URGWOM Executive Committee Meeting

October 1, 2015



US Army Corps of Engineers BUILDING STRONG_® and Taking Care of People!

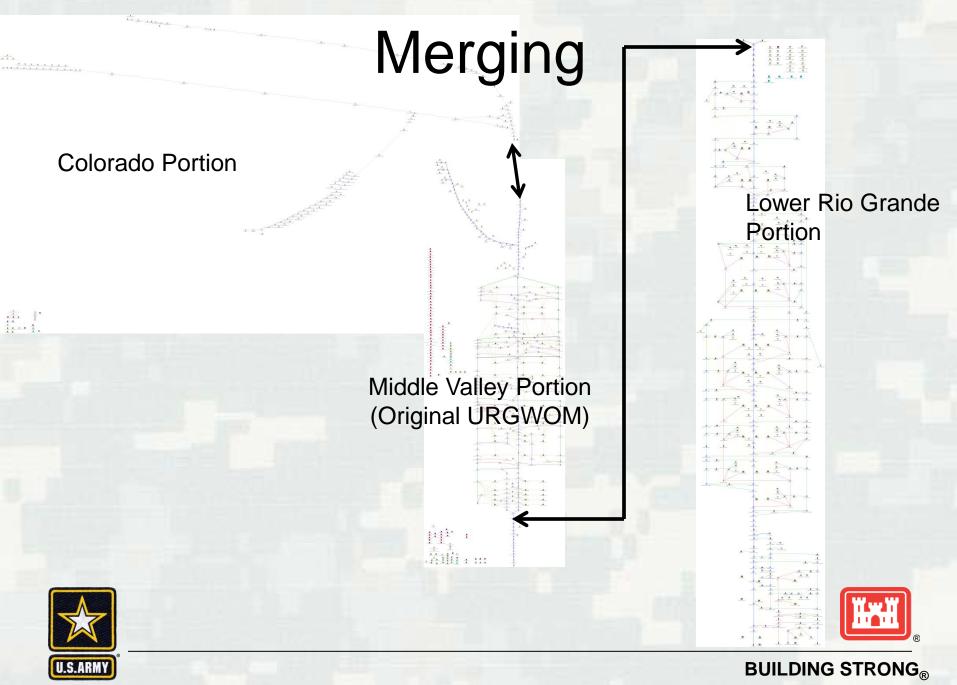
Outline

Merged Model UpdateSummary





BUILDING STRONG_® and Taking Care of People!



and Taking Care of People!

Merging Lower Rio Grande and Colorado portions with URGWOM

- Purposes and Advantages of Merging
 - To have an all encompassing model that looks at the entire system
 - Article VII Restrictions affects all post compact reservoirs including Platoro in CO
 - Lower RG operations better defined
 - Easier to maintain one model and:
 - not require processes for exporting and importing data from one model to the next



Eliminates iterating between model(s)



Merging Lower Rio Grande and Colorado Portions with URGWOM Time Range of Model Real-time to Long-term Planning Time Interval of Model Daily to Monthly





Merging Lower Rio Grande and Colorado portions with URGWOM

Concerns of Merging

- Size of all encompassing model
- Run-time of all encompassing model
- Extra overhead to run Accounting Application

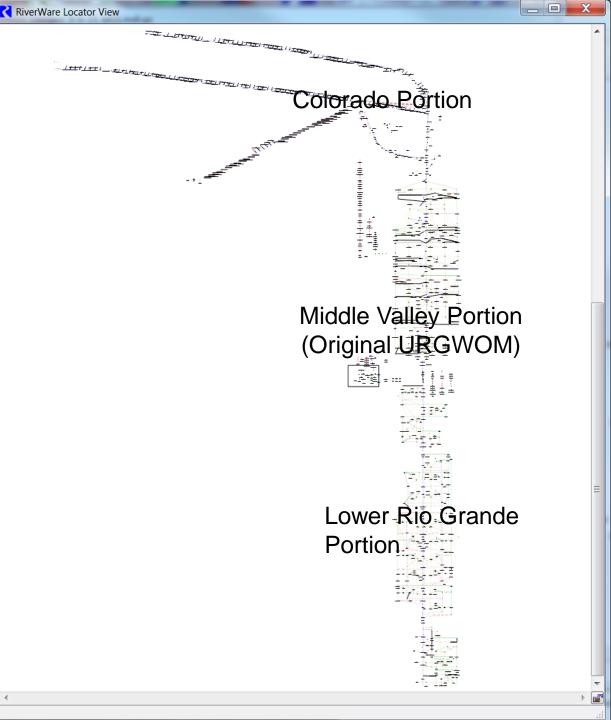




Merging

 Successful merge of all three portions!





Current Status of Merge

Based on One Year Run Time Models (includes output):

Model		# of Objects	File Size	Time to Run		
Colorado		≈ 450	≈ 2 mb	60-90 sec		
URGWOM - Accounting		≈ 650	≈ 15 mb 45-60 sec			
URGWOM - AOP		≈ 650	≈ 17 mb	90-120 sec		
LRG Existing Separ	ate model(s)	≈ 550	≈ 8 mb	30-45 sec		
URGWOM & LRG - Account		≈1200	≈ 18 mb	60-90 sec		
URGWOM & LRG - AOP	Completed	≈1200	≈ 21 mb	150-180 sec		
URGWOM, LRG & CO - Acc	<u> </u>	≈1650	≈ 18 mb	60-90 sec		
URGWOM, LRG & CO - AO	Completed P	≈1650	≈ 23 mb	210-240 sec		





Status of Merging Models for use in 2016

- Account Application
- AOP Application
- Real-Time Application
- Historical Simulation for Calibration
- Planning Application





Account Application

- Tested with Account Model through September 7, 2015
 - Disable Colorado and LRG portions
 - ► >2 Mb larger file (15.0 vs 17.2)
 - ▶ 17 seconds longer to run (34 vs 51 seconds)
 - Duplicates results
 - Would like to add some data that is input with DMI (Platoro Elevation and Outflow, Colorado

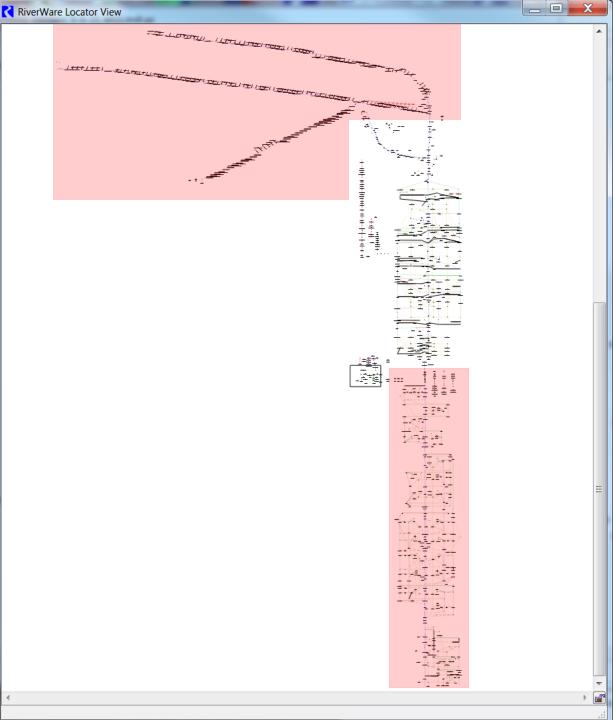


streamgages) – For AOP runs



Enabled/ Disabled Objects

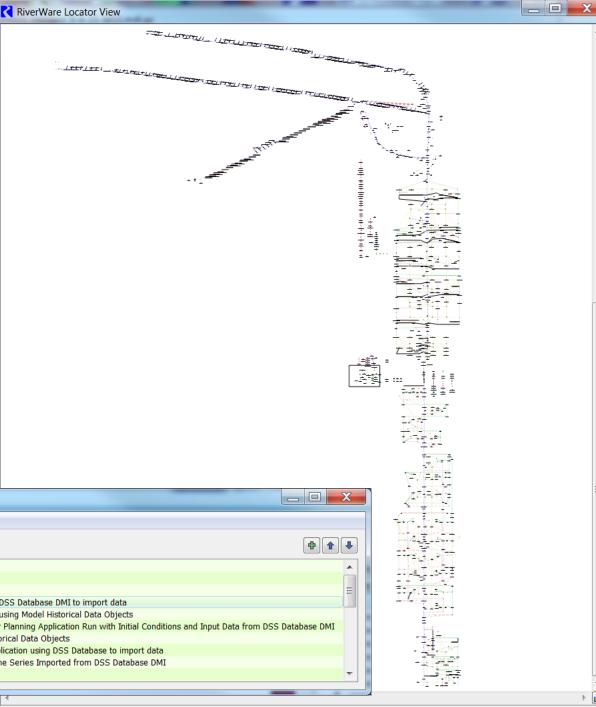
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Scripts

Use Scripts for setting up and running other **Applications**

Script Manager	ζ
🎾 File Edit	
Open Dashboard Edit	ŀ
Accounting Application Run Setup for New Year	
Accounting Application Run Setup	
Prepare for Annual Operating Plan (AOP) Run	Ξ
Prepare for Planning Application Run with Initial Conditions from Spreadsheet and DSS Database DMI to import data	
Prepare for Planning Application Run with Initial Conditions from Spreadsheet and using Model Historical Data Objects	
TEST - NOT WORKING (Not all Initial data available in DSS Database) - Prepare for Planning Application Run with Initial Conditions and Input Data from DSS Database DMI	
Prepare for Planning Application Run from Accounting Application using Model Historical Data Objects	
TEST - NOT WORKING - Prepare for Planning Application Run from Accounting Application using DSS Database to import data	
Prepare for Historical Simulation Run For Calibration with Initial Conditions and Time Series Imported from DSS Database DMI	
Prepare for RealTime Application Run from Accounting Application	-
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Scripts

Example
 Script for
 setting up
 and running
 AOP
 Application



Juli	ipt Dashboard: Prepare for Annual Operating Plan (AOP) Run
•	File Edit
	a re for Annual Operating Plan (AOP) Run s script starts with an accounting model and prepares it for an annual operating plan run.
/ s	iet the run range to: 24:00 JAN 01, Current Year 24:00 DEC 31, Current Year
V S	et ModelRunTypeTriggers.RulebasedSimulationStartDay's value to 24:00 January 8, 2015 Use: Override default va Current: 24:00 January 8, 2015
Z Lo	oad the ruleset K:/model/Official/URGWOM_6.7_09-22-15_Merge.rls.gz Use: Override default file setting
/ s	iet the controller to Inline Rulebased Simulation and Accounting
/ S	et Run Type to AOP
/ S	et the method in Heron's Reservoir Account Slot Inflow category to Zero Slot Inflows
/ s	et the method in Heron's hydrologicInflowCalculationCategory category to Hydrologic Inflow and Loss
/ s	et AbvHeron.Gage Inflow's flags to Output in the range: Start Timestep Finish Timestep
/ s	Set the Initialization Rules execution flag to Yes
/ S	Set accounting period to: Start Timestep - 1 Finish Timestep + 5 Timesteps
/ 0	Open SCT: K:/model/WaterOps/sct/ForecastTables.sct
	Use: Override default file setting
/ Ir	nput NRCS Forecast Data into the appropriate forecast month table slot, e.g., input March forecast data into the ForecastsMarch table slot on the InputForecastData data ob
Z E	nable Dispatching for all objects (Model Run Analysis) The current action has paused script execution.
Z E	ixecute run
/ G	Senerate output device: Gage
/ G	Senerate output device: CaballoOps
/ G	Senerate output device: ElephantButteOps
/ G	Senerate output device: JemezOps
/ G	Senerate output device: CochitiOps
/ G	Senerate output device: AbiquiuOps
/ G	Senerate output device: ElVadoOps
/ G	Senerate output device: HeronOps
V E	ixecute the AOPRunOutputForTemplateSpreadsheet_Excel DMI
Exec	cution

AOP Application

- AOP script (January Forecast)
- Model runs (need more testing, checking results, especially for Colorado and LRG)

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Prepare for RealTime Application Run from Accounting Application	-

Real-Time Application

- Real-Time Script
 - ► No actual data from NWS yet,
 - but runs with manually input data, and with rules projecting data

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Historical Simulation for Calibration

Historical Simulation for Calibration Script Model runs for Middle Valley portion only

Colorado and LRG objects disabled

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	Accounting Application Run Setup	
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Planning Application

- Prepare for Planning Application with Initial Conditions from Spreadsheet and DSS Database DMI to import data Script
 - Tested 1975-2009 (corresponding historical years)
 - Tested 2016-2020 (assorted historical years)
 - Model(s) run

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The URGWOM Grail?

Headwaters to Hudspeth Daily or Monthly

2 MB – 1 year model ~450 objects 3 storage accounts, 2 passthrough accounts, 488 diversion accounts ~1.5 min/year rule based

15 MB – 1 year model ~650 objects 21 accounts ~2 min/year rule based

8 MB -1 year model ~550 objects 9 accounts ~1 min/year rule based Colorado Portion (Above Lobatos) Daily timestep

Dynamic Article VII from URGWOM can impact delivery at Lobatos

> URGWOM (Lobatos to Caballo) Daily timestep

Improved EB ops from Lower RG model = better Article VII modeling = better upstream reservoir modeling

> Lower RG (San Marcial to Hudspeth) Daily timestep

Automated conversion to monthly timestep



Summary

- Corps' opinion
 - Merging Lower Rio Grande and Colorado portions with URGWOM was successful
 - Slightly larger file size and extra runtime should not be an issue or hindrance
 - Testing and getting ready for use in 2016





Questions





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