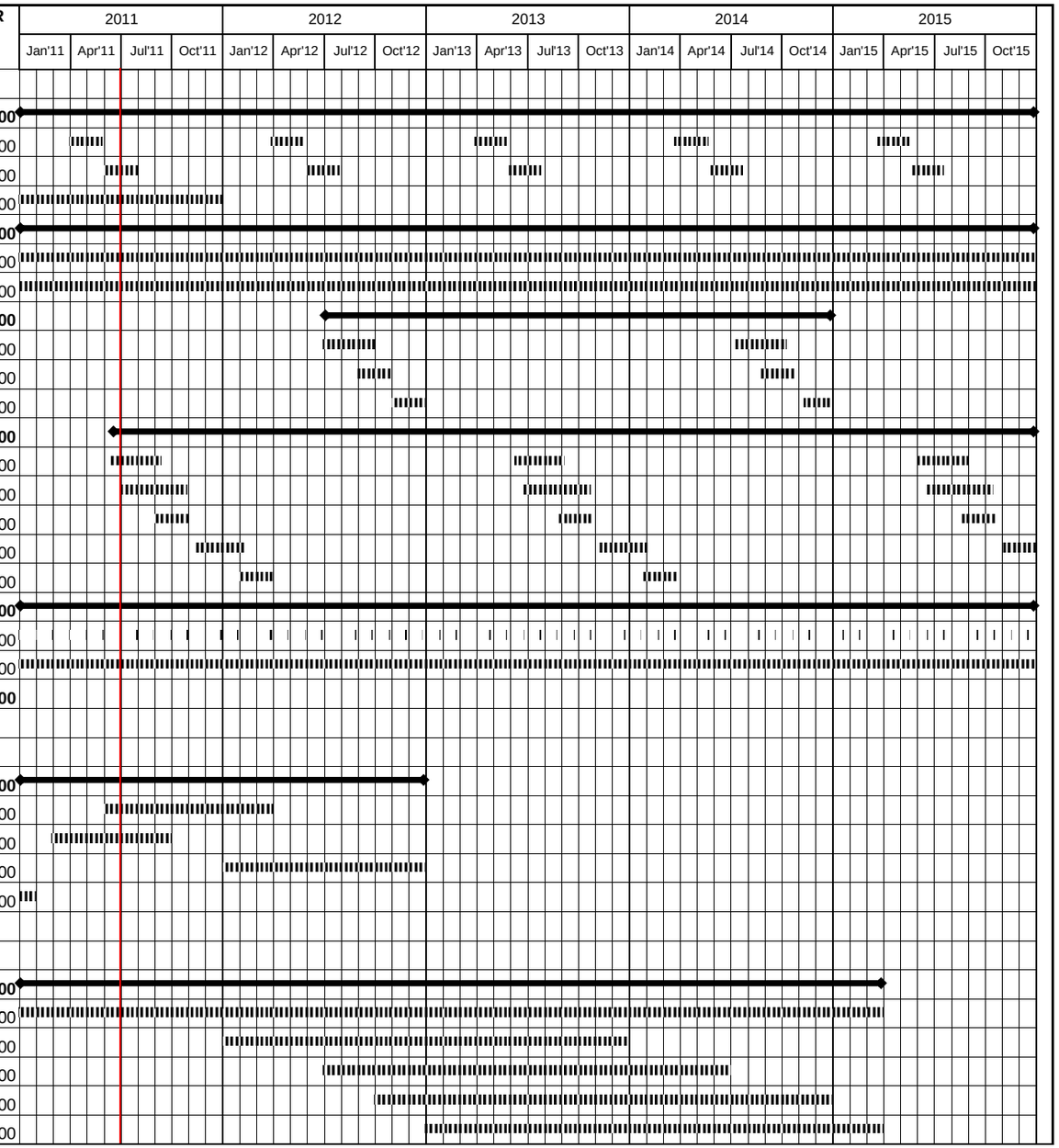
URGWOM Steering Committee Review
DRAFT
Five Year Plan Schedule

	Project	ANNUAL OR BIENNIAL COST
1.	URGWOM REGULAR ACTIVITIES	
1.1	Model data acquisition and input; database management	**$22,500**
1	Annually compile and review input data (inc. ET toolbox)	$7,500
2	Develop, maintain and update hydrologic data base files	$7,500
3	Develop import/export database interface and management protocol	$7,500
1.2	Technical Assistance with Rules Development	**$16,000**
1	Modify the rule policy language in the ruleset to meet new identified needs, improve efficiency and cleanup	$10,000
2	Prepare release notes and documentation of all changes to the ruleset	$6,000
1.3	URGWOM Independent Technical Review (ITR)	**$20,000**
1	Compile documents and data to be reviewed, send out for review, and set date for meeting	$7,500
2	Convene ITR meeting, as necessary	$7,500
3	Review/respond to comments, revise model and documentation as necessary	$5,000
1.4	Update Survey of Vegetated Areas	**$260,000**
1	Acquire color infrared aerial photography for Rio Chama and Middle Rio Grande basins during July – August time frame	$150,000
2	Collect field data on crop types during the aerial photo, density is to be determined depending on the required accuracy	$50,000
3	Image processing: radiometric correction, geo-reference, identify area of interest and mosaic images	$10,000
4	Use remote sensing analysis to do supervised classification of the aerial photos	$40,000
5	Develop a data report for acreages	$10,000
1.5	Monthly Model Maintenance	**$29,000**
1	Participation of monthly model team in relevant URGWOM related meetings and activities.	$6,000
2	Adapt monthly model as necessary to maintain consistency with daily time-step URGWOM models	$23,000
	TOTAL ANNUAL COST URGWOM REGULAR ACTIVITIES (inc. 1/2 cost of Tasks 1.3 and 1.4) =	**$207,500**
2	URGWOM ENHANCEMENT AND DEVELOPMENT	
2.1	Middle Valley Model Improvements	**$85,000**
1	Develop surrogate crop(s) and crop growth coefficients(s) for irrigated acreage in middle valley	$20,000
2	Fully implement water surface and wetted sand loss method	$15,000
3	Calibrate model (Cochiti to Elephant Butte Dam)	$45,000
4	Compare results of RiverWare version 5.2.10 with results from version 6.0	$5,000
2.2	Real-Time Water Operations Model	
2.2.1	Using Existing Model	**$270,000**
1	Apply URGWOM into a daily time step water operations model to function as a 7-day forecast model	$50,000
2	Apply historic monsoon runoff data and NRCS forecasts in 1-year daily timestep forecast model to estimate supplemental water requirements	$10,000
3	Apply URGWOM into a daily time step water operations model to function as a two-year forecast model	$10,000
4	Apply URGWOM water operations and planning model for one-year time horizon, daily time step with ESP traces	$50,000
5	Build new RiverWare model at hourly time step, two-day time horizon	$150,000



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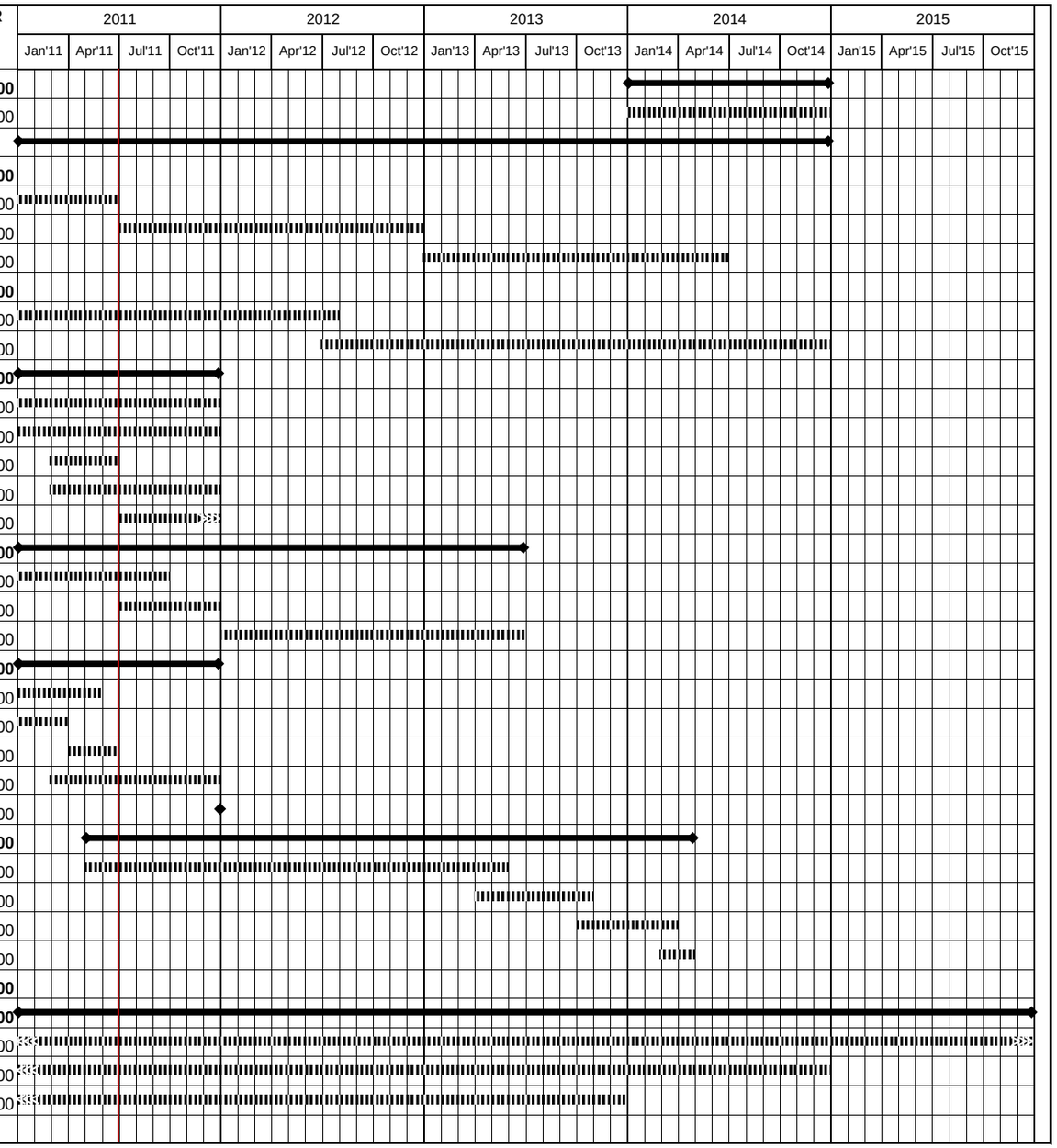
2.2.2	Using Watershed Model in the Real -time Water Operations Model	**$20,000**
1	Develop DMI's to output Watershed Model results and input data to Water Operations Model	$20,000
2.3	Develop Watershed Model	
2.3.1	Track 1 - HEC-HMS model	**$45,000**
1	Build small watershed model for testing and calibration	$10,000
2	Compile data and build large watershed model (e.g., Rio Chama basin) test and calibrate	$10,000
3	Compile data, build watershed scale model; test and calibrate	$25,000
2.3.2	Track 2 - Weather Service modeling	**$470,000**
1	Compile data, build model and test	$120,000
2	Implement model for use in developing basin-wide runoff forecasts	$350,000
2.4	Extend Physical model to headwater areas in Colorado	**$276,000**
1	Compile pertinent hydrologic and water use data for Rio Grande basin above Lobatos Bridge and add to URGWOM database	$25,000
2	Build RiverWare physical model and accounting (Rio Grande Compact) models of Rio Grande basin	$75,000
3	Model calibration and testing; link with existing URGWOM model	$132,000
5	Develop and test rules, develop DMI's and accounts, if necessary	$34,000
6	Prepare model documentation	$10,000
2.5	Add water quality simulation capability to groundwater objects	**$114,000**
1	Develop design document	$14,000
2	Develop approved simulation methods	$50,000
3	Add new water quality method to middle valley model, test.	$50,000
2.6	Accounting Model Enhancements	**$65,000**
1	Enhancements to accounting model and process for generating reports	$10,000
2	Update documentation and presentation of enhancements	$12,000
3	Review and address comments on enhancements	$10,000
4	Develop HDB database interface	$10,000
5	Finalize implementation of enhancements	$23,000
2.7	Monthly Timestep RiverWare Model Development	**$95,000**
1	Identify needs for new or revised accounting methods and user methods	$50,000
2	Develop tools for aggregating data and create database	$25,000
3	Set up DMIs and ruleset	$10,000
4	Documentation and users manual	$10,000
2.8	Lower Rio Grande Model Enhancements (Elephant Butte Dam to Ft. Quitman, TX).	**$450,000**
2.8.1	Phase I, Elephant Butte Dam, NM to El Paso, TX	**$200,000**
1	Hydrologic data compilation and review; update and maintain hydrologic database established in 2006	$50,000
2	Enhance surface water and groundwater hydrologic model linkage; development and testing of groundwater object reaches in Rincon and Mesilla Valleys	$75,000
3	Simulation of the Rio Grande flow below Elephant Butte Dam during 2006 monsoon season flooding for calibration and testing	$75,000



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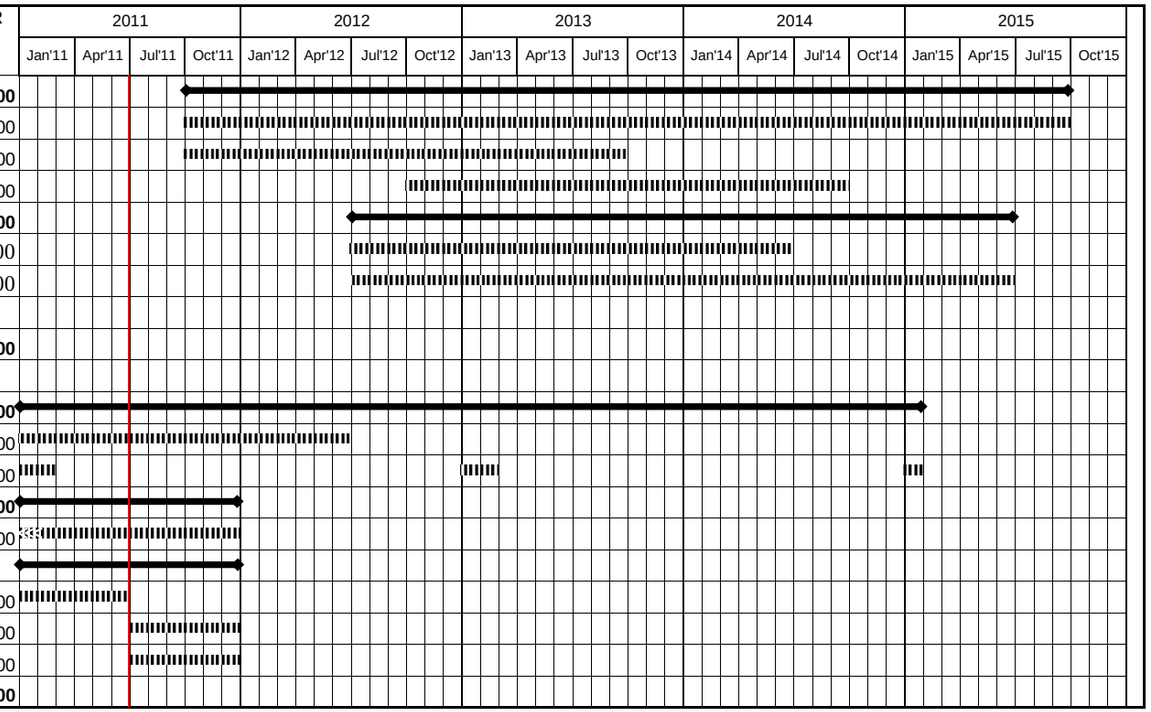
	Project	ANNUAL OR BIENNIAL COST
2.8.2	Phase II, El Paso Texas to Ft. Quitman, TX	**$130,000**
1	Hydrologic data compilation and review; update and maintain hydrologic database for the reach between El Paso and Fort Quitman	$30,000
2	Develop conceptual model to represent river flow for the reach between El Paso, and Fort Quitman, Texas	$40,000
3	Configure the RiverWare model with watershed models	$60,000
2.8.3	Phase III, Flood control operations scenarios, Elephant Butte Dam to Ft. Quitman, TX under new operating agreement	**$120,000**
1	Configure and link two models from Phases I and II into an integrated model.	$50,000
2	Simulate alternative water operations scenarios under different climate and water supply conditions	$70,000
	TOTAL URGWOM ENHANCEMENT AND DEVELOPMENT=	**$1,890,000**
3.	PLANNING SUPPORT	
3.1	Development and Use of Monthly Scoping Model	**$33,000**
1	Develop monthly model rules that are consistent with daily model ruleset, includes RG conservation storage and PHVA tools	$23,000
2	Test model rules by comparison between monthly model results and revised URGWOM daily model (as needed for middle Rio Grande upgrade)	$10,000
3.2	Middle Rio Grande Endangered Species Act Collaborative Program – Species Water Management Group Modeling	**$200,000**
1	Alternative operations formulation and consultation with Collaborative Program	$40,000
2	PHVA-BA / BO modeling	
	Identify and incorporate required modifications to model for simulation of proposed alternatives	$40,000
	Simulation of proposed alternatives	$110,000
	Final Report and consultation with Collaborative Program	$10,000
	TOTAL PLANNING SUPPORT =	**$233,000**