

Milestones

1970's – Conflicts over water threaten supply reliability, water quality, and the regional economy

1973 – A pump tax is enacted to raise money to implement recharge

1978 – Chino Basin is adjudicated and CBMWD Board is appointed as Watermaster. Planning and funding are initiated to manage the Basin

1998 – The nine-member Watermaster Board is created and tasked with the development of the OBMP

1999 – OBMP is developed by Watermaster with input from stakeholders and provides a detailed blueprint to ensure a reliable water supply and to protect and enhance water quality

2000 – Stakeholders reach agreement (Peace Agreement) to move forward cooperatively with the OBMP Implementation Plan; Basin monitoring begins in earnest, as does the first Desalter expansion

2002 – Recharge Master Plan implementation and funding agreement is reached; the \$40 million Chino Basin Facilities Project moves forward, securing Prop 13 grant funding for approximately half the cost

2004 – RWQCB adopts unique Max Benefit Salinity Management Program, enabling implementation of a massive recycled water reuse, stormwater and supplemental water recharge program, and the expansion of groundwater desalting to achieve hydraulic control

2007 – Stakeholders agree (Peace II Agreement) to the second expansion of the Desalters to meet the commitments in the Max Benefit, securing tens of millions of dollars in grant funding and resulting in hundreds of millions of dollars in cost savings and other benefits

2013 – The 2010 RMPU is updated to reflect revised UWMPs developed by water providers (2013 Amendment) to make sure the Basin will be managed at a new equilibrium at the end of the ReOperation period. This forms the foundation for cost-effectively recharging storm, imported, and recycled water with the goal of improving water quality and ensuring water supply reliability. Several recharge improvement projects are agreed to and move forward

2016 – Pumping at the Chino Desalter Authority desalter wells in the Chino Creek Well Field continues to increase and hydraulic control is demonstrated. Desalter expansion continues

2018 – January marks the 40th anniversary of the Chino Basin Judgment. Appeals to the first Safe Yield Reset Court Order conclude and the first Safe Yield Reset is adopted effective 2011; Safe Yield is set at 135,000 afy

2020 – The 2020 OBMP is developed by Watermaster staff with input from stakeholders and adopted by the Board, updating the 20-year-old document. The second Safe Yield Reset is ordered by the Court effective 2021; the Safe Yield is set at 131,000 afy

2021 – The Court approves an extension of the current Storage Management Plan from 500,000 af to 700,000 af until 2030

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Introduction

This white paper describes the Optimum Basin Management Program (OBMP) that was developed in 2000 and updated in 2007, the efficacy of the OBMP, and the need to update it. This paper is organized as follows:

- Existing OBMP – this section describes the history and accomplishments of the OBMP that was developed in 2000 and updated in 2007.
- Need to Update the OBMP – this section summarizes the need to update the OBMP.
- Benefits from Updating the OBMP – this section summarizes the benefits from updating the OBMP.
- Process to Update the OBMP – this section summarizes the process to update the OBMP.

Existing OBMP

The Chino Basin Judgment gave Watermaster the authority to develop an OBMP for the Chino Basin, including both water quantity and quality considerations. Watermaster, with direction from the Court, began the development of the OBMP in 1998 and completed it in July 2000. The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders, described the physical state of the groundwater basin, developed a set of management goals, identified impediments to those goals, developed a series of actions that could be taken to remove those impediments and achieve the management goals, and developed agreements to implement the OBMP. The OBMP goals and the activities to achieve them were stated in the OBMP Phase I report as follows¹:

- “Goal 1 - Enhance Basin Water Supplies. This goal applies not only to local groundwater but also to all sources of water available for the enhancement of the Chino Groundwater Basin. The following activities enhance basin water supplies:
 - Enhance recharge of storm water runoff. Increasing the recharge of storm water in the basin will increase the water supplies in the Chino Basin. The relatively low TDS and nitrate concentrations of storm flow will improve groundwater quality.
 - Increase the recharge of recycled water. The recharge of recycled water above that required for replenishment obligations can be used for safe yield augmentation and/or conjunctive use.
 - Develop new sources of supplemental water. New sources of supplemental water, including surface and groundwater from other basins, can be used to meet Chino Basin area demands, reduce dependency on Metropolitan supplies, and improve drought reliability.

¹ See Optimum Basin Management Program, Phase 1 Report, August 1999, pages 3-2 to 3-4. Document is located here: [http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20\(Revised%20DigDoc\).pdf](http://www.cbwm.org/docs/engdocs/OBMP%20-%20Phase%20I%20(Revised%20DigDoc).pdf)

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- Promote the direct use of recycled water. Promoting the direct use of recycled water for non-potable uses will make more native groundwater available for higher-priority beneficial uses.
- Promote the treatment and use of contaminated groundwater. In some parts of the basin, groundwater is not produced because of contamination problems and thus the yield of the basin may be reduced. The yield of the basin can be maintained and enhanced by the production and treatment of these contaminated waters.
- Reduce groundwater outflow. Increasing groundwater production near the Santa Ana River will increase the streambed percolation of the Santa Ana River into the groundwater basin and reduce groundwater outflow from the basin and thereby increase the supply of groundwater in the basin.
- Re-determine safe yield. Recent studies suggest that the safe yield may be greater than the 140,000 acre-ft as stated in the Judgment. The activities listed above will cause the yield to increase further. Continuing to operate the basin at 140,000 acre- ft/yr will cause groundwater in the basin to be lost to the Santa Ana River. The safe yield will be re-determined on an as-needed basis to maximize the current yield and to cause future increases in yield.
- Goal 2 - Protect and Enhance Water Quality. This goal will be accomplished by implementing activities that capture and dispose of contaminated groundwater, treat contaminated groundwater for direct high-priority beneficial uses, and encourage better management of waste discharges that impact groundwater. The following activities will protect and enhance water quality:
 - Treat contaminated groundwater to meet beneficial uses. Groundwater in some parts of the basins is not produced because of contamination problems. Groundwater quality can be protected by intercepting contaminants before they spread. Intercepted groundwater could be treated and used directly for high priority beneficial uses or injected back into the aquifer.
 - Monitor and manage the basin to reduce contaminants and to improve water quality. Actively assisting and coordinating with the Regional Board, the EPA, and other regulatory agencies in water quality management activities would help improve water quality in the basin.
 - Manage salt accumulation through dilution or blending and the export of salt.
 - Address problems posed by specific contaminants.
- Goal 3 - Enhance Management of the Basin. This goal will be accomplished by implementing activities that will lead to the optimal management of the Chino Basin. The following activities will protect and enhance the management of the basin:
 - Develop policies and procedures that will encourage stable, creative, and fair water resources management in the basin.
 - Optimize the use of local groundwater storage. Policies and procedures for local storage, cyclic storage, and other types of storage accounts will be created to maximize drought protection and improve water quality, and to create an

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efficient system to transfer water from producers with surplus water to producers that need water.

- Develop and/or encourage production patterns, well fields, treatment and water transmission facilities, and alternative water supply sources to ensure maximum and equitable availability of groundwater and to minimize land subsidence. Develop conjunctive-use programs with others to optimize the use of the Chino Basin for in-basin producers and the people
- Goal 4 - Equitably Finance the OBMP. This goal is based on the following principles:
 - The primary source of revenue to finance the implementation will be consumers of Chino Basin groundwater.
 - Consumers in the Chino Basin must be treated equitably by passing the cost of the OBMP on a per acre-foot basis or by other methods, based on formulas to be determined.
 - Financial incentives and disincentives will be established to assure that existing groundwater is pumped out of the basin and a higher quality of water is used to replenish the basin.
 - Opportunities for creativity will be provided to the producers so that they are motivated to use their assets and abilities in the implementation of the OBMP.
 - Recover value from utilization of storage of supplemental water and from rising water outflow.”

The actions to remove the impediments to the OBMP goals were logically grouped into sets of coordinated activities called Program Elements. Each Program Element contains a list of definitive actions and an implementation schedule. The OBMP Implementation Plan consists of nine Program Elements. The relationship of the goals to the Program Elements is shown in the following table.

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Relationship of Goals and Program Elements in the 2000 OBMP

Program Element	Goal 1 - Enhance Basin Water Supplies	Goal 2 - Protect and Enhance Water Quality	Goal 3 - Enhance Management of the Basin	Goal 4 - Equitably Finance the OBMP
Program Element 1. Develop and Implement Comprehensive Monitoring Program (Comprehensive Monitoring Program)	X	X	X	X
Program Element 2. Develop and Implement Comprehensive Recharge Program (Comprehensive Recharge)	X	X	X	X
Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas (Groundwater Desalting)	X	X	X	X
Program Element 4. Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1 (Land Subsidence Management)			X	X
Program Element 5. Develop and Implement Regional Supplemental Water Program (Recycled Water Reuse)	X	X	X	X
Program Element 6. Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management (Water Quality Management)	X	X	X	X
Program Element 7. Develop and Implement Salt Management Plan (Salt and Nutrient Management Plan)	X	X	X	X
Program Element 8. Develop and Implement Groundwater Storage Program (Groundwater Storage Management)	X	X	X	X
Program Element 9. Develop and Implement Conjunctive Use Program (Conjunctive Use)	X	X	X	X

Since October 2000, Watermaster, the Judgment parties, the IEUA, the TVMWD, and the WMWD have implemented most of the actions described in the Program Elements and the OBMP goals have been partially achieved. Some of the requirements and scope of the Program Elements have changed over time as impediments to the goals have been refined by new

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information, evolving technological and institutional challenges, and funding opportunities. The accomplishments from the implementation of the 2000 OBMP are summarized below.

Program Element 1. Develop and Implement Comprehensive Monitoring Program (Comprehensive Monitoring Program)

The objectives of this Program Element are to collect the data necessary to support the implementation of the other eight Program Elements and periodic updates to the state of the basin. The types of data collected include: groundwater data from wells (location, construction, lithology, pumping, water level and water quality); surface water (measuring location, discharge, recharge and water quality); ground level (vertical displacement from remote sensing, ground survey and extensometers, horizontal displacement from ground surveys); climatic data (precipitation from terrestrial stations, PRISM, NEXRAD, bias corrected and spatially disaggregated projections of future precipitation, evaporation, ET and temperature); land use and vegetation maps; normalized difference vegetation index mapping; facilities information (drainage maps, sewershed, water systems and facilities details); aerial photography; and LIDAR surveys. All these data are in stored in a relational database, GIS or other digital formats. The monitoring requirements have been reviewed annually and modified to ensure that the monitoring program delivered the minimum data required for OBMP implementation.

Program Element 2. Develop and Implement Comprehensive Recharge Program (Comprehensive Recharge)

The objectives of this Program Element include increasing stormwater recharge to offset the recharge lost due to channel lining, increase Safe Yield and to ensure that there will be enough supplemental water recharge capacity available to Watermaster to replenish overdraft. Recharge master plans were completed in 2001, 2013, and 2018. Watermaster and the IEUA implemented the 2001 recharge master plan and constructed recharge improvements that increased storm water recharge by about 9,000 afy. Watermaster and the IEUA completed a recharge master plan update in 2013 (2013 RMPU), and they are currently in the process of designing and constructing the recommended 2013 RMPU recharge projects. When completed in 2021, the 2013 RMPU projects will increase stormwater recharge by another 4,800 afy and recycled water recharge capacity by 7,100 afy. Finally, Watermaster and the IEUA completed a recharge master plan update in 2018 that recommended no new recharge projects. In the first 20 years of OBMP implementation, stormwater recharge will have increased about 13,800 afy, and supplemental water recharge capacity will have increased by 27,600 afy. One of the findings of the 2018 recharge master plan update is that Watermaster has enough supplemental water recharge capacity to it meet its replenishment obligations through wet-water recharge through 2050. The IEUA has increased the recharge of recycled water from about 500 afy in 2000 to about 16,000 afy in 2018.

Program Element 3. Develop and Implement a Water Supply Plan for Impaired Areas (Groundwater Desalting)

The objectives of this Program Element are to maintain and enhance the Safe Yield of the basin. The groundwater desalting program was designed to replace declining agricultural groundwater

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pumping in the southern part of the basin with new groundwater pumping to meet increasing municipal water demands in the same area. The new wells used in the groundwater desalting program were constructed in strategic locations to minimize groundwater outflow to the Santa Ana River and to increase the Santa Ana River recharge into the basin. In 2000, the groundwater desalting program included a 6,000 afy treatment plant and a series of wells constructed in the southern part of the Chino Basin near the Chino Airport. Under the OBMP, as of 2018, the desalting program has grown to two treatment plants and additional wells that in aggregate pump and treat about 30,000 afy degraded groundwater, and the program will reach the OBMP objective of 40,000 afy in 2019. The groundwater desalting program facilities are owned by the Chino Basin Desalter Authority (CDA) whose members include the Cities of Chino, Chino Hills, Ontario, and Norco; the Jurupa Community Services District; the Santa Ana River Water Company; the IEUA; and the WMWD.

Program Element 4 Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1 (Land Subsidence Management)

The objectives of this Program Element include the spatial and temporal characterization of land subsidence, identification of its causes, and, where appropriate, the development and implementation of a program to minimize or abate land subsidence. In the early 2000s, Watermaster constructed specialized monitoring wells to characterize land subsidence in the City of Chino. This work yielded two things: a successful voluntary management plan specific to certain wells located within a designated “Managed Area in the City of Chino; and a monitoring and investigative plan to characterize land subsidence throughout MZ1 and a part of MZ2. As of 2018, land subsidence monitoring is ongoing, and a focused effort is underway to develop a land subsidence management plan for the northwestern part of MZ1.

Program Element 5 Develop and Implement Regional Supplemental Water Program (Recycled Water Reuse)

The objective of this Program Element is to improve the regional conveyance and availability of imported and recycled waters throughout the basin. Since 2000, the IEUA has constructed and operated a recycled water conveyance system throughout the basin enabling it to provide recycled water to its member agencies. Recycled water deliveries grew from about 3,400 afy in 2000 to about 34,000 afy in 2017. The recycled water provided by the IEUA has replaced a like amount of groundwater and imported water that would have otherwise been used for non-potable purposes. Much of the post-2000 increase in supplemental water storage in the Chino Basin is attributable to the increased availability of recycled water. Recycled water is more reliable than imported water, and thus using it in lieu of imported water has improved the sustainability of the Chino Basin and water supply reliability. Improvements in the regional conveyance and availability of imported water were not achieved.

Program Element 6 Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management (Water Quality Management)

The objectives of this Program Element are the identification of water quality trends in the basin and the impact of the OBMP implementation on them, the determination of whether point and non-point contamination sources are being addressed by water quality regulators,

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and to collaborate with water quality regulators to identify and facilitate the cleanup of soil and groundwater contamination. Since 2000, Watermaster, through its own monitoring activities and the efforts of cooperating entities, has compiled surface and ground water quality and related data, assessed water quality trends, and periodically reported its findings to the Judgment parties. Watermaster has collaborated with the Regional Board in its efforts to work with dischargers to facilitate the cleanup of soil and groundwater contamination in the basin. The 2000 OBMP Implementation Plan identified the opportunities to use the Chino Desalters to assist in the remediation of the Chino Airport and South Archibald plumes, which, as of this writing, is coming to fruition.

Program Element 7 Develop and Implement Salt Management Plan (Salt and Nutrient Management Plan)

The objectives of this Program Element are to characterize current and future salt and nutrient conditions in the basin and to subsequently develop and implement a plan to manage them. Watermaster and the IEUA developed an innovative salt and nutrient management plan (SNMP) for the Chino Basin that created assimilative capacity for total dissolved solids (TDS) and that when combined with the planned new recharge of stormwater and imported water, groundwater desalting, achievement of Hydraulic Control, and monitoring, enabled the use of recycled water without treatment to reduce the TDS concentration in recycled water. The SNMP was initiated in 2004. Ambient TDS and nitrate concentrations continue to increase in the Chino Basin due to legacy agricultural activities and current irrigation practices.

Program Element 8 Develop and Implement Groundwater Storage Program (Groundwater Storage Management)

The objectives of this Program Element are to develop and implement a storage management program that is protective of water quality, prevents overdraft, and ensures equity among the Judgment parties. This Program Element also includes the recalculation of Safe Yield. The storage management plan in the OBMP implementation plan was implemented in 2000 and revised in 2016, raising the Safe Storage Capacity for managed storage from 500,000 af to 600,000 af through June 2021. Safe yield was recalculated in 2015 and, as of this writing, has not been approved by the Court. Losses from storage were initially assigned to zero through 2005, estimated at 2 percent from 2006 through 2017, and reduced to 0.07 percent thereafter with the achievement of Hydraulic Control. Watermaster conducted a Storage Framework Investigation in 2017 and 2018 to provide technical information to support the development of a new storage management plan in 2019. Technical work has commenced to recalculate the Safe Yield in 2020.

Program Element 9 Develop and Implement Conjunctive Use Program (Conjunctive Use)

The objective of this Program Element is to develop Storage and Recovery programs that will provide broad mutual benefit to the Judgment parties and reduce the cost of OBMP implementation. Watermaster, the IEUA, the TVMWD, the WMWD, and the Metropolitan Water District of Southern California (Metropolitan) implemented a 100,000 af storage program called the Dry-Year Yield Program (DYYP) in 2005. This program runs through 2028. Other than the DYYP, no Storage and Recovery programs have been implemented since 2000. IEUA is

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currently working to obtain a \$207 million grant to develop and implement a Storage and Recovery program that will provide broad mutual benefit to the Judgment parties and state.

The 2000 OBMP Program Elements are highly related as is shown in the figure below. For example, the management activities associated with groundwater recharge impact land subsidence (a possible land subsidence management tool), groundwater storage and conjunctive use (recharge as a means to get water into storage), recycled water reuse (recharge as a means to get recycled and dilution water into the basin), and the salt and nutrient management plan (managed recharge must be blended to meet SNMP requirements). Furthermore, recharge impacts water quality directly, it has the potential to displace contaminant plumes, and future recharge increases with high quality storm and imported waters will be used to increase pumping rights and reduce future desalting requirements.

Relationship of the 2000 OBMP management activities



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Peace Agreements and CEQA

The 2000 OBMP and the Peace Agreement were completed in 1999 and 2000, respectively. The operable features of the OBMP were incorporated into the OBMP Implementation Plan. The OBMP Implementation Plan is Exhibit B to the Peace Agreement. The Peace Agreement was reviewed in a programmatic environmental impact report (PEIR), completed by the IEUA in July 2000.

Subsequent to the PEIR, Watermaster and the Judgment parties developed revisions to the OBMP based on the need to expand the desalting capacity to the 40,000 afy of groundwater pumping required in the OBMP Implementation Plan. Concurrently, the IEUA and Watermaster worked with the Santa Ana Regional Water Quality Control Board (Regional Board) to revise the total dissolved solids (TDS) and nitrate objectives for the Chino North Management Zone to enable the reuse of the IEUA's recycled water without desalting it for a period estimated to be at least 30 years and without impairing the beneficial use of groundwaters in the Chino and Orange County Basins (Program Element 7). One of the Regional Board's conditions for raising the TDS and nitrate objectives was the achievement of Hydraulic Control. Hydraulic Control is the elimination of groundwater discharge from the Chino North Management Zone to the Santa Ana River or its reduction to less than 1,000 afy. Hydraulic Control is a goal of the OBMP with the intent of maintaining and enhancing the Safe Yield of the basin by ensuring that agricultural groundwater pumping in the southern half of the basin will be replaced by groundwater pumping for municipal uses as the land use in that area transitions from agricultural uses to urban uses. Through extensive investigations, the expansion of desalter groundwater pumping to 40,000 afy and Reoperation were determined necessary to achieve Hydraulic Control and maintain the Safe Yield.

The Peace II Agreement was developed to implement the changes in the OBMP required to expand the desalters to 40,000 afy of groundwater pumping, to incorporate Reoperation and Hydraulic Control, and to resolve other issues. There was no change to the storage management plan in the OBMP Implementation Plan to address the implications of the reduction in storage of basin water by 400,000 af as provided for by Reoperation.

The IEUA completed and subsequently adopted a supplemental environmental impact report (SEIR) for the Peace II Agreement in 2010. The technical investigations conducted to support the expansion of desalter groundwater pumping to 40,000 afy and Reoperation also indicated that the Safe Yield of the Chino Basin had become less than that stated in the Chino Basin Judgment due to changes in cultural conditions in the watershed overlying and tributary to the Chino Basin.

Starting in 2011, Watermaster began the technical effort to recalculate the Safe Yield. This work involved updating the hydrogeologic conceptual model of the basin, updating the historical hydrology, updating and recalibrating numerical models that simulate the surface and ground water hydrology of the Chino Basin area, and projecting the surface and groundwater response of the basin to future management plans that included storage management. This work is

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documented in *2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement* (WEI, 2015; hereafter, Safe Yield report)².

In 2017, the IEUA adopted an addendum to the Peace II SEIR to revise the storage management plan in the OBMP through June 30, 2021. The addendum was supported with engineering work that demonstrated that the Safe Storage Capacity could be safely increased from 500,000 af to 600,000 af with the commitment that Watermaster would update the OBMP storage management plan by June 30, 2021.

Need to Update the OBMP

Understanding of the basin hydrogeology and hydrology has improved since 2000, and new water management challenges have been identified that need to be addressed to ensure long-term groundwater pumping sustainability. The strategic drivers/trends that shaped the OBMP in the late 1990s have since changed. There are several drivers and trends that will challenge the ability of the Judgment parties to rely on the OBMP environmental documentation and court approved management agreements (CAMA) to protect their collective interests in the Chino Basin and their water supply reliability. Exhibit 1 graphically illustrates these drivers, associated trends, and their basin management implications. The term “driver” as used herein corresponds to external forces that cause changes in the Chino Basin water space. Grouped under each driver are expected trends that emanate from each driver. The management implications of the drivers/trends on the present and future Chino Basin management are located on the bottom of Exhibit 1. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications. There may be other important drivers/trends and they will be identified in the OBMP update process. The text below summarizes the drivers, trends and management implication shown in Exhibit 1.

Climate Change

Reduced recharge. Present predictions of future precipitation indicate that precipitation patterns will change with more precipitation falling over shorter periods of time and that future droughts will be longer in duration and occur more frequently. This translates into a reduction in precipitation-based recharge to the basin and, if not mitigated, a decline in Safe Yield.

Reduced availability of imported water. Imported water supplies from the State Water Project and surface water sources in the Santa Ana River Watershed will become less reliable with climate change. The availability of imported groundwater from adjacent basins will be reduced for the same reason the Safe Yield of the Chino Basin will likely be reduced.

Legislation and Regulation

Climate science is advancing and generally reporting that the impacts of anthropogenic climate change will occur faster and be more severe than previously anticipated. New laws and regulations will be enacted to reduce greenhouse gas emissions and to mitigate climate change

² This report is located here:

http://www.cbwm.org/docs/engdocs/WEI%202013%20CBWM%20Recalculation%20Model%20Update/20151005_WEI_2013_CBWM_Recal_Model_Final_low.pdf

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impacts. These new laws and regulations will likely place additional restrictions on water use to extend existing water supplies and to protect habitat.

Sustainable Groundwater Management Act (SGMA). Pursuant to SGMA, the Chino Basin is exempt from the development of a Groundwater Sustainability Plan (GSP). Currently, Watermaster is required to annually provide limited information to the state. In the near future, it is likely that adjudicated basins will come under greater scrutiny and be required to demonstrate sustainable groundwater management like that required for non-adjudicated basins.

Conservation. New laws and regulations to increase water conservation will reduce the deep infiltration of precipitation and applied water to the basin and, unless mitigated, will decrease the Safe Yield. Conservation may also impact a party's ability to make use of its pumping rights.

Water quality. Drinking water regulations will continue to become more stringent in the future due to new information on the health effects of various chemical and pathogenic constituents and the ability to measure constituents at increasingly lower detection levels.

Salt and Nutrient Management

TDS Increases in the Basin. Watermaster and the IEUA are co-permittees for the use of recycled water in the Chino Basin. The use of recycled water could become more difficult in the future because the ambient TDS concentration in the Chino Basin is increasing and thereby reducing assimilative capacity. Increases in ambient TDS concentrations in the future will cause an increase in the TDS concentration in recycled water produced by the IEUA and will eventually cause the IEUA to desalt its' recycled water when assimilative capacity for TDS is lost in the Chino North Management Zone. When assimilative capacity for TDS is lost under the current SNMP, the IEUA will be required to desalt its recycled water to the TDS groundwater objective of 420 mg/L prior to reuse in the Chino Basin.

TDS Increases in SWP Water during Droughts. The TDS concentration in the IEUA's recycled water increased during the recent drought due to concurrent increases in TDS concentration in SWP water and almost triggered a requirement, pursuant to the current SNMP in the Basin Plan, to start the planning process to desalt recycled water. Future droughts will likely be longer in duration and occur more frequently. Unless the SNMP is updated, the requirement to implement recycled water desalting could start with the next drought.

Outside Interest in Chino Basin Operations

There is increasing interest from outside entities in how the regional water agencies and Judgment parties operate the Chino Basin. The State of California consistently enacts more restrictive laws and regulations to protect the environment and to improve habitat sustainability. Public Trust related litigation has been used to halt project development and limit water rights. The Resource Agencies, non-governmental organizations, and Santa Ana River parties are showing renewed interest in Santa Ana River discharges for habitat, water supply, and water rights.

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Grant and Low-Interest Loan Project Funding

California voters have a recent history of passing bond initiatives to support water resources projects. The accumulating debt at the national and state level will make it more difficult in the future to obtain grant and low-interest loan funding for water projects. Competition for available funding will increase. Projects approved and constructed in the next few years are more likely to obtain grants and low-interest loans over projects that are deferred into the future.

Improvements in Science and Technology

Laboratory Detection Limits. Improvements in laboratory methods will reduce the detection limits for water quality constituents.

Health Impacts of Chemicals and Pathogens. The number of regulated chemicals will increase, and regulatory standards, based on new research, will become more stringent.

Treatment Technologies. Water treatment technology will improve, enabling water agencies to treat water to more restrictive drinking water standards.

Renewable Energy. The amount of renewable energy available will increase as will the need/requirement to incorporate renewable energy into new projects.

Sensor Technology. There is an increasing trend in the development, cost-efficient availability, and deployment of new terrestrial, aircraft-borne and space-borne sensors that enable the monitoring of the basin and assessment of hydrologic and ecological trends; this will result in improved hydrologic understanding of the basin.

Transparency. Federal and state agencies are requiring that water agencies submit monitoring and other data to them and that these data be made available to the public. The proliferation of these and other publicly available data sources will lead to greater regulatory scrutiny and interest by environmental organizations

The water resource management implications of these drivers and trends for the Judgment parties include:

- reductions in Chino Basin safe yield,
- Chino Basin water quality degradation,
- increased cost of groundwater use,
- reduced imported water availability,
- imported water quality degradation,
- reduced recycled water availability and increased cost,
- recycled water quality degradation, and
- increased cost of Basin Plan compliance.

Mitigation of these implications requires a proactive integrated approach to updating the OBMP.

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The OBMP CEQA Document Needs to Be Updated

The PEIR and SEIR for the OBMP are eighteen and eight years old, respectively: knowledge of the basin’s characteristics has improved since these documents were adopted, water management challenges have intensified, and environmental considerations have changed. The PEIR and SEIR are not sufficiently current to support present decision-making and further investment. The existing environmental clearance is too old to be relied upon for receiving state grant and low interest loan funding and render Watermaster and the IEUA to make decisions relying on the earlier environmental evaluations that are vulnerable to collateral attack.

Accordingly, Watermaster needs to review and update (if necessary) its groundwater management goals, articulate impediments to those goals, update the OBMP and its implementation agreement as required by Paragraph 41 of the Judgment, and complete a new CEQA process.

Benefits from Updating the OBMP

The current OBMP contains a set of management activities that improve the reliability and long-term sustainability of the Chino Basin and the water supply reliability of the Judgment parties. The OBMP was developed in 1998 and 1999, based on the goals of the Judgment parties, the hydrologic understanding of the basin, the institutional and regulatory environment, an assessment of the impediments to achieving the Judgment parties’ goals, and the actions required to remove the impediments and achieve the goals.

The Judgment parties need to consider whether the OBMP goals have changed, update them, and define the impediments to achieving the goals based on the present and expected hydrologic conditions in the basin, and current and projected trends in the institutional, regulatory, and financing spaces. The parties can then develop an action plan to overcome impediments to achieve the updated OBMP goals. In the absence of an updated OBMP, it will grow increasingly difficult to maintain current and projected groundwater pumping and recycled water reuse and to utilize the unused storage capacity in the basin. An updated OBMP will provide the Judgment parties with: a program-level water resources management plan that maximizes their pumping rights, use of recycled water, use of storage space, and an updated CEQA document to provide certainty for implementation.

Process to Update the OBMP

The process for the development of the 2000 OBMP involved the description of the state of the Chino Basin, the articulation of the Judgment parties’ “issues, needs and wants,” the Judgment parties’ development of OBMP management goals, the articulation of the impediments to achieving the goals, the description of the actions required to remove the impediments, the development of an implementation plan and an agreement among the Judgment parties to fund and implement the OBMP, and the preparation of CEQA documentation. The table below summarizes the effort for the 2000 OBMP and the OBMP update. The text that follows summarizes the update process.

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Steps involved in OBMP development

OBMP Development Step		2000	2020
1	Prepare state of the basin assessment	X	
2	Articulate “issues, needs and wants” and management goals	X	X
3	Describe impediments to management goals	X	X
4	Develop actions to remove impediments	X	X
5	Develop implementation plan	X	X
6	Develop implementation agreement	X	X
7	Prepare CEQA documentation	X	X
8	Court approval	X	X
9	Prepare financing plan		X

1. The combination of the existing 2016 State of the Basin Report, annual report of the Ground Level Monitoring Committee, 2018 Recharge Master Plan Update report, and 2018 Storage Framework report are sufficient to understand the current state of the basin. Also, the 2018 State of Basin report is currently in preparation and will be available to the Judgment parties during the OBMP update process.
2. One to two listening sessions will be held to enable the Judgment parties to articulate their “issues, needs and wants” and their recommended goals for basin management. Watermaster staff will prepare documents that combine and systematize these items and obtain concurrence from the parties that their concerns and goals expressed at these listening sessions have been captured in the planning documents.
3. One to two listening sessions will be held to describe the impediments to achieving the goals. Watermaster staff will prepare documents that combine and systematize the impediments and obtain concurrence from the parties that the impediments expressed at these workshops have been captured in the planning documents.
4. Watermaster staff will develop an initial set of actions that if taken will remove the impediments to the OBMP goals, prepare reconnaissance-level cost estimates to implement the actions, and document this work in a draft TM. Up to three listening sessions will be held to present the actions to the Judgment parties, obtain their comments and suggestions, revise the actions, and subsequently finalize the TM.
5. Watermaster staff will create a draft implementation plan for the OBMP update and document it in a draft TM. One or two listening sessions will be held to present the implementation plan to the Judgment parties, obtain their comments and suggestions, and subsequently incorporate them into the draft TM.

White Paper – 2020 Update to the Chino Basin Optimum Basin Management Program

6. Watermaster will provide a facilitated process for the Judgment parties to develop an agreement to implement the OBMP update.
7. The IEUA will prepare the appropriate CEQA documentation for the OBMP update.
8. Upon completion of the implementation agreement and CEQA, Watermaster and the Judgment parties will seek Court approval of the OBMP update.
9. After the CEQA document is adopted by the IEUA, the Judgment parties, the IEUA, and interested entities will prepare a financing plan.

OBMP Update Schedule

Steps 1 through 5, ending with the development of the OBMP implementation plan, will be completed in the period of January 2019 through December 2019. The development of the OBMP implementation agreement and CEQA will be completed in the period of January 2020 through June 2020. Court approval and the development of a financing plan will occur thereafter.

To: Chino Basin Watermaster Stakeholders
From: Watermaster 2020 OBMP Update Team
Subject: 2020 OBMP Update -- Listening Session #1 Memorandum
Date: February 5, 2019

The objectives of this memorandum are to summarize the information provided by the stakeholders during Listening Session #1 and provide information that will assist the stakeholders in reviewing the work products of Listening Session #1 and preparing for Listening Session #2.

Background

During 1998-2000, the Chino Basin Watermaster (Watermaster) conducted a process to develop the Chino Basin Optimum Basin Management Program (OBMP). The OBMP was developed in a collaborative public process that identified the needs and wants of all stakeholders; described the physical state of the groundwater basin; developed a set of management goals; identified impediments to those goals; described a series of actions that could be taken to remove those impediments and achieve the management goals; developed and executed agreements to implement the OBMP; and certified a programmatic Environmental Impact Report (PEIR) pursuant to CEQA.

By 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented, while some have not. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that necessitate that the plan be adapted to protect the collective interests of the Chino Basin parties and their water supply reliability. For these reasons, the Watermaster parties are updating the 2000 OBMP (2020 OBMP Update) to set the framework for the next 20 to 30 years of basin-management activities.

The 2020 OBMP Update will be conducted using a collaborative process like that employed for the development of the 2000 OBMP. A description of the development of the 2000 OBMP and the rationale for and process to prepare the 2020 OBMP Update is included in a white paper prepared for the Chino Basin stakeholders: *White Paper – 2020 Update to Chino Basin Optimum Basin Management Program* (OBMP White Paper). The OBMP White Paper, and all documents relevant to the 2020 OBMP Update, are available on the [Watermaster's ftp site](#).¹

A series of eight public listening sessions are being held by the Watermaster throughout 2019 to support the 2020 OBMP Update. The purpose of the listening sessions is to obtain information and feedback from the parties and other Chino Basin stakeholders to define the collective goals of the parties, the impediments to achieving the goals, the management actions required to remove the impediments, and an implementation plan for the management actions. Watermaster staff will provide key information prior to and during each listening session to help the parties and other stakeholders provide their input on each topic discussed. The objective is for the ideas and opinions of every stakeholder to be heard. Participation in the listening sessions is critical to the development of the 2020 OBMP Update. Watermaster held Listening Session #1 on January 15, 2019.

Summary of Listening Session #1

Listening Session #1 was a four-hour workshop broken down into three main agenda topics:

¹ https://cbwm.syncedtool.com/shares/folder/9abb162877b999/?folder_id=670

- History of the 2000 OBMP
- Rationale for the 2020 OBMP Update – Drivers, Trends, and Implications (Breakout Session)
- Rationale for the 2020 OBMP Update – Issues, Needs, and Wants (Group Participation Session)

Prior to Listening Session #1 the following materials were distributed:

- Meeting agenda
- The OBMP White Paper
- An explanation of the assignment to prepare for Listening Session #1

These materials and a copy of the presentation given during Listening Session #1 are available on the Watermaster's ftp site.

History of the 2000 OBMP

The history of the 2000 OBMP and its implementation was provided by Watermaster staff and its legal, engineering, and environmental consultants. The presentation provided detail on why the OBMP was created; the process to develop it and the associated implementation agreements and environmental review documents; the OBMP Program Elements; and the progress and accomplishments in implementing each of the OBMP Program Elements, including a discussion on what was not accomplished.

Rationale for the 2020 OBMP Update – Drivers, Trends, and Implications

As described in the OBMP White Paper, the strategic drivers and trends that shaped the OBMP in the late 1990s have since changed. Exhibit 1 in the OBMP White Paper was a first attempt to summarize the current drivers and trends shaping water management, and their basin management implications for the Chino Basin parties. "Drivers" are external forces that cause changes in the Chino Basin water space. Grouped under each driver are expected trends that emanate from that driver. The relationship of the drivers/trends to the management implications are shown by arcs that connect trends to implications.

A breakout session was held to obtain input on the proposed drivers, trends and implications in Exhibit 1. The listening session attendees were divided into four groups to discuss changes and additions to the drivers, trends and implications. Each group documented its discussion and one member of each group reported out a summary of the group discussion to all attendees. The input provided by each breakout group was used to revise Exhibit 1 (attached to this memorandum). The following are the revised implications for Basin management that form a rationale for the 2020 OBMP Update:

- Reduced recycled water availability and increased cost
- Reduced imported water availability and increased cost
- Inability to pump groundwater with existing infrastructure
- Imported water quality degradation
- Chino Basin water quality degradation
- Increased cost of groundwater use
- Reductions in Chino Basin Safe Yield
- Recycled water quality degradation
- Increased cost of Basin Plan compliance

The final version of Exhibit 1 will be included as a final deliverable of the 2020 OBMP Update. Additional comments on Exhibit 1 can be submitted in writing to Edgar Tellez-Foster (etellezfoster@cbwm.org).

Rationale for the 2020 OBMP Update – Issues, Needs, and Wants

As described in the OBMP White Paper, the issues, needs and wants of the parties will form the basis of the management goals of the 2020 OBMP Update and inform the identification of impediments to the

goals and action items to remove the impediments. A full group participation session was led by Watermaster staff to obtain feedback from the listening session attendees on their individual issues, needs and wants related to basin management. The listening session attendees articulated the issues, needs, and wants of their associated party in writing and then verbally shared with the full group. The feedback provided by the attendees was transcribed by Watermaster staff and then the needs and wants were organized into similar classes of issues. The classes of issues identified were effectively the same as the implications for basin management defined in Exhibit 1. Table 1 is a summary of the needs and wants of the parties, organized by the basin management issues. Attribution by party was assigned to each need and want.

Next Steps

The next steps in the process to develop the 2020 OBMP Update are:

1. Finalize the descriptions of issues, needs, and wants for basin management in Table 1.
2. Describe the goals for the 2020 OBMP Update, and impediments to achieving the goals.

OBMP Goals and Impediments

For the 2000 OBMP, the Chino Basin stakeholders established four management goals for the OBMP that addressed the issues, needs, and wants of the parties:

Enhance Basin Water Supplies. The intent of the goal was to increase the volumes and variety of available water supplies. This goal applied not only to local groundwater, but also to all sources of water available to the parties (*e.g.*, recycled, imported).

Protect and Enhance Water Quality. The intent of the goal was to ensure the protection of the long-term beneficial uses of the groundwater basin.

Enhance Management of the Basin. The intent of the goal was to encourage stable, creative, sustainable and fair water resources management for broad mutual benefit to all stakeholders and avoidance of undesirable results.

Equitably Finance the OBMP. The intent of the goal was to identify and use efficient and equitable methods to fund OBMP implementation.

While these general goals are as valid today as they were in 2000, it was apparent from the discussions of issues, needs, and wants at Listening Session #1 that the impediments to achieving the goals have changed and that the stakeholders have more focused goals for basin management. The focus of the next two listening sessions will be to identify the issues/needs/wants that are common to most stakeholders and to define focused goal statements and the impediments to achieving the goals. Listed below are four example goals, based on common issues/needs/wants, for the 2020 OBMP Update. Below each goal are some examples of the impediments to achieving the goals, and actions to remove the impediments. The impediments listed are not exhaustive.

Goal #1: Be able to rely on local supplies to meet potable demands for a [6, 12, 18, 24-month] period in the event of a [short-term, long-term] outage of imported water supply.

Impediments to achieving the goal:

- The current capacity to rely on groundwater during these periods is constrained by insufficient pumping capacity, insufficient conveyance, poor quality, and subsidence.
- Exercising storage in the Chino Basin as a way of enhancing local water-supply reliability can cause undesirable results such as subsidence and loss of yield.

Actions to remove impediments and achieve the goal:

- Develop a Storage Management Plan (SMP) to define how to utilize storage without causing undesirable results.
- Build the production, conveyance and treatment facilities necessary to meet demands and operate in accordance with the SMP.

Goal #2: Avoid shutdown of groundwater production facilities due to existing or potential new water-quality regulations.

Impediment to achieving the goal: Insufficient treatment and brine disposal capacity.

Action to remove impediment and achieve the goal: Build conveyance and regional treatment facilities (with ability to expand, if necessary) to treat current and potential future contaminants of concern.

Goal #3: Optimize the use of unused storage space in the Basin by implementing storage and recovery programs.

Impediment to achieving the goal: Exercising storage in the Chino Basin can cause undesirable results such as subsidence and loss of yield.

Action to remove impediment and achieve the goal: Develop a Storage Management Plan (SMP) to define how to utilize storage without causing undesirable results.

Goal #4: Fund [X%] of the implementation of the OBMP Update with supplemental resources, such as grants, low-interest loans, or outside funding partners.

Impediment to achieving the goal: Competition for future grant funding will be fierce; success in obtaining grant funding is uncertain.

Recommended Preparation for Listening Session #2

1. Review the Issues, Needs, and Wants matrix in Table 1. Ensure that the feedback you reported at Listening Session #1 was accurately captured. Come to Listening Session #2 prepared to provide your feedback and add your party's attribution to the needs or wants identified by others, if you deem appropriate. The intent is to finalize Table 1 and use it to identify the specific concerns shared by most stakeholders. These common concerns will serve as that starting point for defining goals for the 2020 OBMP Update.
2. Based on your review of this memo and Table 1, come prepared to suggest and formulate goals for the 2020 OBMP Update and the impediments to achieving those goals.

Exhibit 1 – Drivers and Trends and Their Implications 2020 OBMP Update

Drivers

Trends

Implications

Drivers

Trends

Implications

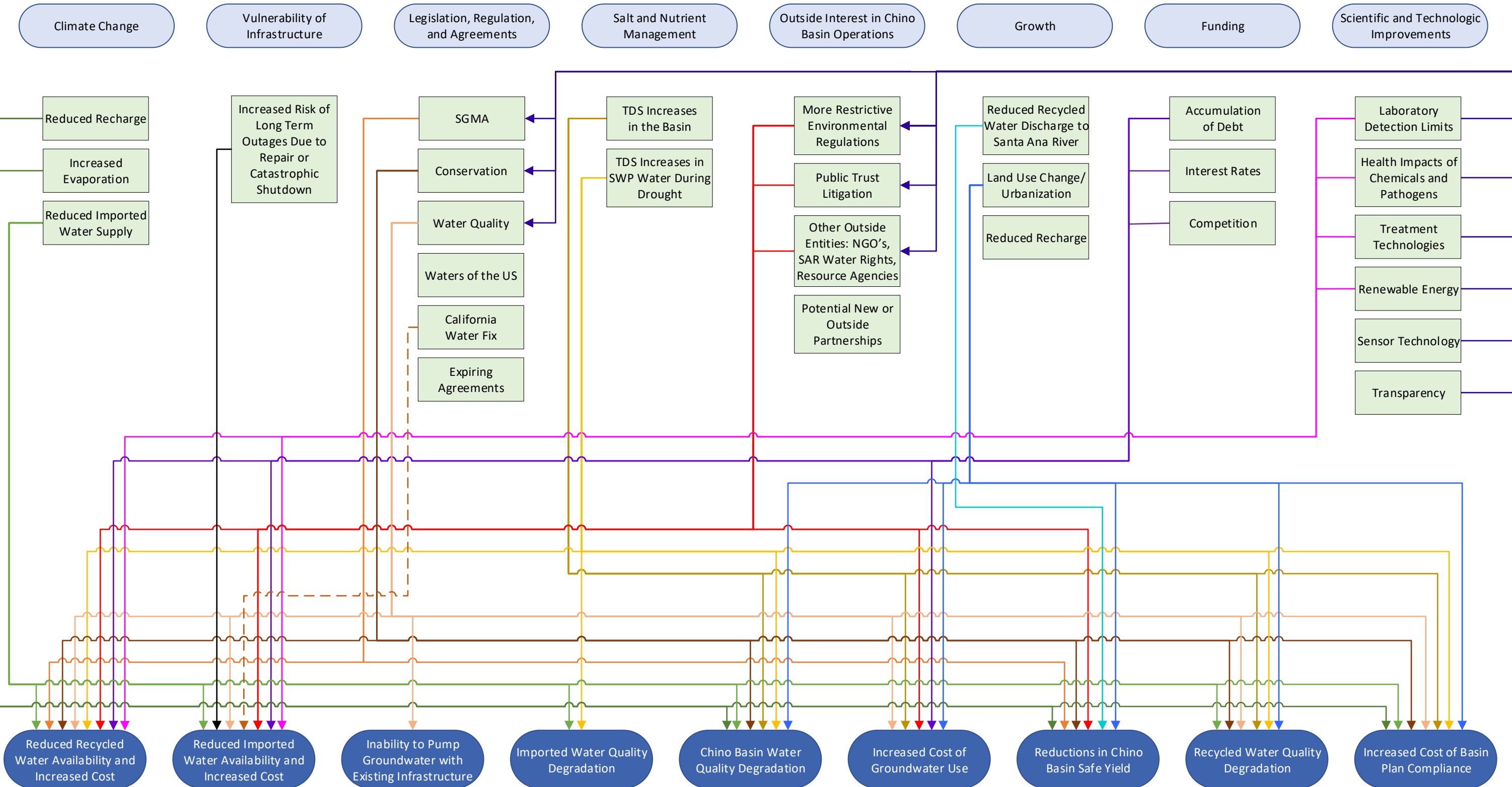


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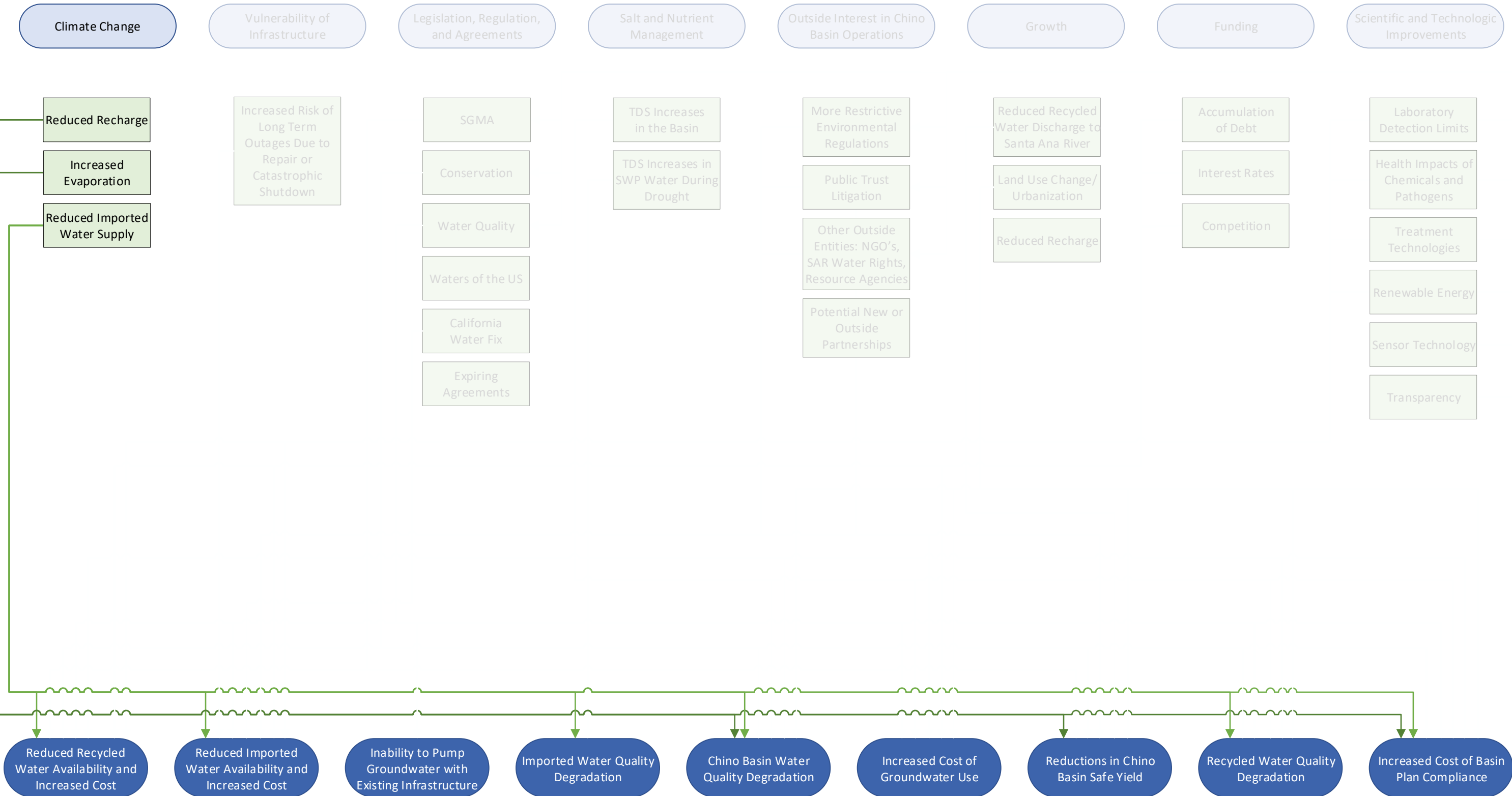


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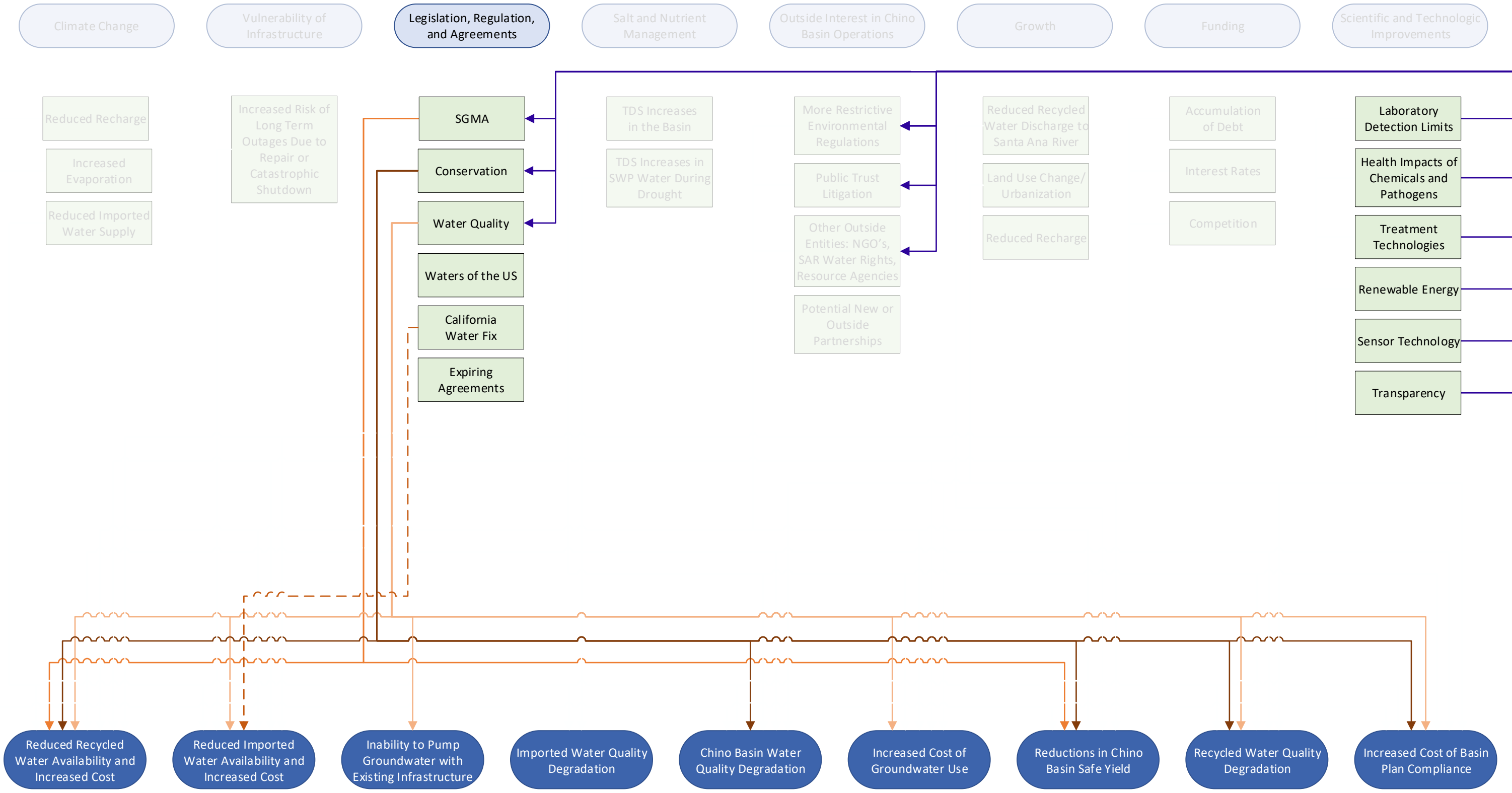


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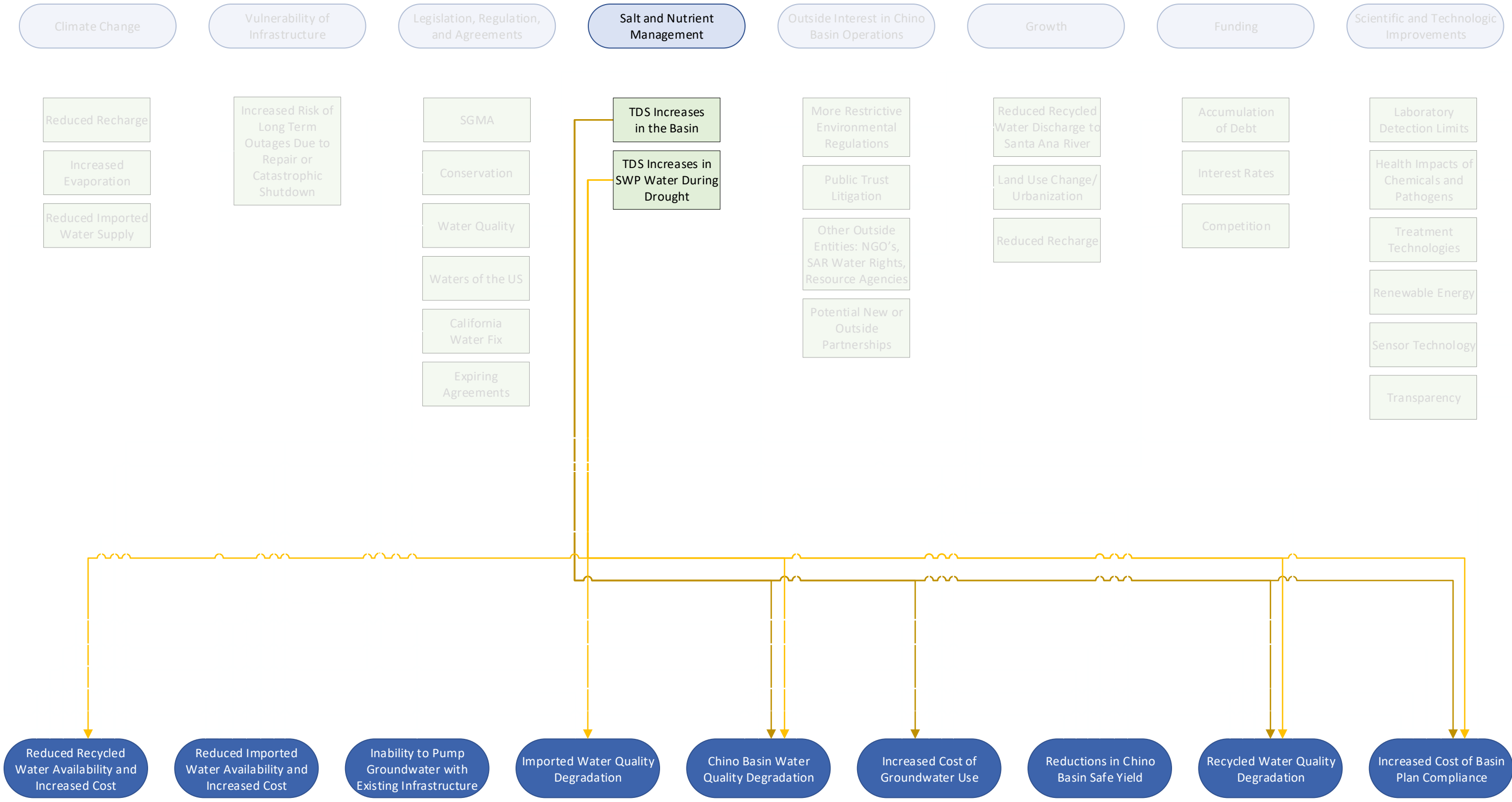


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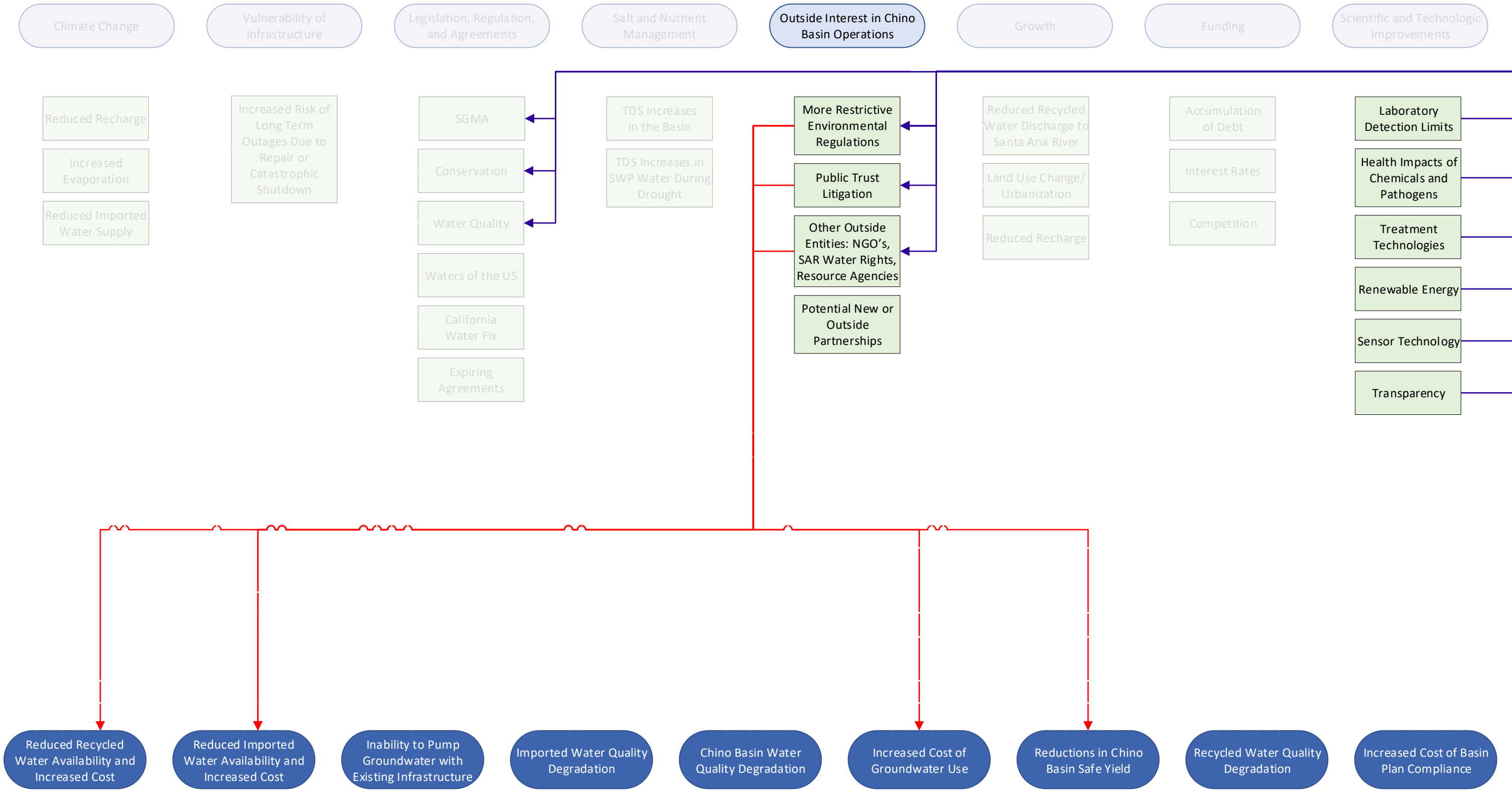


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