.

Update on Subcontracting Subcommittee
Shirley Mondy sent the draft contract procedures out on May 19th. This is a draft proposal for contracting new starts for the Program. The Coordination Committee would like to vote on this at their July 17th meeting and wants to receive feedback from all Committee members before then.

Ray Alvarado asked about whether there would have to be a peer review line item for each scope? Shirley Mondy stated that the Biology Committee has a scope of work that covers all peer review. This draft contract procedure is more about how to handle new starts. Once new starts are established, then requests for proposal (RFP’s) could be developed. RFP’s or independent work would then go through a peer review process for ranking and technical merit. It would probably be most appropriate for the peer review costs to be included in the Program administration or coordination budget. Please get comments to Shirley Mondy, Pat Page, or Bill Miller by the end of June, including feedback on how the peer review process should work, so they can be forwarded to the Coordination Committee for discussion at their July 17 meeting.

Outstanding Data Needs to Complete Modeling Work
Dave King needs the 1994 - 2000 perturbations. Ron Bliesner emailed these to Dave King on June 2nd.

Review New Action Items
New action items were reviewed and will be added to the Hydrology Committee Action Item Log.

Next Meeting
The next meeting will be held on August 5, 2003, at 8:30 am, at the Farmington Civic Center. The Committee will be notified once the location is confirmed.
Table 2. San Juan Hydrology Model - Data and Model Development Costs
April 2003 Budget

<table>
<thead>
<tr>
<th>Task</th>
<th>FY2001 Proposal Schedule</th>
<th>Professional time - staff days</th>
<th>FY2001 Funds</th>
<th>FY2002 Funds</th>
<th>FY2003 Funds</th>
<th>Estimated Cost</th>
<th>Target Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Analyze and correct gage errors.</td>
<td>Nov-00</td>
<td>0.0 20.0 20.0</td>
<td>$16,000</td>
<td>$0</td>
<td>$0</td>
<td>$16,000</td>
<td>Sep-01</td>
</tr>
<tr>
<td>B. CDSS interface</td>
<td>Nov-00</td>
<td>76.5 7.0 83.5</td>
<td>$28,321</td>
<td>$23,451</td>
<td>-$804</td>
<td>$50,968</td>
<td>Nov-02</td>
</tr>
<tr>
<td>C. Data systems development</td>
<td>Jan-01</td>
<td>76.5 7.0 83.5</td>
<td>$28,321</td>
<td>$23,451</td>
<td>-$804</td>
<td>$50,968</td>
<td>Nov-02</td>
</tr>
<tr>
<td>D. Correct 1970 -1993 database</td>
<td>Mar-01</td>
<td>33.0 0.0 33.0</td>
<td>$4,088</td>
<td>$16,377</td>
<td>$1,099</td>
<td>$21,564</td>
<td>Nov-02</td>
</tr>
<tr>
<td>E. Extend data sets to 1929</td>
<td>Apr-01</td>
<td>16.0 0.0 16.0</td>
<td>$0</td>
<td>$9,471</td>
<td>$1,781</td>
<td>$11,252</td>
<td>Nov-02</td>
</tr>
<tr>
<td>F. Extend data sets from 1993 to 1999</td>
<td>May-01</td>
<td>16.0 0.0 16.0</td>
<td>$0</td>
<td>$9,471</td>
<td>$1,781</td>
<td>$11,252</td>
<td>Nov-02</td>
</tr>
<tr>
<td>G. Configure and Calibrate to CDSS</td>
<td>Jun-01</td>
<td>89.0 11.0 100.0</td>
<td>$20,873</td>
<td>$33,484</td>
<td>$13,203</td>
<td>$67,560</td>
<td>Nov-02</td>
</tr>
<tr>
<td>H. Implement functionality in Riverware</td>
<td>Jun-01</td>
<td>26.0 0.0 26.0</td>
<td>$16,788</td>
<td>$0</td>
<td>$0</td>
<td>$16,788</td>
<td>Sep-01</td>
</tr>
<tr>
<td>I. Daily disaggregation</td>
<td>Aug-01</td>
<td>25.0 35.0 60.0</td>
<td>$0</td>
<td>$36,855</td>
<td>$8,320</td>
<td>$45,175</td>
<td>Oct-02</td>
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<td>J. San Juan Model upgrade / calibration</td>
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</tr>
<tr>
<td>K. Coordination with stakeholders</td>
<td>Throughout</td>
<td>84.3 13.0 97.3</td>
<td>$18,939</td>
<td>$44,300</td>
<td>$2,822</td>
<td>$66,061</td>
<td>Jun-03</td>
</tr>
<tr>
<td>L. Develop complete documentation</td>
<td>Nov-01</td>
<td>77.0 25.0 102.0</td>
<td>$13,601</td>
<td>$28,329</td>
<td>$27,156</td>
<td>$69,086</td>
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<tr>
<td>Expenses</td>
<td></td>
<td></td>
<td>$23,173</td>
<td>$41,004</td>
<td>$3,500</td>
<td>$67,677</td>
<td></td>
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<tr>
<td>Total</td>
<td></td>
<td>590 198 788</td>
<td>$170,103</td>
<td>$339,500</td>
<td>$96,720</td>
<td>$606,323</td>
<td></td>
</tr>
</tbody>
</table>

Expenses include travel, contracting costs, software, work station procurement and training, work station support, and RiverWare modifications. FY2002 funds include $108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.
## April 2003 Budget

<table>
<thead>
<tr>
<th>Task</th>
<th>FY2001 Proposal Schedule</th>
<th>Professional time - staff days</th>
<th>FY2001 Funds</th>
<th>FY2002 Funds</th>
<th>FY2003 Funds</th>
<th>Estimated Cost</th>
<th>Target Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Analyze and correct gage errors.</td>
<td>Nov-00</td>
<td>0.0 20.0 20.0</td>
<td>$15,335</td>
<td>$0</td>
<td>$0</td>
<td>$15,335</td>
<td>Sep-01</td>
</tr>
<tr>
<td>B. CDSS interface</td>
<td>Nov-00</td>
<td>74.0 4.5 78.5</td>
<td>$28,321</td>
<td>$21,558</td>
<td>$678</td>
<td>$50,557</td>
<td>Jul-03</td>
</tr>
<tr>
<td>C. Data systems development</td>
<td>Jan-01</td>
<td>74.0 4.5 78.5</td>
<td>$28,321</td>
<td>$21,558</td>
<td>$678</td>
<td>$50,557</td>
<td>Jul-03</td>
</tr>
<tr>
<td>D. Correct 1970 -1993 database</td>
<td>Mar-01</td>
<td>33.0 0.0 33.0</td>
<td>$4,088</td>
<td>$16,377</td>
<td>$1,356</td>
<td>$21,822</td>
<td>Oct-02</td>
</tr>
<tr>
<td>E. Extend data sets to 1929</td>
<td>Apr-01</td>
<td>16.0 0.0 16.0</td>
<td>$0</td>
<td>$9,471</td>
<td>$1,356</td>
<td>$10,827</td>
<td>Oct-02</td>
</tr>
<tr>
<td>F. Extend data sets from 1993 to 1999</td>
<td>May-01</td>
<td>20.0 0.0 20.0</td>
<td>$0</td>
<td>$9,471</td>
<td>$3,676</td>
<td>$13,147</td>
<td>Jul-03</td>
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<tr>
<td>G. Configure and Calibrate to CDSS</td>
<td>Jun-01</td>
<td>87.0 11.0 98.0</td>
<td>$20,873</td>
<td>$33,484</td>
<td>$10,856</td>
<td>$65,213</td>
<td>Jun-03</td>
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<tr>
<td>H. Implement functionality in Riverware</td>
<td>Jun-01</td>
<td>26.0 0.0 26.0</td>
<td>$16,788</td>
<td>$0</td>
<td>$0</td>
<td>$16,788</td>
<td>Sep-01</td>
</tr>
<tr>
<td>I. Daily disaggregation</td>
<td>Aug-01</td>
<td>27.0 35.0 62.0</td>
<td>$0</td>
<td>$36,855</td>
<td>$9,312</td>
<td>$46,167</td>
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<td>J. San Juan Model upgrade / calibration</td>
<td>Sep-01</td>
<td>73.5 83.0 156.5</td>
<td>$0</td>
<td>$75,578</td>
<td>$41,700</td>
<td>$117,278</td>
<td>Aug-03</td>
</tr>
<tr>
<td>K. Coordination with stakeholders</td>
<td>Throughout</td>
<td>84.3 13.0 97.3</td>
<td>$18,939</td>
<td>$44,300</td>
<td>$0</td>
<td>$63,239</td>
<td>Sep-03</td>
</tr>
<tr>
<td>L. Develop complete documentation</td>
<td>Nov-01</td>
<td>69.9 30.0 99.9</td>
<td>$13,601</td>
<td>$32,114</td>
<td>$23,608</td>
<td>$69,323</td>
<td>Sep-03</td>
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<tr>
<td>Expenses</td>
<td></td>
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<td>$23,173</td>
<td>$41,004</td>
<td>$3,500</td>
<td>$67,677</td>
<td></td>
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<tr>
<td>Total</td>
<td></td>
<td>585 201 786</td>
<td>$169,438</td>
<td>$341,771</td>
<td>$96,720</td>
<td>$607,929</td>
<td>Sep-03</td>
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</table>

Expenses include travel, contracting costs, software, work station procurement and training, work station support, and RiverWare modifications. FY2002 funds include $108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.
<table>
<thead>
<tr>
<th>Task</th>
<th>Actual Schedule</th>
<th>Target Schedule</th>
<th>Amount Expended</th>
<th>Percent Expended</th>
<th>Percent Completion</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Sep-01</td>
<td>Sep-01</td>
<td>$15,335</td>
<td>100%</td>
<td>100%</td>
<td>Initial analysis is complete. Task may be revisited after new model is available.</td>
</tr>
<tr>
<td>B</td>
<td>Jul-03</td>
<td></td>
<td>$53,323</td>
<td>105%</td>
<td>100%</td>
<td>Interfacing of daily and monthly time-series data is complete. Node and support data interfacing are partially completed.</td>
</tr>
<tr>
<td>C</td>
<td>Jul-03</td>
<td></td>
<td>$53,323</td>
<td>105%</td>
<td>100%</td>
<td>Database interfacing is completed.</td>
</tr>
<tr>
<td>D</td>
<td>Oct-02</td>
<td>Oct-02</td>
<td>$23,954</td>
<td>110%</td>
<td>100%</td>
<td>Provisional data set exists.</td>
</tr>
<tr>
<td>E</td>
<td>Jan-03</td>
<td>Oct-02</td>
<td>$11,407</td>
<td>105%</td>
<td>100%</td>
<td>Provisional data set exists.</td>
</tr>
<tr>
<td>F</td>
<td>Jul-03</td>
<td></td>
<td>$11,987</td>
<td>91%</td>
<td>93%</td>
<td>Provisional data set exists.</td>
</tr>
<tr>
<td>G</td>
<td>Jun-03</td>
<td></td>
<td>$65,801</td>
<td>101%</td>
<td>100%</td>
<td>Reconfiguration is essentially complete. Verification continues.</td>
</tr>
<tr>
<td>H</td>
<td>Sep-01</td>
<td>Sep-01</td>
<td>$16,788</td>
<td>100%</td>
<td>100%</td>
<td>StateMod return flow methods are implemented. New RiverWare requests types are implemented. It was demonstrated that StateMod water rights processing can be duplicated in RiverWare if required.</td>
</tr>
<tr>
<td>I</td>
<td>Jun-03</td>
<td></td>
<td>$45,618</td>
<td>99%</td>
<td>95%</td>
<td>Data, models, and methods to support disaggregation are completed. Incorporation of output remains</td>
</tr>
<tr>
<td>J</td>
<td>Aug-03</td>
<td></td>
<td>$40,920</td>
<td>35%</td>
<td>34%</td>
<td>Some sensitivity testing has been conducted and analyzed. Initial scoping of operation alternatives is complete. Scoping, testing, and implementation is ongoing.</td>
</tr>
<tr>
<td>K</td>
<td>Sep-03</td>
<td></td>
<td>$61,751</td>
<td>98%</td>
<td>95%</td>
<td>Ongoing. Work plan, schedule, and budget are updated at least monthly</td>
</tr>
<tr>
<td>L</td>
<td>Sep-03</td>
<td></td>
<td>$40,256</td>
<td>58%</td>
<td>50%</td>
<td>Web page has been implemented that includes links to models, rulesets, and documentation. Links are available to 2nd generation documentation and drafts of several third generation documents. Ongoing.</td>
</tr>
</tbody>
</table>

**Expenses** $51,196

**Total** $491,659 81% 82%

**Monthly Log**

| Differences exist between percent expended and percent completed due to work funded by other sources of funds and other reporting factors. Percent completions are based upon all work to complete project whereas percent expended are based upon program funds that are budgeted to respective tasks. |

A draft user’s manual was completed that includes documentation of data, DMI scripts, data updating instructions, and model updating instructions which includes all of the monthly models. Additional second generation functions were converted from UDF’s (User defined functions) to compiled RPL (RiverWare Policy Language) functions and the last second generation model was created to facilitate comparisons to the third generation model. Configuration of the bridge model was completed and the DMI’s were added. A daily version of the ALP rules and functions were developed. The draft hydrology model table of contents was reviewed. Arizona and Utah historic data were revised with revised CU&L data. Models were updated with revised StateMod data that include the revised Arizona and Utah data, small configurations changes, and other minor adjustments. The revised naturalized flows are being reviewed. |

**Expenditures are through -----> 5/31/2003**

FY2002 funds include $108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.
### April 2003 Budget

06/02/03

<table>
<thead>
<tr>
<th>Task</th>
<th>Staff Days</th>
<th>Costs</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOR Consultants</td>
<td>Total</td>
<td>Program Budget</td>
</tr>
<tr>
<td>A</td>
<td>0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>B</td>
<td>74</td>
<td>5</td>
<td>79</td>
</tr>
<tr>
<td>C</td>
<td>33</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>D</td>
<td>16</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>E</td>
<td>20</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>87</td>
<td>11</td>
<td>98</td>
</tr>
<tr>
<td>H</td>
<td>26</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>I</td>
<td>27</td>
<td>35</td>
<td>62</td>
</tr>
<tr>
<td>J</td>
<td>74</td>
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<td>K</td>
<td>84</td>
<td>13</td>
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<tr>
<td>L</td>
<td>70</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Expenses</td>
<td>Total</td>
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</tr>
<tr>
<td></td>
<td>D&amp;MD</td>
<td>585</td>
<td>201</td>
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<tr>
<td></td>
<td>Other</td>
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<td>201</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>585</td>
<td>201</td>
</tr>
</tbody>
</table>

| FY2001 |  $154,103 | $15,335 | $169,438 | $154,103 | $15,335 | $169,438 |
| FY2002 |  $182,456 | $159,315 | $341,771 | $198,016 | $86,190 | $284,206 |
| FY2003 |  $96,720 | 0 | $96,720 | $57,275 | 0 | $57,275 |

Expenditures are through -------> 05/31/03

$60,000 have been obligated by cooperative agreement for work on tasks B, C, I, G, K, and L.

$99,315 have been obligated by contract for work on tasks I, J, K, and L.
SJRIP Hydrology Model Development - Detailed Tasks and Schedule Timeline

Work Items

1. SJRIP Hydrology Model Development - Detailed Tasks and Schedule Timeline
SJRIP Hydrology Monthly Log

The following is a monthly log of work on third generation San Juan Basin Hydrology Model (SJBHM), associated data development, and operation and maintenance of SJBHM. The SJBHM is used to support the San Juan Recovery Implementation Program (SJRIP). Additional information is available from the SJRIP Hydrology Committee web page at http://wcao.usbr.gov/envprog/sjrip.

May, 2003

A draft user’s manual was completed that includes documentation of data, DMI scripts, data updating instructions, and model updating instructions which includes all of the monthly models. Additional second generation functions were converted from UDF’s (User defined functions) to compiled RPL (RiverWare Policy Language) functions and the last second generation model was created to facilitate comparisons to the third generation model. Configuration of the bridge model was completed and the DMI’s were added. A daily version of the ALP rules and functions were developed. The draft hydrology model table of contents was reviewed. Arizona and Utah historic data were revised with revised CU&L data. Models were updated with revised StateMod data that include the revised Arizona and Utah data, small configurations changes, and other minor adjustments. The revised naturalized flows are being reviewed.

April, 2003

The primary activities during this month were coordination, creation of additional DMI scripts to facilitate maintenance, adjustment of StateMod model, and development of a draft User’s Manual.

March, 2003

The primary activities were a closer examination of the StateMod natural flows and model runs, documentation, budgeting and scheduling. In addition, scripts were developed to facilitate long-term operation and maintenance models.

February, 2003

The primary activities were continuation of the validation process and completion of the migration model configuration and rules. Debugging of the disaggregation model unearthed a StateMod bug that was corrected. Additional technical transfer was provided to field personnel. RiverWare DMI’s were modified to support platform independence using latest RiverWare and perl scripts. Work has commenced on the bridge model.

January, 2003
The primary activity was continuation of the validation process. The validation required additional configuration adjustments in StateMod and RiverWare, additional DMI’s, and creation of a ruleset to compute aggregated values and to compensate for differences between StateMod and RiverWare. Additional knowledge of StateMod was also acquired to complete the validation. The other activities were technical transfer from Denver to Durango, moving the publicly available data, models, rulesets, and documentation to ftp.usbr.gov, updating the daily disaggregation configuration, and creating an initial configuration of the daily decision model.

December, 2002

Several iterations of provisional StateMod output were obtained from CWCB that were used to validate the daily disaggregation model and the monthly migration model. The daily disaggregation model has been completed except data updates and testing the migration to the daily decision model. The monthly validation model was used to complete development of static data DMI’s (elevation area tables, elevation volume tables, stage discharge tables, lagging coefficients), initial conditions DMI’s (lagging and reservoirs), and time-series DMI’s. The primary validation activity has been to do configuration adjustments and node mapping adjustments related to StateMod carried water cases. A regression that used to forecast San Juan Chama diversions was updated. Data are being collected to update the forecast error regression.

November, 2002

The provisional data set was documented for the Hydrology Committee. Static and dynamic (time-series) data DMI’s were added to the validation and migration models. Static data were evolved into RiverWare format that included stage-discharge tables, area-capacity tables, and evaporation tables. Revised StateMod gains distribution coefficients were incorporated into the daily historic gains model. Some testing of new RiverWare data types and RPL functions was done to investigate their potential use in the new model. An initial StateMod data set was obtained for the historic scenario. This model was tested and reviewed and use of the data in RiverWare data stores and models was initiated. Alternatives were investigated to replace the web site’s ftp services. Animas forecasting options were investigated.

October, 2002

A daily natural flow model to support the daily decision model was built and partially populated. DMI control, mapping, and scripts were completed for this model. A ruleset to disaggregate extended monthly gage flows and historic depletions was developed. Daily flow fractions were developed for mainstem gages and tributaries. Model will compute daily gains for the mainstem gages that will be used by daily decision model. Static data DMI’s were updated.
Provisional New Mexico, Arizona, and Utah historic and baseline data sets were provided to CWCB in StateMod format.

September, 2002

Second generation documentation was completed except for some loose ends. Completed updating of historic gaged flows through water year 2000. Conducted technical transfer to new person with focus on support of long-term data maintenance. Improved DMI’s, control files, map files, and run scripts to facilitate long-term data maintenance. Created initial documentation of data stores, scripts, control files, map files, and DMI’s to facilitate long-term data maintenance. Adjusted schedule and budget to reflect actual FY2002 work, expenditures, and schedule. Worked on daily natural flows model, DMI’s, and rulesets. Spreadsheet aggregation utilities were developed.

August, 2002

Preliminary power depletions and system efficiencies were obtained from NMISC. NIIP historic and baseline depletions were developed. Reclamation updated their historic streamflow data and Reclamation reservoir operations data. Reclamation operations data were provided to CWCB. Jicarilla hydrology node information (precipitation and area) was obtained. SJC data set was extended through 2000 and daily flow fractions for the tributaries were developed. An improved SJC configuration and ruleset was tested with the second generation and implemented in the migration model. Rules were tested to support migration of forecasts data from the migration model to the decision model. First draft of revised operating criteria for Navajo was formulated.

July, 2002

Discussions were held with NMISC regarding the mainstem configuration. The irrigation nodes are established but acreage adjustments remain. The non-irrigation configuration is nearing completion. NMISC needs to provide efficiencies, capacities, and non-irrigation depletions. The Jicarilla nodes were located and a hydrology node provided for their water. Daily depletion disaggregation fractions were obtained from the contractor and their usage was tested in RiverWare. A forthcoming version of RiverWare will compute diversion requests of user provided depletion requests. The ability to use user provided frost dates was added to Reclamation’s Blaney-Criddle model. A data management interface (DMI) was developed for StateMod daily data to facilitate future data updating. DSS DMI’s were also developed to facilitate data archiving.

June, 2002
The RiverWare model and SJRIPDB were modified for known configuration changes. New Mexico non-irrigation configuration remains. Return flow apportions were computed for the known configuration. The ET spreadsheets were adjusted and a New Mexico irrigation spreadsheet was prototyped. Additional climate data were obtained or developed including daily data for all of New Mexico. Disaggregation data and procedures were evolved. Options to implement the disaggregation data and procedures in the RiverWare models were scoped. Additional data management utilities were developed and long-term options to maintain and update data were investigated. Available historic USGS and reservoir operations data were obtained.

May, 2002

Daily climate data were obtained to support daily evapotranspiration estimates that will be used to facilitate disaggregation of irrigation depletions. Monthly climate data for the entire basin were updated through 2000 except for 3 stations that not yet available. Climate station weights were developed for the anticipated New Mexico irrigation depletion nodes. NMISC cropping patterns and acres were extended from 1929 through 2000 by depletion node in Blaney-Criddle format. The cropping patterns are being used for the daily evapotranspiration computations as well. The ability to optionally compute irrigation depletions using original Blaney-Criddle was added to the code and a comparison run was made. Work was done on other disaggregation data development as well. Hammond historic data were obtained and integrated with historic estimates. Considerable work was done on the StateMod and RiverWare models for the mainstem reconfiguration.

April, 2002

Additional adjustments were made to the modeling approach and associated documentation to address Hydrology Committee questions and to reflect evolution of the model development. The RiverWare monthly model was modified to use diversion objects in lieu of water user objects for supplemental water cases. This allows easier recognition of them in the model, reduces the size of the model, and separates their management. The code that creates the model was migrated to RiverWare 4.0.4. Reclamation’s Blaney-Criddle calculator was modified to compute original Blaney-Criddle and to use some of the data formats developed for SJRIP. Original Blaney-Criddle crop coefficients for New Mexico (which are seasonal) were obtained from the New Mexico State Engineer’s Office.

March, 2002

An initial cut was made to map New Mexico’s irrigation depletions to StateMod and RiverWare nodes. After adding expected non-irrigation nodes, an initial cut was made on return flow distribution. The configuration is being negotiated with NMISC. A discussion was held with CWCB regarding supplemental hydrology.
nodes (gains between gage nodes) on the main stem of the San Juan. The latest version of CWCB’s San Juan StateMod model was obtained to use as a starting point for the main stem reconfiguration. The RiverWare model will be built consistent with the StateMod although some configuration issues remain in both Colorado and New Mexico.

February, 2002

The database and software that are being used to create the monthly model from the StateMod natural flow model was extended to support multiple versions of models. In addition, the ability to distinguish and create water objects by RiverWare depletion request types was provided. This will enable optional use of acres and rates verses user provided depletion requests. The lastest San Juan StateMod model was obtained to begin reconfiguration of the main stem San Juan nodes. Provisional acres and cropping patterns were obtained from New Mexico for computation of historic depletions. Initial work was begun on historic Arizona and Utah depletions including obtaining revised data from Utah. The flow recommendations performance spreadsheet was evolved in anticipation of daily model output. RPL (RiverWare Policy Language) functions were specified to compute the flow recommendation statistics within a model run so that they can be used to optimize releases. This implementation will be funded by research funds because it has application in other basins.

January, 2002

Technical work was limited due to other obligations but a few data management support items were completed that include development of DMI’s to import into RiverWare and export data from RiverWare in a format that is consistent with the spreadsheets produced by a RiverWare data file (RDF). These DMI’s will enable us to make model updates using output of previous runs. In addition, the ability to optionally include html targets to objects and slots was added to selected DMI’s. These formats will be used to provide data access via the internet to stakeholders. A spreadsheet and documentation were developed to facilitate computation of equivalent RiverWare depletion slots from equivalent StateMod data. Another spreadsheet was developed to convert and store the previous model’s climate data in the new model’s monthly format.

December, 2001

Technical work was limited due to vacation, other obligations, development of the budget, and preparation of contract specifications. However, a few small items were completed. An application was created to create and update a table of model runs that provides links to data and plots. These tables will be added to the web site when an appropriate data format is available. Technology were obtained from another project that has developed a way to create and post a set of plots to an Acrobat (pdf) file from a standard RiverWare output file (RiverWare Data File (RDF)). An inconsistency on use of the minimum pumping to ALP was
corrected and posted to the web site rulesets. The process to create a RiverWare model from StateMod was evolved to be more usable as the respective models are reconfigured.

A cooperative agreement was prepared with Kelller-Bliesner to assist with work plan items 10, 16, 20, 23, and 24. Work under this cooperative agreement has not commenced.

November, 2001

Technical work was limited due to vacation, other obligations, and development of the budget. However, a few small items were completed. A utility to convert StateMod area-capacity data to RiverWare format was developed and a DMI was created to import the area-capacity data into RiverWare. Documentation of static data DMI’s was drafted and added to the web page. Some adjustments were made to the web pages for consistency and to prototype inclusion of data and plots from models. An outline of documentation needs was provided to CWCB. Configuration and data issues were discussed with NMISC. A disaggregation needs document was drafted and provided to Keller-Blisner for review and extension.

October, 2001

Minimal technical work was done due to vacation, other obligations, work station procurement, and development of the budget and contract specifications.

September, 2001

1. Task H – Completed testing of StateMod water right procedures. This required fixing of RiverWare bug that was discovered in late August.
2. Task L – Slightly revised web page and scoped means to link to model visualization pages. Improved SRJIP database software to facilitate posting of data to web site.
3. Task K – Prepared background material and met with Hydrology Committee subteam and full team.
4. Task A - Gage errors were analyzed and correction options were evaluated.

August, 2001

1. Task L – Official web page was posted and slightly revised.
2. Tasks H and J – Additional testing StateMod water right procedures was conducted.
3. Task C - New Mexico Interstate Streamflow Commission was asked for clarification on irrigated lands identified by their GIS coverage.
4. Task H - CADSWES completed incorporation of lagged return flows into decision functions. Reclamation verified that they worked properly.

July, 2001

1. Tasks G and J - We fine tuned the programmatic means of creating RiverWare model from a StateMod model. Although this process worked for the Gains model, initially RiverWare would not save the validation model. This problem has been corrected. The validation model with existing main stem configuration was programatically created using spatial coordinates that were estimated from known latitudes and longitudes. This resulted in some portions of the model being extremely congested. The locations of objects is being adjusted to improve model navigation. The model will be recreated programatically after the improved visualization and mainstem reconfiguration are completed.

2. Task L – Reclamation Salt Lake web master was contacted to obtain an official site for the hydrology model web page. A numeric site has been assigned but the official name awaits registration. Committee will be posted as soon as site is posted.

3. Tasks H and J – We scoped and tested implementation of StateMod water rights procedures in RiverWare. Testing to date has not included reservoirs because a few additional StateMod procedural questions remain to be resolved. A report of the implementation has been drafted and will be provided to the committee after testing is completed.

4. Tasks H and J – We had a meeting with CADSWES to discuss possibility of using RiverWare’s accounting functionality to support water right rules and areas for improved performance. This will consist of creating compiled versions of some of the RPL (RiverWare Policy Language) functions that were written to support water rights rules.

5. Tasks C and L – An automated means of creating a web page visualization of a RiverWare model has been developed (by another project and borrowed for our use). We will provide a link to the gains model when the official web site is posted. We will use this mechanism to provide access of model data to those committee members that do not have access to RiverWare.

June, 2001

1. Developed programmatic means of creating RiverWare model from StateMod model. This will facilitate updating of RiverWare model as reconfiguration changes are made to StateMod model. Using software to create the RiverWare
model also reduces the chances of making linking errors. We used this program to create first version of validation model.

2. Met with CWCB to clarify additional StateMod data and methods.

3. Created Piedra Validation model. We intend to use this model and a calibration model of same subbasin to verify DMI's, compare basic items to StateMod, and to prototype water rights emulation in RiverWare. After our meeting with CWCB, this model is matching nicely with StateMod to the extent that it has been checked.

4. Developed a means of visualizing a RiverWare model on a web page. The technology was developed by another project and borrowed for our use in SJRIP. This will provide non RiverWare user's access to RiverWare data with visualization on a web page that appears similar to an actual RiverWare model.

5. A number of utilities were developed to support RiverWare model creation, and visualization.

6. Researched options to implement water rights emulation in RiverWare.

7. Updated plan of study data and responded to comments to plan of study.

May, 2001

1. Developed log of first and second generation models and rulesets and created web access of same. Included in this structure are a model and ruleset naming convention, links to models and rulesets, links to scenario model runs, and links to documentation.

2. Created a Hydrologic Database (HDB) in Denver to support data access of model input and output data.

3. Met with CADSWES to discuss modifications to HDB to support depletions datatypes. The modifications are minor and non program funded.

4. Met with Ray Bennet of CWCB to clarify how CDSS StateMod water right's algorithm works and to discuss StateMod implementation of the variable efficiency method.

5. Made initial San Juan main stem reconfiguration after discussions with NMISC. Additional discussions with NMISC to clarify some items.

6. Completed software to support mapping of RiverWare nodes to CDSS and DMI's.

8. Obtained and tested a newer version of RiverWare that corrected a problem with initial conditions for multiple lagged return flows. This version of RiverWare also has a new rules function that should help in SJRIP. It does not yet have the ability to see lagged return flows when estimating reservoir releases. That modification should be available by June 22.

October, 2000 through April, 2001 Activities

1. Previous generation of RiverWare model rules were migrated to run entirely in "new" rules environment. Previous generation of rules was a bridge between "new" and "tcl" (old) rules system. Although actual rules in new model may vary considerably from the previous generation, individual functions may still be used in the new model. Completion of this task enables us to eliminate most compatibility issues between model generations. This task was completed before SJIRP funds became available using other sources of funding.

2. All comments from previous generation of model were incorporated to the extent possible. It was important to complete this documentation before the modelers became too involved in the new model development. This task was mostly completed without SJIRP funds.

3. Two sensitivity runs were made with the previous generation of model to better understand how the system responds. These runs have not been analyzed (post processed) but could provide some information to improve the next generation model.

4. A contract has been arranged for analyzing and correcting gage errors.

5. Reclamation GIS sets have been updated with Colorado, New Mexico, and USGS coverages. In addition, research funds were used to develop a methodology to estimate the portion of return flows that return to subbasins generated using GIS technology. Return flow proportions are important when estimating water supply of individual water users in StateMod. Some programs funds were used to apply this technology to the San Juan basin. The technology has been provided to Colorado Water Conservation Board to use as they see fit to improve the SJRIP StateMod model.

6. Reclamation have acquired all necessary CDSS (Colorado Decision Support System) software, existing San Juan StateMod model, support data, and documentation. Reclamation staff have worked with CWCB to clarify StateMod methods, data, and operating criteria.
7. DMI’s (Data Management Interfaces) have been developed to move data between StateMod and RiverWare, between StateMod and two common Reclamation data formats, and between StateMod and HDB (Hydrologic Data Base). A prototype HDB has been installed in Denver.

8. StateMod return flow methods have been created in RiverWare using research funds. The methods have been tested but additional modifications needs to been completed before the return flow methods can be seen by rules when lagging is invoked.

9. Mapping of CDSS nodes to RiverWare nodes is nearly complete. A validation model will be built initially to verify that water moves through the RiverWare model as it does in StateMod. This model should be completed and tested by mid May.
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<tr>
<th>Action Item</th>
<th>Meeting/Origination Date</th>
<th>Responsible Party</th>
<th>Due Date</th>
<th>Revised Date</th>
<th>Date Completed</th>
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<tbody>
<tr>
<td>4</td>
<td>7/25/01</td>
<td>Dave King</td>
<td>Ongoing</td>
<td></td>
<td>Continues to Update</td>
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<tr>
<td>5</td>
<td>7/25/01</td>
<td>Reclamation and Keller-Bliesner</td>
<td>Ongoing</td>
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<tr>
<td>12</td>
<td>7/25/01</td>
<td>Keller-Bliesner and Reclamation</td>
<td>Ongoing</td>
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<tr>
<td>33</td>
<td>11/27/01</td>
<td>New Mexico</td>
<td>March 2002</td>
<td>Extended</td>
<td></td>
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<tr>
<td>34</td>
<td>11/27/01</td>
<td>Hydrology Committee</td>
<td>When the Model is complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>5/7/02</td>
<td>John Whipple</td>
<td>June 17, 2002</td>
<td>Extended</td>
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Add model runs and other information to the permanent hydrology website: [http://wcao.uc.usbr.gov/envprog/sjrip/](http://wcao.uc.usbr.gov/envprog/sjrip/).

Model modification briefings.

Any new data or methods incorporated into RiverWare or State Mod will be shared with the Hydrology Committee.

New Mexico will work on developing data on non-irrigation depletions starting in March. [10/29/02] New Mexico has provided provisional data on the prior depletions. Staff will not be available for the next few months to work on this. *Dave King has extrapolated pre-1970 non-irrigation depletions data back to a baseline and will send the spreadsheet to Rick Cox.* (completed as of 2/11/03) Dave will provide written explanation of how extrapolation was done to Hydrology Committee. The model is operating with provisional generation II data until New Mexico submits further data.

Gage error analysis discussion: the Hydrology Committee still needs to determine whether big losses are due to daily disaggregation. The Committee has the option to re-evaluate losses once the 3rd Generation model is complete.

John Whipple will provide a written statement of New Mexico’s concerns re: State Mod. Based on that, Ray Alvarado will provide a written description of StateMod. New Mexico’s comments have not yet been received. [10/29/02] Still on New Mexico’s back burner.
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<tbody>
<tr>
<td>63</td>
<td>In the development of the model, if another data set is found that disagrees with the data provided by the state (or anyone else), then that information needs to be discussed at a Hydrology Committee meeting.</td>
<td>6/25/02</td>
<td>Modelers Hydrology Committee</td>
<td>Immediately Ongoing</td>
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<tr>
<td>78</td>
<td>The Committee agreed to fund add’l trips by USGS, and suggested that USGS fund the necessary improvements (new cableway) at Shiprock. Pat Page will talk to BOR contract people to get a contract going for USGS for 2003 (done Dec. 2, 2002). Ron Bliesner will talk with John Leeper to see if there is anything that can be done from Navajo Nation to assist USGS in obtaining access. Jerry Thomas at BIA in Shiprock manages those access contracts - he may also be able to help.</td>
<td>10/29/02</td>
<td>Hydrology Committee Pat Page Ron Bliesner</td>
<td>April 1, 2003</td>
<td></td>
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<tr>
<td>81</td>
<td>Add peer review discussion to next summer’s meeting agenda when Amy Cutler comes back to present progress and findings. <strong>Invite Amy to the August meeting and discuss whether her model needs peer review.</strong></td>
<td>10/29/02</td>
<td>Pat Page Shirley Mondy</td>
<td>April 1, 2003</td>
<td>August 5, 2003</td>
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<tr>
<td>91</td>
<td>John Leeper agreed to get a letter to USGS and to whomever controls the locations to ease access for USGS.</td>
<td>4/1/03</td>
<td>John Leeper</td>
<td></td>
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<td>93</td>
<td>The Hydrology Committee agreed to add a discussion of hydrologic conditions to the agenda of each meeting or conference call to determine whether extreme conditions exist.</td>
<td>4/1/03</td>
<td>Hydrology Committee Pat Page</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td>98</td>
<td>Dave King will have a documentation outline available in time to be discussed at the June conference call. Documentation outline will be added to the June 3rd conference call. <strong>This documentation was emailed to the Committee on June 3, 2003. The Committee should get comments to Dave King by June 13, 2003.</strong></td>
<td>4/1/03</td>
<td>Dave King Pat Page</td>
<td>June 3, 2003</td>
<td>June 13, 2003</td>
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<tr>
<td>101</td>
<td>6/3/03</td>
<td>Pat Page</td>
<td></td>
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<td>Under the model maintenance scope of work, Pat Page will add the documentation for objective #2, add the specifics about the estimated/projected model runs that are budgeted for FY04, and will take the administration tasks out of this scope of work. This will also be noted in the out year funding.</td>
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<tr>
<td>102</td>
<td>6/3/03</td>
<td>Pat Page</td>
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<tr>
<td>Pat Page will invite Mike Roarke to the August Hydrology Committee meeting to get an update report on the effectiveness of additional gage readings. Pat Page will also call USGS and verify that the FY04 budget for the additional gage readings will cover the work. Pat will clarify with the Albuquerque Reclamation office whether there is a reporting requirement implicit in their contract with USGS. Pat Page will add this to the scope of work this week.</td>
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<tr>
<td>103</td>
<td>6/3/03</td>
<td>Pat Page</td>
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<tr>
<td>Pat Page and Steve Harris agreed to clarify the 2003 extreme condition decision and get it out to the Hydrology Committee for review.</td>
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June 26, 2003
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<th>Revised Date</th>
<th>Date Completed</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Complete 2nd generation model documentation. Reclamation portion was mostly the data. Still being reviewed. Responses to commentators have been written. Done. Needs to be added to the website.</td>
<td>7/25/01</td>
<td>Reclamation Keller-Bliesner</td>
<td>11/27/01</td>
<td>John Simons needs to review 7/15/02 9/30/02</td>
</tr>
<tr>
<td>2</td>
<td>Write letter to the water districts.</td>
<td>7/25/01</td>
<td>Reclamation</td>
<td>10/31/01</td>
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<tr>
<td>3</td>
<td>Draft Progress Report using Dave King’s information. (See #9) A letter documenting the status of the model will be sent to Hydrology Committee by the end of April.</td>
<td>7/25/01</td>
<td>Pat Page</td>
<td>4/30/02</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Give Dave King and Ron Bliesner the water allocations information (in particular, non-irrigation return flow locations and depletions) from the meeting with New Mexico.</td>
<td>7/25/01</td>
<td>John Simons</td>
<td></td>
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<tr>
<td>7</td>
<td>Let Brent Uilenberg know what funds will not be used in FY 01.</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Send completed FY 2002 budget to Program Coordinator.</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td></td>
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</tr>
<tr>
<td>9</td>
<td>Provide Progress Report information to Errol Jensen.</td>
<td>7/25/01</td>
<td>Colorado (Keller-Bliesner has no progress to report)</td>
<td>10/3/01</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The Hydrology Committee would like to see the proposal on handling water rights before it is implemented.</td>
<td>7/25/01</td>
<td>Dave King</td>
<td>11/27/01</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Forward the GIS methodology and information to Colorado, and notify John Whipple and Pat Turney when that will happen.</td>
<td>7/25/01</td>
<td>John Simons</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>Add a notation to the Work Plan that Items 1 - 16 will be completed (funds obligated/used) in 2001.</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td>7/27/01</td>
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<tr>
<td>14</td>
<td>Prepare Tables 1 and 2 for presentation to the Coordination Committee. (Use Table 3 for the Hydrology Committee only.)</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td>7/27/01</td>
<td></td>
</tr>
<tr>
<td>Action Item</td>
<td>Meeting/Origination Date</td>
<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
<td>Date Completed</td>
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</tr>
<tr>
<td>15 Table 2 needs to be revised to update the schedule.</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td>7/27/01</td>
<td>9/26/01</td>
<td></td>
</tr>
<tr>
<td>16 Verify how the $237,000 will be spent in 2001, if much of the remaining work will be completed by Reclamation staff.</td>
<td>7/25/01</td>
<td>Errol Jensen</td>
<td>7/27/01</td>
<td>9/26/01</td>
<td></td>
</tr>
<tr>
<td>17 Work through the details and update revised target dates for 2001 funding information and get to Program Coordinator ASAP.</td>
<td>7/25/01</td>
<td>Errol Jensen Dave King</td>
<td>7/27/01</td>
<td>9/26/01</td>
<td></td>
</tr>
<tr>
<td>18 Once the scopes of work are complete, notify the Hydrology Committee so that people can express interest in performing the work.</td>
<td>7/25/01</td>
<td>Reclamation</td>
<td>Ongoing</td>
<td>5/7/02</td>
<td></td>
</tr>
<tr>
<td>19 Incorporate Product Deliverables and Delivery Dates into the Work Plan. Current tables could be updated with 2003 outcomes and a delivery date for each task.</td>
<td>7/25/01</td>
<td>Pat Page</td>
<td>7/02</td>
<td>6/25/02</td>
<td></td>
</tr>
<tr>
<td>20 Anyone interested in attending the San Juan Congressional briefing and tour should let the Program Coordinator know.</td>
<td>7/25/01</td>
<td>Everyone</td>
<td>8/3/01</td>
<td>Cancelled</td>
<td></td>
</tr>
<tr>
<td>21 The Hydrology Committee will finalize meeting dates and set conference calls.</td>
<td>9/26/01</td>
<td>Everyone</td>
<td>11/27/01</td>
<td>11/27/01</td>
<td></td>
</tr>
<tr>
<td>22 When the report on the Navajo Reservoir Operations Low Flow Test is complete, a copy will be sent to Shirley to be sent out or linked to the San Juan website.</td>
<td>9/26/01</td>
<td>John Simons</td>
<td>March or April 2002</td>
<td>5/14/02 7/1/02</td>
<td>7/1/02</td>
</tr>
<tr>
<td>23 The July 25, 2001 Conference Call Summary will be updated on the website.</td>
<td>9/26/01</td>
<td>Marilyn Greenberg</td>
<td>12/1/01</td>
<td>11/20/01</td>
<td></td>
</tr>
<tr>
<td>24 Reclamation will extend Arizona and Utah historic irrigated acreage data back to 1929, in a spreadsheet format, as needed for the model. Provisional data is complete. Summary of provisional data set has been sent out by Dave King. Final data is pending CRSS process (as of 10/29/02).</td>
<td>9/26/01</td>
<td>Reclamation (11/27/01)</td>
<td>mid May 2002</td>
<td>7/15/02 9/15/02 Extended indefinitely</td>
<td>5/5/03</td>
</tr>
<tr>
<td>Action Item</td>
<td>Meeting/Origination Date</td>
<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
<td>Date Completed</td>
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</tr>
<tr>
<td>25</td>
<td>9/26/01</td>
<td>Everyone</td>
<td>11/27/01</td>
<td></td>
<td>11/27/01</td>
</tr>
<tr>
<td>26</td>
<td>9/26/01</td>
<td>Ray Alvarado</td>
<td></td>
<td></td>
<td>2/1/02</td>
</tr>
<tr>
<td>27</td>
<td>9/26/01</td>
<td>Dave King / Hydrology Committee</td>
<td>11/27/01</td>
<td>3/26/02</td>
<td>3/26/02</td>
</tr>
<tr>
<td>28</td>
<td>9/26/01</td>
<td>Dave King</td>
<td>11/27/01</td>
<td>3/26/02</td>
<td>3/26/02</td>
</tr>
<tr>
<td>29</td>
<td>9/26/01</td>
<td>Keller-Bliesner</td>
<td>11/27/01</td>
<td>Add'l comments to Bliesner and BOR by 4/29/02</td>
<td>3/26/02</td>
</tr>
<tr>
<td>30</td>
<td>9/26/01</td>
<td>Marilyn Greenberg</td>
<td>12/1/01</td>
<td></td>
<td>11/20/01</td>
</tr>
<tr>
<td>31</td>
<td>3/26/02 9/26/01</td>
<td>Pat Page</td>
<td>June or August 2002</td>
<td>6/25/02</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>11/27/01</td>
<td>Dave King</td>
<td>Monthly</td>
<td></td>
<td>2/11/03 - process is standardized. Move to completed log.</td>
</tr>
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<td>Action Item</td>
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<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
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<tr>
<td>35</td>
<td>11/27/01</td>
<td>Shirley Mondy</td>
<td></td>
<td></td>
<td>5/1/02</td>
</tr>
<tr>
<td></td>
<td>John Whipple suggested that the June 14, 2001 version of the Hydrology Committee Model Disclaimer, as approved at the June 19, 2001 Coordination Committee Meeting, be used on Model documentation. Shirley will mail it out on the listserv.</td>
<td></td>
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<tr>
<td>36</td>
<td>11/27/01</td>
<td>Everyone</td>
<td>12/7/01</td>
<td>Revisions still needed. Dave King will assist</td>
<td>1/29/02</td>
</tr>
<tr>
<td></td>
<td>Please get comments regarding the September 26, 2001 draft meeting summary to Marilyn Greenberg by 12/7/01. FWS will send out a revised copy.</td>
<td>Marilyn Greenberg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>1/15/02</td>
<td>Hydrology Committee</td>
<td>after Oct. 29, 2002 Hydrology meeting</td>
<td>10/29/02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Hydrology Committee would like to quantify the benefits of continuing to fund USGS for additional gage readings on the San Juan beyond 2002. The Committee decided to allocate the funds for the additional gage readings and the allocation can be removed later if it needed after the re-evaluation in #34.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>3/26/02 11/27/01</td>
<td>Pat Page</td>
<td>3/26/02</td>
<td>5/7/02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Long Term Hydrology Committee Budget Proposal was requested by the Coordination Committee. Please provide your comments to Pat Page. Pat will put the long term budget into a format that is compatible with the work plan and send it back to the Hydrology Committee for comment.</td>
<td>Hydrology Committee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>1/15/02</td>
<td>Marilyn Greenberg</td>
<td></td>
<td>1/29/02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The final summary of the November 27, 2001 Hydrology Committee conference call will be mailed out to Committee members when revised.</td>
<td></td>
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<tr>
<td>40</td>
<td>1/15/02</td>
<td>Dave King</td>
<td>Ongoing</td>
<td>3/26/02 Format has been established. Ongoing Reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dave King will review the budget and progress report targets and address the impacts of missed targets. Dave King and Pat Page will include more details, such as impacts, in the progress reports.</td>
<td>Pat Page</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>1/15/02</td>
<td>Dave King</td>
<td></td>
<td>3/26/02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dave King and Reclamation will develop and add a statement about not using water rights in RiverWare in the model documentation. Statements regarding water rights have been removed from the model documentation.</td>
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<td><strong>Action Item</strong></td>
<td><strong>Meeting/Origination Date</strong></td>
<td><strong>Responsible Party</strong></td>
<td><strong>Due Date</strong></td>
<td><strong>Revised Date</strong></td>
<td><strong>Date Completed</strong></td>
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</tr>
<tr>
<td>42 The Committee is requested to provide additional comments on Keller-Bliesner’s 1/11/02 “Draft Plan of Approach” to Ron Bliesner or John Simons by 1/29/02.</td>
<td>1/15/01</td>
<td>Hydrology Committee</td>
<td>1/29/02</td>
<td></td>
<td>3/2/02</td>
</tr>
<tr>
<td>43 The January 15, 2002 Conference Call Summary was approved as amended. Marilyn Greenberg will send out the final version to Committee members and post it on the website when revisions have been completed.</td>
<td>3/26/02</td>
<td>Marilyn Greenberg</td>
<td></td>
<td></td>
<td>5/1/02</td>
</tr>
<tr>
<td>44 The Committee agreed to talk with USGS, or invite them to come to the Committee and give us a report at the end of the calendar year - around October 22 Hydrology Meeting? (See # 37) USGS has been contacted and they have indicated that they will attend the HC Oct. meeting.</td>
<td>3/26/02</td>
<td></td>
<td>10/22/02</td>
<td></td>
<td>6/25/02</td>
</tr>
<tr>
<td>45 The Hydrology Committee voted to recommend moving forward with the “Key Model Input Draft Plan of Approach” dated 3/22/02. New Mexico was the only vote not in favor.</td>
<td>3/26/02</td>
<td>Dave King</td>
<td></td>
<td></td>
<td>3/26/02</td>
</tr>
<tr>
<td>46 John Whipple will try to get some written technical comments regarding the Draft Plan of Approach (3/22/02), that was approved, out to Keller-Bliesner and the Hydrology Committee within the next month.</td>
<td>3/26/02</td>
<td>John Whipple</td>
<td>4/26/02</td>
<td>Ongoing</td>
<td>6/7/02</td>
</tr>
<tr>
<td>47 The SJRIP 3rd Generation Hydrologic Data and Model Development plan of approach (3/23/02) will be revised and sent out to the Committee in a couple of days. It should be reviewed by Committee members and comments forwarded to Dave King prior to April 15.</td>
<td>3/26/02</td>
<td>Dave King</td>
<td></td>
<td>Hydrology Committee</td>
<td>4/15/02</td>
</tr>
<tr>
<td>48 Pat Page and Steve Harris agreed to create a budget and status report with a conversion column to ensure that tasks A-L remain associated with the $535,500 that was allocated.</td>
<td>3/26/02</td>
<td>Pat Page</td>
<td></td>
<td></td>
<td>5/7/02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steve Harris</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Action Item</td>
<td>Meeting/Origination Date</td>
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<td>Date Completed</td>
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<tr>
<td>49</td>
<td>Pat Page will create a reasonable schedule, with a bar chart, to show where we are in terms of completion of tasks and budget that has been utilized/allocated. The chart will also show which tasks can be done concurrently and which work must be completed in order for other work to begin. Work that John Simons was going to do, but cannot do, will be included; as well as the work that needs to wait for John Simons to complete.</td>
<td>3/26/02</td>
<td>Pat Page</td>
<td>4/30/02</td>
<td>5/7/02</td>
</tr>
<tr>
<td>50</td>
<td>Steve Harris and Pat Page will send out a long term budget revision. The Committee should review and be ready to discuss at the May 7 Conference Call.</td>
<td>3/26/02</td>
<td>Steve Harris Pat Page</td>
<td>4/30/02</td>
<td>5/7/02</td>
</tr>
<tr>
<td>51</td>
<td>The Committee is seeking direction from FWS on whether running the model for 500 acre feet is worth it. Steve Cullinan will check into this and find out what has been approved under the two different 3000 af blocks. Shirley Mondy reported that a few hundred af has been used out of the 2nd 3000 block of minor depletions so far. 100 af or less is covered by the 2nd 3000 af of minor depletions, so 500 af is not covered.</td>
<td>3/26/02</td>
<td>Steve Cullinan</td>
<td>4/30/02</td>
<td>6/25/02 Baseline Discussion</td>
</tr>
<tr>
<td>52</td>
<td>The Committee will add Hydrology Committee tasks into the LRP. Pat Page and Steve Harris will send a version out for the Committee to review prior to April 30.</td>
<td>3/26/02</td>
<td>Pat Page Steve Harris</td>
<td>4/30/02</td>
<td>5/14/02 Biology Comm. meets 5/21/02</td>
</tr>
<tr>
<td>53</td>
<td>Pat Page was asked by the Committee to inquire as to why the Hydrology Committee was not asked, in addition to the Biology Committee, about the flexibility of operations recommendations.</td>
<td>3/26/02</td>
<td>Pat Page</td>
<td>4/30/02</td>
<td>5/7/02</td>
</tr>
<tr>
<td>54</td>
<td>The Committee will decide on the FY03 budget request, and whether there is any FY02 give up on 5/7/02 conf. call.</td>
<td>3/26/02</td>
<td>Hydrology Committee</td>
<td>5/7/02</td>
<td>5/7/02</td>
</tr>
<tr>
<td>Action Item</td>
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<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
<td>Date Completed</td>
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<tr>
<td>55</td>
<td>The March 26, 2002 Draft Meeting Summary will be updated with the edits from 5/7 and forwarded to John Whipple for his input. The revised summary will then be sent out to the Committee. The May 7 draft meeting summary and the updated action item log will be sent to the Committee for review. The March 26th and the May 7th draft meeting summaries will be reviewed for approval on June 25, 2002.</td>
<td>5/7/02</td>
<td>Marilyn Greenberg John Whipple Hydrology Committee</td>
<td>June 25 for final review/approval by Committee</td>
<td>6/25/02</td>
</tr>
<tr>
<td>56</td>
<td>The Committee agreed to change the meeting summary format to include “Discussion”, “Decision”, and “Action” sections.</td>
<td>5/7/02</td>
<td>Marilyn Greenberg</td>
<td>Effective Immediately</td>
<td>6/25/02</td>
</tr>
<tr>
<td>57</td>
<td>The Committee requested that the Status Report be titled “Status Report” and that the percent expended column be placed next to the percent completions column.</td>
<td>5/7/02</td>
<td>Pat Page</td>
<td></td>
<td>6/25/02</td>
</tr>
<tr>
<td>59</td>
<td>There was a motion for the Committee to evaluate the consistency of baseline depletions for the San Juan Basin throughout the model. Further discussion was tabled until the next meeting.</td>
<td>5/7/02</td>
<td>Hydrology Committee</td>
<td>6/25/02</td>
<td>6/25/02</td>
</tr>
<tr>
<td>60</td>
<td>Pat Page will revise and send the long term budget out to the listserv for review and approval within the week. Page’s time for the rest of the year will be paid for with non-Program funds. Once comments have been received and the Committee approves, the long term budget will be submitted to the Coordination Committee.</td>
<td>5/7/02</td>
<td>Pat Page Hydrology Committee</td>
<td>5/14/02</td>
<td>5/14/02</td>
</tr>
<tr>
<td>61</td>
<td>The Committee members will come up with suggestions regarding the target base flow as it relates to the flow recommendations prior to the next meeting. These suggestions will be offered to Reclamation. Page and Simons will attend the May 21 Biology Committee meeting to discuss this item. Reclamation is utilizing a more strict interpretation of flow recommendations because of current drought conditions, and the Farmington gage is being used.</td>
<td>5/7/02</td>
<td>Hydrology Committee Pat Page/John Simons</td>
<td>6/25/02</td>
<td>6/25/02</td>
</tr>
<tr>
<td>Action Item</td>
<td>Meeting/Origination Date</td>
<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
<td>Date Completed</td>
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<tr>
<td>62</td>
<td>6/25/02</td>
<td>Pat Page, Dave King</td>
<td>Immediate Ongoing</td>
<td></td>
<td>8/2/02</td>
</tr>
<tr>
<td>64</td>
<td>6/25/02</td>
<td>Dave King</td>
<td></td>
<td>Ongoing</td>
<td>7/1/02</td>
</tr>
<tr>
<td>65</td>
<td>6/25/02</td>
<td>Keller-Bliesner</td>
<td></td>
<td>10/29/02</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>6/25/02</td>
<td>Shirley Mondy</td>
<td></td>
<td>10/29/02</td>
<td>10/29/02</td>
</tr>
<tr>
<td>67</td>
<td>6/25/02</td>
<td></td>
<td>August 20</td>
<td>10/29/02</td>
<td>10/29/02</td>
</tr>
<tr>
<td>68</td>
<td>6/25/02</td>
<td></td>
<td>Ongoing</td>
<td>Cancelled</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>6/25/02</td>
<td>Steve Harris, Pat Page Hydrology Committee</td>
<td>August 1</td>
<td></td>
<td>7/10/02</td>
</tr>
<tr>
<td>70</td>
<td>6/25/02</td>
<td>Shirley Mondy</td>
<td></td>
<td></td>
<td>6/27/02</td>
</tr>
<tr>
<td>71</td>
<td>6/25/02</td>
<td>Shirley Mondy</td>
<td>9/25/02 Coordination Meeting</td>
<td></td>
<td>10/29/02</td>
</tr>
<tr>
<td>Action Item</td>
<td>Meeting/Origination Date</td>
<td>Responsible Party</td>
<td>Due Date</td>
<td>Revised Date</td>
<td>Date Completed</td>
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<tr>
<td>72</td>
<td>6/25/02</td>
<td>Ron Bliesner</td>
<td></td>
<td></td>
<td>10/29/02</td>
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<tr>
<td></td>
<td></td>
<td>John Simons</td>
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<tr>
<td>73</td>
<td>6/25/02</td>
<td>John Simons</td>
<td>August 6</td>
<td></td>
<td>8/19/02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dave King</td>
<td></td>
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<td></td>
<td></td>
<td>Keller-Bliesner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>6/25/02</td>
<td>John Simons</td>
<td>July 11</td>
<td></td>
<td>7/11/02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>John Whipple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>6/25/02</td>
<td>Pat Page</td>
<td></td>
<td></td>
<td>7/18/02</td>
</tr>
<tr>
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<td>Hydrology Committee</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>76</td>
<td>8/20/02</td>
<td>Hydrology Committee</td>
<td></td>
<td>9/13/02</td>
<td>Ongoing</td>
</tr>
<tr>
<td>77</td>
<td>8/20/02</td>
<td>Hydrology Committee</td>
<td></td>
<td>10/29/02</td>
<td>April 1, 2003</td>
</tr>
<tr>
<td>79</td>
<td>10/29/02</td>
<td>Ron Bliesner</td>
<td></td>
<td></td>
<td>11/1/02</td>
</tr>
<tr>
<td>80</td>
<td>10/29/02</td>
<td>Marilyn Greenberg</td>
<td></td>
<td></td>
<td>11/1/02</td>
</tr>
<tr>
<td>82</td>
<td>10/29/02</td>
<td>John Simons</td>
<td></td>
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<td>May 2003</td>
<td>May 2003 Sub</td>
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<td>Feb. 14, 2003</td>
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<td>Feb. 23, 2003</td>
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<td>92</td>
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<td>June 3, 2003</td>
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<td>Due Date</td>
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</tr>
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<tr>
<td>95  Dave King will add draft documentation on model data sharing and will add it to the model website.</td>
<td>4/1/03</td>
<td>Dave King</td>
<td></td>
<td></td>
<td>04/02/03</td>
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<tr>
<td>96  John Simons will send a letter requesting permission for Reclamation to maintain and FTP site so they can continue to do the modeling work.</td>
<td>4/1/03</td>
<td>John Simons</td>
<td></td>
<td>5/29/03</td>
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<tr>
<td>97  Dave King will add “draft” documentation to the documents on the website so that it will be clear to everyone that these are working documents, not final documents.</td>
<td>4/1/03</td>
<td>Dave King</td>
<td></td>
<td>4/2/03</td>
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<tr>
<td>99  Ron Bliesner will email the revised Operating Criteria to the Committee</td>
<td>4/1/03</td>
<td>Ron Bliesner</td>
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<td>4/2/03</td>
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<tr>
<td>100 John Whipple and/or Shirley Mondy will take the Hydrology Committee’s recommendation of no need for third party peer review to the next Coordination Committee.</td>
<td>4/1/03</td>
<td>John Whipple</td>
<td>May 23, 2003</td>
<td>4/10/03</td>
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</tbody>
</table>
Improve Stream Gaging and Flow Measurements
San Juan River Basin Recovery Implementation Program - Hydrology Committee
Fiscal Year 2004 Project Proposal
D-R-A-F-T
Principal Investigator: Pat Page
Bureau of Reclamation
835 E. 2nd Avenue, Suite #300
Durango, CO 81301
(970) 385-6560 ppage@uc.usbr.gov

Background:

There are five USGS streamflow gaging stations on the main stem of the San Juan River that are very important to the operation of the river and play an important role in the implementation of the flow recommendations. Stream gaging data on the San Juan River are needed to attempt to reliably develop and implement flow recommendations.

Study Area:

San Juan River Basin in New Mexico

Objectives:

1. Provide funding to the USGS to take one additional flow measurement per month at the four San Juan River gages in New Mexico. (Note: Base cost for operation of the stations is paid for by non-Program funds.)

Products:

Improved flow measurement and more accurate gage readings.

Budget FY-2004:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Staff days</th>
<th>Labor</th>
<th>Travel</th>
<th>Equipment and supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1</td>
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<tr>
<td>Fiscal Year</td>
<td>Estimated Outyear Funding</td>
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<tr>
<td>Fiscal Year 2005</td>
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<td>Fiscal Year 2006</td>
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<td>Fiscal Year 2008</td>
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Background:
The model will be made available to generate and analyze runs associated with Section 7 Consultations and/or special requests from the Biology or Coordination Committees related to the flow recommendations or other hydrological aspects of the Program. In order for the model to be available for such requests, the model and data must be maintained to adjust configurations, correct for errors, and evolve the data set forward through time. Additionally, Reclamation will coordinate and manage the hydrology-related tasks performed by the Hydrology Committee, including administering cooperative agreements and contracts with consultants, accounting for expenditures, developing and providing status reports, and coordinating work items to ensure work is completed as planned.

Study Area:
San Juan River Basin

Objectives:
1. Maintain data to evolve the data set forward through time.
2. Maintain the model to adjust model configuration, methodologies, data, or assumptions.
3. Provide hardware and software support.
4. Implement Riverware upgrades and receive technical support.
5. Generate and analyze model runs associated with Section 7 consultations or special requests from the Biology and/or Coordination Committees.
6. Coordinate and manage the hydrology-related tasks performed by the Hydrology Committee, including administering cooperative agreements and contracts with consultants, accounting for expenditures, developing and providing status reports, and coordinating work items to ensure work is completed as planned.
7. Provide technology transference to Reclamation’s Western Colorado Area Office staff in the details of maintaining the data and models, and in operating the models.

Products:
1. Hydrological analysis of water development scenarios or other scenarios as requested by stakeholders or Program committees.
2. Monthly status reports showing work completed and funds expended will be provided to the Hydrology Committee. A report addressing the status of the model and documenting changes to it will be prepared and submitted to the Coordination Committee. Another report documenting hydrological conditions and Navajo Dam operations, and updating hydrological statistics for water year 2002 will also be prepared and submitted to the Coordination Committee.

Budget FY-2004:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Staff Days</th>
<th>Labor</th>
<th>Travel</th>
<th>Equipment and Supplies</th>
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</thead>
<tbody>
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<tr>
<td>Travel</td>
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<td>Travel</td>
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Estimated Out Year Funding (Based on 5% allowance for inflation)

(Note: Out year budget could be increased if additional hydrological Program duties are identified and assigned to the Reclamation modeler. The Hydrology Committee encourages Reclamation to staff this person in the Durango office.)

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