# Appendix F2
# Options Submitted to the Study

# Appendix F2 — Options Submitted to the Study

## 1.0 Introduction

In November 2011, the Colorado River Basin Water Supply and Demand Study (Study) began its fourth and final phase: Evaluation of Opportunities for Supply and Demand. From November 2011 through February 2012, the Study solicited public input on options and strategies for helping to resolve future water supply and demand imbalances in the Colorado River Basin (Basin). The Study cost-share partners sought input from a broad range of stakeholders and interested parties located within as well as external to the Basin.

A report by the Bureau of Reclamation (Reclamation), *Phase 4: Development and Evaluation of Opportunities for Balancing Water Supply and Demand – Request for Ideas,* (Reclamation, 2011) was published to provide relevant information to those interested in submitting input. The report provided a summary of previous studies that assessed future imbalances and explored options and strategies, and described ongoing efforts for balancing Basin supply and demand. Project participants and stakeholders were encouraged to submit ideas related to options and strategies that could help to resolve future supply and demand imbalances in the Basin by February 1, 2012.

A total of 160 options were received. The submittals, as received, are available in electronic portable document format on the compact disc that accompanies this report and at the Study website at http://www.usbr.gov/lc/region/programs/crbstudy.html. The options were separated into four types based on their approach for resolving the imbalance: Increase Supply, Reduce Demand, Modify Operations, and Governance and Implementation.

Approximately 55 options were submitted that related to increasing supply, 42 options related to reducing demand, 22 options related to modifying operations, and 41 options related to governance and implementation. The options were further organized into categories and groups, from which representative options were developed for consideration in the analysis, as follows:

- **Increase Supply:** This type included suggestions for importing water into the Basin from the Green River, Snake River, via ocean routes, or through exchanges with Missouri and Mississippi rivers' supply; desalination projects along the Pacific Ocean, along the Gulf of California, or brackish water desalting projects in California and Arizona; wastewater reuse; greater use of local supplies; and application of watershed management techniques such as weather modification or vegetation control to increase supply.

- **Reduce Demand:** This type included suggestions for municipal and industrial water conservation, agricultural water conservation, energy water use efficiency, and methods for reducing evaporation from lakes and canals.

- **Modify Operations:** This type included suggestions for changing system operations, augmenting storage, and including water banking and transfer programs.

- **Governance and Implementation:** These suggestions are related to changes in policy, management, legal structure, or future implementation and governance of the Colorado River system.

Table F2-1 summarizes the submittals and the original submittals are available via links from the electronic version of this appendix available on the compact disc that accompanies this report and the version of this appendix on the Study website at http://www.usbr.gov/lc/region/programs/crbstudy.html.

TABLE F2-1
Summary of Options Received

| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Increase Supply | Importation | Imports to the Green River Headwaters | Snake River Imports | 4 | Colorado River Augmentation – Snake River Import |
| Increase Supply | Importation | Imports to the Green River Headwaters | Snake River Imports | 39 | Import flows from the Snake River to the Green River |
| Increase Supply | Importation | Imports to the Green River Headwaters | Snake River Imports | 47 | Colorado River Augmentation – Clark's Fork to Green River Import |
| Increase Supply | Importation | Imports to the Green River Headwaters | Bear River Imports | 46 | Colorado River Augmentation – Bear River to Ham's Fork Creek Import |
| Increase Supply | Importation | Imports to the Green River Headwaters | Yellowstone River Imports | 158 | Imports from Tributaries of the Columbia River |
| Increase Supply | Importation | Imports to the Colorado Front Range | Missouri River Imports | 12 | Surface Water Importation – Missouri River |
| Increase Supply | Importation | Imports to the Colorado Front Range | Missouri River Imports | 50 | Missouri River Reuse Project (Front Range) |
| Increase Supply | Importation | Imports to the Colorado Front Range | Missouri River Imports | 155 | Midwest Imports |
| Increase Supply | Importation | Imports to the Colorado Front Range | Missouri River Imports | 157 | Import Water from Floodplains |
| Increase Supply | Importation | Imports to the Colorado Front Range | Missouri River Imports | 159 | Missouri River Reuse Project (Front Range + Rio Grande) |
| Increase Supply | Importation | Imports to the Colorado Front Range | Mississippi River Imports | 52 | Mississippi River Supply |
| Increase Supply | Importation | Imports to Southern California | Tankers | 14 | Water Imports Using Ocean Routes – Tankers |
| Increase Supply | Importation | Imports to Southern California | Water Bags | 15 | Water Imports Using Ocean Routes – Water Bags |
| Increase Supply | Importation | Imports to Southern California | Icebergs | 16 | Water Imports Using Ocean Routes – Icebergs |
| Increase Supply | Importation | Imports to Southern California | Columbia River Imports | 49 | Colorado River Augmentation – Columbia River via a Submarine Pipeline |

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Summary of Options Received

| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California | 6 | Pacific Ocean Desalination |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California | 11 | Desalination in California – Subsidized by Nevada and Arizona |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California and Mexico | 40 | Widespread Desalination – San Francisco, Salton Sea, Puerto Penase, Mexicali Mexico; Rio Grande, Houston Area. |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California and Mexico | 103 | Desalination Augmentation |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California | 128 | Water for West Project |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in California | 156 | Implement Desalination and Reuse Concepts |
| Increase Supply | Desalination | Ocean Desalination | Pacific Ocean Desalination in Mexico | 108 | Rosarito Beach Binational Seawater Desalination Plant |
| Increase Supply | Desalination | Ocean Desalination | Gulf of California Desalination | 30 | Desalination – Sea of Cortez |
| Increase Supply | Desalination | Ocean Desalination | Gulf of California Desalination | 110 | Gulf of California Desalination |
| Increase Supply | Desalination | Desalination of Agricultural Drainwater | Salton Sea Drainwater Reuse | 137 | Colorado River Aqueduct Desalination and Salton Sea Water Supply Project |
| Increase Supply | Desalination | Desalination of Agricultural Drainwater | Salton Sea Drainwater Reuse | 139 | Salton Sea Restoration and Drainwater Reuse |
| Increase Supply | Desalination | Desalination of Brackish Groundwater | Southern California Groundwater Desalination | 24 | Desalination of Brackish Groundwater – Yuma, AZ and Riverside County, CA |
| Increase Supply | Desalination | Desalination of Brackish Groundwater | Southern California Groundwater Desalination | 143 | Southern California Groundwater Desalination |
| Increase Supply | Desalination | Desalination of Brackish Groundwater | Brackish Water Desalting in Yuma Area | 140 | Brackish Water Desalting in Yuma Area |

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| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Increase Supply | Desalination | Desalination of Brackish Groundwater | Brackish Water Desalting in Yuma Area | 162 | Yuma-Mesa Barrier Dam and Water Collector System Project |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 7 | Mega Reuse in Southern Coast California |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 26 | Water Reuse/Recycling |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 104 | Water Reuse/Recycling |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 141 | Water Reuse in Front Range Colorado |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 142 | Water Reuse Along Wasatch Front |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 145 | Water Reuse in Central Arizona |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 160 | Water Reuse – New Mexico's Urban Areas |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 161 | Water Reuse – Wyoming's Urban Areas |
| Increase Supply | Reuse | Municipal Wastewater Reuse | Municipal Wastewater Reuse | 98 | Water Conservation and Management |
| Increase Supply | Reuse | Grey Water Reuse | Grey Water Reuse | 3 | Grey Water Recycling System |
| Increase Supply | Reuse | Industrial Wastewater Reuse | Industrial Wastewater Reuse | 152 | Industrial Reuse |
| Increase Supply | Local Supply | Rainwater Harvesting | Rainwater Harvesting | 17 | Individual Conservation and Storage (Rain Barrels) |
| Increase Supply | Local Supply | Rainwater Harvesting | Rainwater Harvesting | 22 | Rainwater Capture Diverted to Lake Mead |
| Increase Supply | Local Supply | Coal Bed Methane-produced Water | Coal Bed Methane-produced Water | 42 | Consider Adequate Supplies to Oil and Gas Industries in the Future |

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| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Increase Supply | Local Supply | Coal Bed Methane-produced Water | Coal Bed Methane-produced Water | 51 | Coal Bed Methane Produced Water |
| Increase Supply | Watershed Management | Brush Control | Brush Control | 5 | Brush Control on BLM Land |
| Increase Supply | Watershed Management | Dust Control | Dust Control | 33 | Development of a Dust Mitigation Program |
| Increase Supply | Watershed Management | Dust Control | Dust Control | 59 | Dust Abatement for Colorado River Flow Recovery |
| Increase Supply | Watershed Management | Dust Control | Dust Control | 92 | Air Quality Improvement/Reduction of Soot causing Snow to Melt |
| Increase Supply | Watershed Management | Forest Management | Forest Management | 48 | Forest Management – Increased Harvest |
| Increase Supply | Watershed Management | Forest Management | Forest Management | 125 | Forest Management Strategies to Reduce Wildfires |
| Increase Supply | Watershed Management | Weather Modification | Weather Modification | 89 | Precipitation Enhancement / Cloud Seeding (Weather Modification) |
| Increase Supply | Watershed Management | Weather Modification | Weather Modification | 129 | Weather Modification Program (i.e. Cloud Seeding) |
| Increase Supply | Watershed Management | Weather Modification | Weather Modification | 153 | Increase Rainfall by Creating More Inland Seas |
| Increase Supply | Watershed Management | Tamarisk Control | Tamarisk Control | 130 | Strategic Management of Tamarisk |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 9 | Residential housing water leak reduction |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 23 | Eliminate Water Needy Plants |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 25 | Municipal Efficiency: 1% per Year |

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|---|---|---|---|---|---|
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 27 | Water Efficiency Action Network of the Colorado River Basin (WEAN-CRB) |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 29 | Mandate water saving technologies for large water users |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 32 | Prohibit/Eliminate New Large-Scale Diversions |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 41 | Urban Water Demand Management and Conservation |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 43 | Evaporation reduction by limiting man-made water bodies including pools, lakes and water parks. |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 45 | Reduce Outdoor Water Use |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 58 | Conservation Instead of Lake Powell pipeline |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 61 | Geyser Flow Control Device |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 69 | Municipal Efficiency 1 percent per year |
| Reduce Demand | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 70 | Water Loss Control and Reduction |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 71 | Landscape Design Regulations |

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|---|---|---|---|---|---|
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 72 | Landscape Water Budgets |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 73 | Enforcement of Water Waste Ordinances |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 74 | Water Audits |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 75 | Public Education and Awareness Campaigns |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 76 | Lawns to Xeriscape |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 77 | Inclining Block Rates |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 78 | Residential Retrofits |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 79 | Commercial Retrofits |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 80 | Metering Multi-Family Use |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 81 | Pool Covers |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 107 | Change of current water policies |

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|---|---|---|---|---|---|
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 119 | Colorado River Basin-Wide Per Capita Water Use Goal |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 131 | Proposal to include water savings from the implementation of new product standards in baseline water use projections |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 132 | Proposal to include water savings from proposed product standards in conservation scenario demand projections |
| Reduce Demand | Municipal/ Industrial Water Conservation | Municipal/Industrial Water Conservation | Municipal/Industrial Water Conservation | 151 | Assisted/Smart Irrigation and Precision farming (fertilizer applications) in urban settings |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation | 19 | Assisted/Smart Irrigation and Precision Farming in Agricultural Settings |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation | 53 | Agricultural Conservation and Efficiency |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation | 54 | Irrigation Infrastructure Modernization Program to Improve Efficiency |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation | 83 | Reduction of On-farm and Conveyance Evaporative Losses and Deep Percolation. |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation | 90 | Watershed Management Improvements (Soil Grouting, Irrigation Practices, Utilizing Stock Ponds and Small Divers |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation with Water Transfers | 31 | Conversion to Controlled Environment Agriculture (greenhouse production) |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation with Water Transfers | 99 | Water Pricing Reform |

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|---|---|---|---|---|---|
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation with Water Transfers | 118 | Reduce Cattle Production and Beef Demand |
| Reduce Demand | Agricultural Water Conservation | Agricultural Water Conservation | Agricultural Water Conservation with Water Transfers | 138 | Agricultural Field Restoration Utilizing Native Grasses |
| Reduce Demand | Energy Water Use Efficiency | Conversion of Power Plants to Air Cooling | Conversion of Power Plants to Air Cooling | 13 | Power Plant Air Cooling Conversion – Navajo Generating Station |
| Reduce Demand | Energy Water Use Efficiency | Energy Conservation | Water Use Efficiencies in the Oil and Gas Industry | 18 | Reform of Gas and Oil Industry |
| Reduce Demand | Energy Water Use Efficiency | Conversion of Power Plants to Air Cooling | Conversion of Power Plants to Air Cooling | 28 | Demand Management at Thermoelectric Power Plants |
| Reduce Demand | Energy Water Use Efficiency | Energy Conservation | Water Use Efficiencies in the Oil and Gas Industry | 126 | Reducing Energy Industry's Water Consumption |
| Modify Operations | System Operations | Evaporation Control Covers | Solar Panel Reservoir Covers | 1 | Evaporation Reduction via Floatovoltaics Systems |
| Modify Operations | System Operations | Evaporation Control Covers | Solar Panel Reservoir Covers | 86 | Reduce Surface Water Evaporation via Floating Photovoltaics or Plastic Balls |
| Modify Operations | System Operations | Evaporation Control Covers | Solar Panel Reservoir Covers | 44 | Evaporation Reduction from Reservoirs and Canals |
| Modify Operations | System Operations | Evaporation Control Covers | Solar Panel Canal Covers | 10 | Evaporation Reduction at Canals by Covering with Solar Panels |
| Modify Operations | System Operations | Evaporation Control Covers | Chemical Type Covers | 133 | Eliminating Water Loss by Cutting Evaporation by 50% |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Reduce Reservoir Evaporation | 37 | Optimization Study of Evaporation Loss |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Reduce Reservoir Evaporation | 136 | Reservoir Evaporation Control |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Prioritize Lake Mead Storage | 60 | Fill Mead First |

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|---|---|---|---|---|---|
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Prioritize Lake Mead Storage | 102 | Single Reservoir Water Storage |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Maximize Hydropower Generation | 111 | Aspinall Unit Bypass Reduction Option |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Maximize Hydropower Generation | 113 | Crystal Reservoir Unit Bypass Reduction Option |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Maximize Hydropower Generation | 114 | Flaming Gorge Unit Bypass Reduction Option |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Maximize Hydropower Generation | 115 | Fontenelle Reservoir Unit Bypass Reduction Option |
| Modify Operations | System Operations | Modified Operation of Existing Reservoirs | Maximize Hydropower Generation | 116 | Hydropower Minimum Generation Elevation Protection Option |
| Modify Operations | System Operations | Operating for Environmental Purposes | Operating for Environmental Purposes | 20 | The One-Dam Solution – Lake Powell Removal, Underground Storage and Sediment Removal in Lake Mead |
| Modify Operations | System Operations | Operating for Environmental Purposes | Operating for Environmental Purposes | 56 | Integrated Options to Maintain and Restore Healthy River Flows |
| Modify Operations | System Operations | Operating for Environmental Purposes | Operating for Environmental Purposes | 65 | Integrated Options to Maintain and Restore Healthy River Flows |
| Modify Operations | System Operations | Operating for Environmental Purposes | Operating for Environmental Purposes | 106 | Yuma Island Wildlife, Irrigation and Improvement |
| Modify Operations | System Operations | Operating for Environmental Purposes | Operating for Environmental Purposes | 124 | Integrated Options to Maintain and Restore Healthy River Flows |
| Modify Operations | System Operations | New Water Storage | New Water Storage | 154 | Pump Storage in Upper Basin Headwaters |
| Modify Operations | System Operations | New Water Storage | New Water Storage | 85 | Reservoirs such as Drop 2 |
| Modify Operations | System Operations | New Water Storage | Improved Groundwater Management | 63 | Improved Groundwater Management |

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| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Water Transfers, Exchanges | Water Transfers and Exchanges | 101 | Water Banking and Transfer Scheme |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Water Transfers, Exchanges | Water Transfers and Exchanges | 120 | Facilitating Voluntary Transfers of Federal Project Water |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Guided Water Markets | Guided Water Markets | 62 | Guided Water Markets |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Guided Water Markets | Guided Water Markets | 121 | Guided Water Markets |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Upper Basin Water Banking | Upper Basin Water Banking | 55 | ICS in the Upper Basin |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Upper Basin Water Banking | Upper Basin Water Banking | 64 | Individual State-based Water Banks in the Upper Basin |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Upper Basin Water Banking | Upper Basin Water Banking | 95 | Upper Basin Water Bank |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Upper Basin Water Banking | Upper Basin Water Banking | 123 | Individual State-based Water Banks in the Upper Basin |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Upper Basin Water Banking | Upper Basin Water Banking | 127 | Upper Basin Water Bank |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Lower Basin Water Banking | Lower Basin Water Banking | 35 | Lower Basin Water Banking |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Lower Basin Water Banking | Lower Basin Water Banking | 68 | Lower Basin Water Bank |

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| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Groundwater Banking | Groundwater Banking | 87 | Groundwater Banking Credits |
| Governance and Implementation | Water Transfers, Exchanges, and Banking | Groundwater Banking | Groundwater Banking | 100 | Aquifer Storage and Recovery |
| Governance and Implementation | Water Management and Allocation | Changes to Apportionment of Water Supply | Changes to Apportionment of Water Supply | 21 | The One-Dam Solution – Re-examine the Colorado River Compact |
| Governance and Implementation | Water Management and Allocation | Changes to Apportionment of Water Supply | Changes to Apportionment of Water Supply | 36 | Mutual Forbearance by Upper and Lower Basins |
| Governance and Implementation | Water Management and Allocation | Changes to Apportionment of Water Supply | Changes to Apportionment of Water Supply | 38 | Colorado River Basin Flow Re-distribution based on population |
| Governance and Implementation | Water Management and Allocation | Changes to Apportionment of Water Supply | Changes to Apportionment of Water Supply | 117 | Upper Basin Voluntary Demand Cap |
| Governance and Implementation | Water Management and Allocation | Process for Expanded Stakeholder Involvement | Process for Expanded Stakeholder Involvement | 34 | Informal Basin-wide Stakeholder Governance Process |
| Governance and Implementation | Water Management and Allocation | Process for Expanded Stakeholder Involvement | Process for Expanded Stakeholder Involvement | 135 | Colorado River Basin Blue Ribbon Committee |
| Governance and Implementation | Water Management and Allocation | Population Control | Population Control | 2 | Conversations to limit growth in subject area |
| Governance and Implementation | Water Management and Allocation | Population Control | Population Control | 57 | Reverse Migration |

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| Option Type | Option Category | Option Group | Representative Option | Record No. | Option Name |
|---|---|---|---|---|---|
| Governance and Implementation | Water Management and Allocation | Conservation and Trust Funds | Conservation and Trust Funds | 67 | Leveraging utility scale water efficiency programs to support local and regional environmental enhancement using the Conserve to Enhance mechanism |
| Governance and Implementation | Water Management and Allocation | Conservation and Trust Funds | Conservation and Trust Funds | 88 | Financial Tools Allowing New Development to Pay for the Development of New Local Supplies |
| Governance and Implementation | Water Management and Allocation | Conservation and Trust Funds | Conservation and Trust Funds | 91 | Removal of Invasive Plants Species |
| Governance and Implementation | Water Management and Allocation | Conservation and Trust Funds | Conservation and Trust Funds | 112 | Colorado River Climate Change Adaptation & Environmental Trust Fund |
| Governance and Implementation | Tribal Water | Voluntary Tribal Water Transfers | Voluntary Tribal Water Transfers | 66 | Inter-Basin (Upper Basin to Lower Basin) Leasing of Ute Indian Tribal Water |
| Governance and Implementation | Tribal Water | Voluntary Tribal Water Transfers | Voluntary Tribal Water Transfers | 96 | Upper Basin, Interstate Leasing of Ute Indian Tribal Water |
| Governance and Implementation | Tribal Water | Voluntary Tribal Water Transfers | Voluntary Tribal Water Transfers | 109 | Tribal Efficiencies and Voluntary Water Transfers |
| Governance and Implementation | Tribal Water | Voluntary Tribal Water Transfers | Voluntary Tribal Water Transfers | 144 | Voluntary Tribal Water Transfers |
| Governance and Implementation | Tribal Water | Tribal Water Storage and Intentionally Created Surplus | Tribal Water Storage and Intentionally Created Surplus | 82 | Recognition of the Ute Tribe's reserved Water Right in Storage |
| Governance and Implementation | Tribal Water | Tribal Water Storage and Intentionally Created Surplus | Tribal Water Storage and Intentionally Created Surplus | 146 | Beneficial Water Use of All Tribal Waters by Tribes |
| Governance and Implementation | Tribal Water | Inter-governmental Forum | Inter-governmental Forum | 163 | Inter-governmental Forum |
| Governance and Implementation | Tribal Water | Resolution of Tribal Claims | Resolution of Tribal Claims | 134 | Expeditious Resolution of All Tribal Claims |

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|---|---|---|---|---|---|
| Governance and Implementation | Tribal Water | Affordability of Tribal Waters via Central Arizona Project | Affordability of Tribal Waters via Central Arizona Project | 147 | Affordability of Tribal Waters Via the CAP Canal |
| Governance and Implementation | Tribal Water | Barriers to Tribal Participation in Federal Programs | Barriers to Tribal Participation in Federal Programs | 148 | Remove Barriers On Tribal Access to Programs Impacting Water Management |
| Governance and Implementation | Tribal Water | Recognition of Limits | Recognition of Limits | 149 | All Communities Must Respect Limits of Available Water in System |
| Governance and Implementation | Tribal Water | Stabilization of Soil | Stabilization of Soil | 150 | Flow Augmentation by Soil Stabilization |
| Governance and Implementation | Tribal Water | Non-Tributary Groundwater Use | Non-Tributary Groundwater Use | 97 | Ute Indian Tribe Groundwater Use |
| Governance and Implementation | Tribal Water | Protection Against Over-allocation | Protection Against Over-allocation | 84 | Establishment of a “Safety Net” to Ensure the Ute Indian Tribe’s Reserved Water Rights are Protected from Over-allocation of the State of Utah’s Apportionment of Colorado River Water |
| Governance and Implementation | Data and Information | Improved Water Use Accounting in the Upper Basin | Improved Water Use Accounting in the Upper Basin | 94 | Upper Basin Accounting |
| Governance and Implementation | Data and Information | Colorado River Simulation System Modeling Improvements | Colorado River Simulation System Modeling Improvements | 122 | Inclusion of USGS Stream Gages in Colorado River Basin Supply and Demand Study |

# 2.0 References

Bureau of Reclamation (Reclamation). 2011. *Phase 4: Development and Evaluation of Opportunities for Balancing Water Supply and Demand – Request for Ideas*.