SALINAS AND CARMEL BASINS STUDY

Task Assignments by Reclamation, USGS, Contractor and Local Agency Partners DRAFT-FINAL Feb. 2017

Task	Reclamation	Contractor	USGS	MPWMD	MCWRA	SLOCPWD	MRWPCA
1. Develop Study Metrics							
1(a) Develop Climate Metrics	Co-lead	Coordinate / Support	Co-lead	Review	Review	Review	Review
1(b) Develop Supply Metrics	Coordinate / Support	Coordinate / Support	Limited Support / Review	Co-lead (MP, CRB, SGB)	Co-lead (SVB, SGB)	Co-lead (PRB)	Review
1(c) Develop Demand Metrics	Coordinate / Support	Coordinate / Support	Limited Support / Review	Co-lead (MP, CRB, SGB)	Co-lead (SVB, SGB)	Co-lead (PRB)	Review
1(d) Develop Operations Metrics	Coordinate / Support	Coordinate / Support	Limited Support / Review	Co-lead (MP, CRB, SGB)	Co-lead (SVB, SGB)	Co-lead (PRB)	Review
1(e) Task 1 Tech Memo	Support / Review	Lead	Review	Review	Review	Review	Review
2. Characterize Climate Change and SLR							
2(a) Compile Climate Data – Observed Climate	• Lead	Coordinate / Support Study Team	Limited support (provide available data)	Provide available data	Provide available data	Provide available data	Provide available data
2(b) Compile Climate – Global Projections	• Lead	Coordinate / Support Study Team	Review	• N/A	• N/A	• N/A	• N/A
2(c) Compile Climate – Downscaled Proj.	• Lead	Coordinate / Support Study Team	Review	• N/A	• N/A	• N/A	• N/A
2(d) Characterize Current Climate	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(e) Characterize Climate Trends – Observed	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(f) Characterize Climate Trends – Projected	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(g) Compile Sea Level Data – Observed Climate	• Lead	Coordinate / Support Study Team	Review	• N/A	• N/A	• N/A	• N/A
2(h) Compile Sea Level – Projections	• Lead	Coordinate / Support Study Team	Limited support (discuss data options)	• N/A	• N/A	• N/A	• N/A
2(j) Characterize Current Sea Level	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(k) Characterize Sea Level Trends – Observed	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(I) Characterize Sea Level Trends – Projected	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
2(m) Task 2 Tech Memo	• Lead	Review / Support Study Team	Review	Review	Review	Review	Review
3. Develop Study Scenarios							
3(a) Develop Climate Scenarios	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
3(b) Develop Sea Level Scenarios	• Lead	Coordinate / Support Study Team	Limited support (discuss method options)	• N/A	• N/A	• N/A	• N/A
3(c) Develop Socioeconomic Scenarios	Coordinate / Support	• Lead	Review	• Co-lead (MP, CRB, SGB)	Co-lead (SVB, SGB)	Co-lead (PRB)	Co-Lead (SGB)
3(d) Task 3 Tech Memo	 Lead – outline/template Lead – climate Lead – sea level 	 Co-lead – outline/template Lead – socio/econ 	Review	 Review – climate Review – sea level Co-lead – socio/econ 	 Review – climate Review – sea level Co-lead – socio/econ 	 Review – climate Review – sea level Co-lead – socio/econ 	 Review – climate Review – sea level Review – socio/econ
	Review – socio/econ	scenarios • Lead – prepare final		(MP, CRB, SGB)	(SVB, SGB)	(PRB)	

		tech memo					
4. Develop Modeling Tools and Inputs							
4(a) Develop modeling tools	Coordinate / Support	Coordinate / Support Study Team	 Lead (all sub-areas) Obtain models and inputs from partners Identify model updates for basin study Implement updates (if any) 	 Support (MP, CRB, SGB) Provide calibrated model and default inputs Provide documentation of model and inputs Provide data/tools used to develop selected inputs Discuss model updates required for basin study 	 Support (SVB, SGB) Provide calibrated model and default inputs Provide documentation of model and inputs Provide data/tools used to develop selected inputs Discuss updates required for basin study 	 Support (PRB) Provide calibrated model and default inputs Provide documentation of model and inputs Provide data/tools used to develop selected inputs Discuss updates required for basin study 	• Review
4(b) Develop model inputs – baseline	Coordinate / Support	• N/A	 Lead (all sub-areas) Identify updates to inputs for baseline Implement updates 	Support (MP, CRB, SGB)Identify and discuss input updates for baseline	 Support (SVB, SGB) Identify and discuss input updates for baseline 	 Support (PRB) Identify and discuss input updates for baseline 	Review
4(c) Develop model inputs – future climate	 Support Provide climate scenarios, collaborate on method to develop model inputs for scenarios 	• N/A	 Lead (all sub-areas) Identify updates to inputs for all scenarios Implement updates 	 Support (MP, CRB, SGB) Identify and discuss input updates for future scenarios 	 Support (SVB, SGB) Identify and discuss input updates for future scenarios 	 Support (PRB) Identify and discuss input updates for future scenarios 	• Review
4(d) Develop model inputs – future sea level	 Support Provide sea level scenarios, collaborate on method to develop model inputs for scenarios 	• N/A	Lead (all sub-areas)Identify updates to inputs for all scenariosImplement updates	Support (CRB, SGB)Identify and discuss input updates for future scenarios	Support (SVB, SGB)Identify and discuss input updates for future scenarios	Review	Review
4(e) Develop model inputs – future socio/econ	Coordinate / Support / Review	• N/A	 Lead (all sub-areas) Identify updates to inputs for all scenarios Implement updates 	 Support (MP, CRB, SGB) Identify and discuss input updates for future scenarios Support USGS in implementing updates 	 Support (SVB, SGB) Identify and discuss input updates for future scenarios Support USGS in implementing updates 	 Support (PRB) Identify and discuss input updates for future scenarios Support USGS in implementing updates 	• Review
4(f) Task 4 Tech Memo	 Lead – outline/template Review – model development / updates Co-Lead – climate inputs Co-Lead – sea level inputs Review – socio/econ inputs 	 Co-lead – outline/template Co-lead – socio/econ inputs Lead – prepare final tech memo Review / Support Study Team 	 Co-Lead – model development / updates Co-Lead – climate inputs Co-Lead – sea level inputs Co-Lead – socio/econ inputs 	 Review – climate inputs Review – sea level inputs Co-Lead – socio/econ inputs (MP, CRB, SGB) 	 Review – climate inputs Review – sea level inputs Co-Lead – socio/econ inputs (SVB, SGB) 	 Review – climate inputs Review – sea level inputs Co-Lead – socio/econ inputs (PRB) 	 Review – climate inputs Review – sea level inputs Review – socio/econ inputs
5. Evaluate supplies, demands, and operations							
5(a) Simulate Baseline Conditions	Coordinate / Support	Coordinate / Support Study Team	 Lead (all sub-areas) Carry out simulations of baseline conditions using models and inputs developed in Task 4 	Support	Support	Support	• Review

5(b) Simulate Future Conditions	Coordinate / Support	Coordinate / Support	Lead (all sub-areas)	Support	Support	Support	Review
		Study Team	Carry out simulations of future conditions under future climate, socioeconomic, and sea level scenarios using models and inputs developed in Task 4				
5(c) Compute Study Metrics	 Co-Lead (all sub-areas) Compute study metrics – historical (Compute from observations) Discuss method options to compute study metrics for baseline + future scenarios 	Coordinate / Support Study Team	 Co-Lead (all sub-areas) Discuss method options to compute study metrics for baseline + future scenarios Compute study metrics – baseline + future (Computed from model simulations carried out under Task 5(a-b)) 	 Support (MP, CRB, SGB) Provide historical data to compute metrics Discuss method options to compute study metrics for baseline + future scenarios 	 Support (SVB, SGB) Provide historical data to compute metrics Discuss method options to compute study metrics for baseline + future scenarios 	 Support (PRB) Provide historical data to compute metrics Discuss method options to compute study metrics for baseline + future scenarios 	 Support (SGB) Provide historical data to compute metrics Discuss method options to compute study metrics for baseline + future scenarios
5(d) Evaluate/Characterize Historical Conditions	 Lead Quantitatively evaluate / characterize historical water supplies, demands, and operations based on study metrics from Task 5(c) 	 Co-Lead Qualitatively interpret and discuss historical water supplies, demands, and operations based on quantitative evaluation / characterization 	Support Discuss approach to evaluating / characterizing historical conditions	Support Discuss approach to evaluating / characterizing historical conditions	Support Discuss approach to evaluating / characterizing historical conditions	Support Discuss approach to evaluating / characterizing historical conditions	Support Discuss approach to evaluating / characterizing historical conditions
5(e) Evaluate/Characterize Baseline Conditions (without adaptation/mitigation)	 Lead Quantitatively evaluate / characterize baseline water supplies, demands, and operations based on study metrics from Task 5(c) 	 Co-Lead Qualitatively interpret and discuss baseline water supplies, demands, and operations based on quantitative evaluation / characterization 	 Support Discuss approach to evaluating / characterizing baseline conditions 	 Support Discuss approach to evaluating / characterizing baseline conditions 	 Support Discuss approach to evaluating / characterizing baseline conditions 	 Support Discuss approach to evaluating / characterizing baseline conditions 	 Support Discuss approach to evaluating / characterizing baseline conditions
5(f) Evaluate/Characterize Future Conditions (without adaptation/mitigation)	 Lead Evaluate / characterize future water supplies, demands, and operations based on study metrics from Task 5(c) 	 Co-Lead Qualitatively interpret and discuss future water supplies, demands, and operations based on quantitative evaluation / characterization 	 Support Discuss approach to evaluating / characterizing future conditions 	Support Discuss approach to evaluating / characterizing future conditions	 Support Discuss approach to evaluating / characterizing future conditions 	Support Discuss approach to evaluating / characterizing future conditions	Support Discuss approach to evaluating / characterizing future conditions
5(g) Evaluate/Characterize Projected Change (without adaptation/mitigation)	 Lead – Compare baseline vs. historical (historical vs. future w/o climate change, effects of socio/econ change) Lead – Compare future vs. baseline (baseline vs. future climate scenarios, effects of climate change) 	 Co-Lead Qualitatively interpret and discuss projected effects of climate change and socioeconomic change on water supplies, demands, and operations 	 Support Discuss approach to evaluating / characterizing projected changes/effects Discuss approach to evaluating / characterizing climate and socioeconomic uncertainties 	• Review	• Review	Review	• Review
5(h) Task 5 Tech Memo	 Lead – outline/template Lead – historical conditions Lead – baseline conditions Lead – future conditions 	 Co-lead – outline/template Co-Lead – historical conditions (qualitative 	 Lead – simulations / results Review – historical conditions Review – baseline conditions Review – future conditions 	Review – all	Review – all	Review – all	Review – all

	Lead – projected change	 interpretation) Co-Lead – baseline conditions (qualitative interpretation) Co- Lead – future conditions (qualitative interpretation) Co-Lead – projected change (qualitative interpretation) Lead – prepare final tech memo 	Review – projected change				
6. Develop mitigation/adaptation strategies							
6(a) Define mitigation/adaptation objectives	 Coordinate / Support (all subareas) Discuss/review imbalances Discuss/review adaptation objectives 	Lead- Identify adaptation / mitigation objectives	 Support (all sub-areas) Discuss/review imbalances Discuss/review adaptation objectives) 	 Co-Lead (MP, CRB, SGB) Identify adaptation / mitigation objectives 	 Co-Lead (SVB, SGB) Identify adaptation / mitigation objectives 	 Co-Lead (PRB) Identify adaptation / mitigation objectives 	 Co-Lead (SGB) Identify adaptation / mitigation objectives
6(b) Develop non-structural strategies (optional)	 Coordinate / Support (all subareas) Discuss/review non-structural strategies Help as needed to develop concepts in sufficient detail to simulate/evaluate alternatives 	Lead - Develop non- structural adaptation / mitigation strategies with Study Team	 Support (all sub-areas) Discuss/review non-structural strategies Help as needed to develop concepts in sufficient detail to simulate/evaluate alternatives 	 Co-Lead (MP, CRB, SGB) Develop non-structural adaptation / mitigation strategies 	 Co-Lead (SVB, SGB) Develop non- structural adaptation / mitigation strategies 	Co-Lead (PRB) Develop non-structural adaptation / mitigation strategies	 Co-Lead (SGB) Develop non-structural adaptation / mitigation strategies
6(c) Develop structural strategies (optional)	 Coordinate / Support (all subareas) Discuss/review structural strategies Help as needed to develop concepts in sufficient detail to simulate/evaluate alternatives 	Lead - Develop structural adaptation / mitigation strategies with Study Team	 Support (all sub-areas) Discuss/review structural strategies Help as needed to develop concepts in sufficient detail to simulate/evaluate alternatives 	 Co-Lead (MP, CRB, SGB) Develop structural adaptation / mitigation strategies 	 Co-Lead (SVB, SGB) Develop structural adaptation / mitigation strategies 	 Co-Lead (PRB) Develop structural adaptation / mitigation strategies 	 Co-Lead (SGB) Develop structural adaptation / mitigation strategies
6(f) Task 6 Tech Memo	 Lead – outline/template Review – strategies (all sub-areas) 	 Co-lead – outline/template Co-lead section(s) describing proposed strategies Lead – prepare final tech memo 	Review (all sub-areas)	 Co-lead (MP, CRB, SGB) Contribute section(s) describing proposed strategies 	 Co-lead (SVB, SGB) Contribute section(s) describing proposed strategies 	 Co-lead (PRB) Contribute section(s) describing proposed strategies 	 Co-lead (SGB) Contribute section(s) describing proposed strategies
7. Evaluate adaptation/mitigation strategies							
7(a) Initial Screening or Evaluation of Proposed Adaptation / Mitigation Strategies	 Coordinate / Support Discuss screening criteria (qualitative) Discuss method options for initial evaluation via simplified approach 	Lead – Facilitate discussion to identify and select screening criteria and method options for initial evaluation,	 Support Discuss screening criteria (qualitative) Discuss method options for initial evaluation via simplified 	 Co-Lead (MP, CRB, SGB) Identify and select initial screening criteria Identify and select option(s) for initial 	 Co-Lead (SVB, SGB) Identify and select initial screening criteria Identify and select 	 Co-Lead (PRB) Identify and select initial screening criteria Identify and select option(s) for initial 	 Co-Lead (SGB) Identify and select initial screening criteria Identify and select option(s) for initial

	(quantitative)	including developing draft	approach (quantitative)	evaluation	option(s) for initial	evaluation	evaluation
	Provide support in carrying out initial screening / evaluation	criteria and method options • Lead – Perform initial screening and evaluation w/ Study Team		Carry out initial screening and evaluation	evaluationCarry out initial screening and evaluation	Carry out initial screening and evaluation	Carry out initial screening and evaluation
7(b) Modify model configuration and/or inputs as needed to simulate adaptation / mitigation strategies	 Coordinate / Support Discuss method options to represent strategies in sub-area models 	 Co-Lead Facilitate w/ Study Team discuss options to represent strategies in sub-area models 	 Co-Lead Discuss method options to represent strategies in sub-area models Implement selected options 	 Co-Lead Discuss method options to represent strategies in sub-area models 	 Co-Lead Discuss method options to represent strategies in sub-area models 	 Co-Lead Discuss method options to represent strategies in sub-area models 	 Co-Lead Discuss method options to represent strategies in sub-area models
7(c) Simulate Baseline Conditions (with adaptation/mitigation strategies)	Coordinate / Support	Facilitate review and discussion, including dissemination of simulation results to Study Team	 Lead Carry out simulations of baseline conditions with adaptation/mitigation strategies in place using models/inputs developed in Task 7(a) 	Review	• Review	• Review	Review
7(d) Simulate Future Conditions (with adaptation/mitigation strategies)	 Coordinate / Support Identify future climate scenarios to be simulated with adaptation/mitigation strategies (bracketing approach) 	Facilitate review and discussion, including dissemination of simulation results to Study Team	 Lead Carry out simulations of future conditions with adaptation/mitigation strategies in place using models/inputs developed in Task 7(a) 	• Review	• Review	• Review	Review
7(e) Evaluate/Characterize Baseline Conditions (with adaptation/mitigation strategies)	 Lead Quantitatively evaluate / characterize baseline water supplies, demands, and operations based on study metrics with adaptation / mitigation strategies 	 Co-Lead Qualitatively interpret and discuss baseline water supplies, demands, and operations based on quantitative evaluation / characterization 	 Support Provide study metrics from simulations carried out in Task 7(c) Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies
7(f) Evaluate/Characterize Future Conditions (with adaptation/mitigation strategies)	Lead Quantitatively evaluate / characterize future water supplies, demands, and operations based on study metrics with adaptation / mitigation strategies	Co-Lead Qualitatively interpret and discuss future water supplies, demands, and operations based on quantitative evaluation / characterization	 Support Provide study metrics from simulations carried out in Task 7(d) Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies 	 Support Discuss method options to evaluate / characterize conditions with strategies
7(g) Evaluate Adaptation/Mitigation Strategies	 Co-Lead Compare water supplies, demands, and operations between simulations with and without adaptation/mitigation strategies Quantify effects of adaptation/mitigation strategies on water supplies, demands, and operations based on simulated change in study metrics Compare effects of each adaptation / mitigation strategy to corresponding strategy objectives 	 Lead Interpret results with the Study Team (with vs. without strategy) (MP, CRB, SGB, SVB, PRB) Consider trade-offs (quantitative trade-off with respect to water supply/demand; qualitative trade-off with respect to environmental and other considerations) 	Support Discuss method options for quantifying effects of adaptation / mitigation strategies	Co-Lead Interpret results (with vs. without strategy) (MP, CRB, SGB) Consider trade-offs (quantitative trade-off with respect to water supply/demand; qualitative trade-off with respect to environmental and other considerations)	Co-Lead Interpret results (with vs. without strategy) (SVB, SGB) Consider trade-offs (quantitative trade-off with respect to water supply/demand; qualitative trade-off with respect to environmental and other considerations)	Co-Lead Interpret results (with vs. without strategy) (PRB) Consider trade-offs (quantitative trade-off with respect to water supply/demand; qualitative trade-off with respect to environmental and other considerations)	Co-Lead Interpret results (with vs. without strategy) (SGB) Consider trade-offs (quantitative trade-off with respect to water supply/demand; qualitative trade-off with respect to environmental and other considerations)

7(h) Task 7 Tech Memo	 Lead – outline/template Co-Lead – initial screening/evaluation Lead – evaluation results Co-Lead – interpretation and trade-off analysis 	 Co-Lead - outline/template Co-Lead - interpretation and trade-off analysis Review - all other Lead - prepare final tech memo 	 Lead – modeling methods/results Review – all other 	 Co-Lead – initial screening/evaluation Co-Lead – interpretation and trade-off analysis Review – all other 	 Co-Lead – initial screening/evaluation Co-Lead – interpretation and trade-off analysis Review – all other 	 Co-Lead – initial screening/evaluation Co-Lead – interpretation and trade-off analysis Review – all other 	 Co-Lead – initial screening/evaluation Co-Lead – interpretation and trade-off analysis Review – all other
8. Final Study Report and Executive							
Summary							
8(a) Write final report		Lead – Summary Report &	Support – review	 Support – limited writing 	Support – review	 Support – review 	 Support – review
	 Support – Contractor Prep of 	Executive Summary		Support – review			
	Summary Report						
	• Lead – review						
8(b) Write executive summary	Support – Contractor Prep of	Lead – Summary Report &	Support – review	Support – limited writing	Support – review	Support – review	Support – review
, ,	Executive Summary	Executive Summary		 Support – review 	1		. ,
	• Lead – review						

NOTES:

(1) Abbreviations: CRB = Carmel River Basin; SVB = Salinas Valley Basin; PRB = Paso Robles Basin; SGB = Seaside Groundwater Basin; MP = Monterey Peninsula watersheds (area between CRB and SVB model domains)

SHADING:

GREEN: Task / sub-task funded by partner	(partner cost share)
BLUE: Task / sub-task funded by Reclamation	(Federal cost share)
BROWN:Not applicable	(No cost)