March 13, 2017

TO: Carmine DeBonis, Jr., Deputy County Administrator - Public Works
FROM: Jackson Jenkins, Director - RWRD

After last year’s completion of the Five-Year Reporting period on WISP recommended activities, I recommended to previous Deputy County Administrator John Bernal that staff continue reporting on the implementation of WISP goals, recommendations and action plan items. The City of Tucson has decided to end its reporting on WISP.

Accordingly, attached is a WISP Post-Action Report for 2016. It notes progress in advancing comprehensive integrated planning, respect for the environment, water supply and water demand. Post-action priorities include advancement of a Lower Santa Cruz River Management Plan, adaptive reclaimed water management strategies to balance use and County engagement in state water management, CAP system use planning and drought contingency planning.

One of WISP’s goals, to ensure the future of riparian and aquatic habitat along the effluent-dependent Santa Cruz River, remains uncertain. CEP water has not been allocated to the river. Additionally, Arizona’s recharge program does not incentivize development of renewable water supplies by managed in-channel recharge, even though it is inexpensive and is recognized as providing multiple benefits to riparian and wildlife habitat.

There also remains concern that the Colorado River can supply Lake Mead with sufficient inflow to meet a structural deficit, drought and provide water supply for an increasing population within a future of climate uncertainty.

Should you have any questions, please feel free to let me know.

Attachments

c: Linda Mayro, OSC Director
    Kathleen Chavez, Water Policy Manager
The Water & Wastewater Infrastructure, Supply and Planning Study (WISP), or City/County Water Study, was initiated in 2008 and produced a two-phase report assessing existing water resources, infrastructure capacity and demand scenarios. Based upon the first phase framework, to include an extensive stakeholder process, agreement was reached on a range of topics central to sustainable water planning. An action plan was developed to implement the 19 shared goals and 56 recommendations over a five-year period. The WISP Action Plan for Water Sustainability 2011-2015 (Action Plan) was adopted by both Mayor and Council and the Board of Supervisors in 2010. The City and County have submitted a year-end progress report for each year of the plan period. Despite the closing of the plan period, County staff will continue reporting on the progress of WISP goals.

The Action Plan contains four elements, each with programs, goals, recommendations and action items to implement the recommendations:

- **Comprehensive Integrated Planning (CIP) Programs**
  - General and Comprehensive Plan Updates
  - Smart Growth Tools and Regulations
  - Linking Water and Land Use Planning
- **Respect For Environment (RFE) Programs**
  - Collaboration for Environmental Restoration
  - Preservation and Protection of Riparian Areas
  - Multiple Benefit Capital Improvement Projects
  - Lower Santa Cruz River Management Plan
- **Water Supply (WS) Programs**
  - Water Supply and Water Quality
  - Effluent Management
  - Regulatory/Policy Advocacy
  - Drought Preparedness
- **Demand Management (DM) Programs**
  - Planning and Evaluation
  - Consistent Standards and Guidelines
  - Education and Outreach

**Element Goals**

- **Comprehensive Integrated Planning**
  1. Encourage sustainable urban forms
  2. Direct growth to suitable growth areas
  3. Integrate land use and water resources planning
  4. Growth should pay for itself over time and be financially sustainable
- **Respect For Environment**
  1. Preserve existing riparian areas through coordinated regulation, policy and outreach
  2. Identify needs and opportunities for future restoration
  3. Ensure that public projects are multi-benefit including restoration, stormwater management, recharge and public amenity
  4. Ensure the future of riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River
  5. Develop water supply for the environment
- **Water Supply**
  1. Work collaboratively to acquire new water supplies for reliability
  2. Maximize and make efficient use of effluent and other locally renewable water supplies
  3. Address regulatory barriers to maximizing local supplies
  4. Foster increased use of reclaimed water
  5. Be Prepared for climate change and drought
- **Demand Management**
  1. Increase the effectiveness of conservation programming through coordinated planning and evaluation
  2. Establish common water conservation goals and targeted methods
  3. Manage demand through the design of the built environment
  4. Manage demand through changing behaviors
  5. Increase the use of rainwater and stormwater
Previous year-end progress reports have addressed each action plan item associated with the recommendations. As much of the Action Plan has been completed or is a completed continual process, subsequent progress reports will expand on the goals and concept of water sustainability adopted in the WISP Study.

Some Action Plan items have proved problematic, not as widely beneficial as envisioned or narrowly crafted in relation to actual implementation. This is not a critique of the WISP Study or Action Plan as the goals and recommendations provide overarching direction to a sustainable water future and while a specific Action Plan item may not have been achieved, the intent of the predominant goal may have been realized through alternative means or the attempted implementation provided valuable experience or “lesson learned”.

Review of WISP Scope of Work & Guiding Principles:

- City/County need to come to common agreement on location of future population growth increment to 2050
- Urban form, water, and infrastructure planning will directly influence where future population growth will occur
- Locating future population should be done in a manner so as not to disadvantage or adversely impact existing residents
- New growth must be located where it is beneficial to the environment, economy, and conservation of resources
- Large scale infrastructure systems to support the growth centers must be integrated with existing urban infrastructure systems that are in place
- Land use planning must be integrated with water resources and infrastructure for each jurisdiction
- Long term future water supply cannot occur at expense of existing residents or environment

Though the programming period for WISP has ended, the phase reports and action plan remain Board adopted policy recommendations and serve as guidance for County water sustainability efforts moving forward.

Comprehensive Integrated Planning

This element is substantially complete.

Pima Prospers Comprehensive Plan Water Resources Element (4.2) cites the Action Plan directing the Plan Update to “comply with all applicable goals and recommendations in the 2011-2015 Action Plan for Water Sustainability, approved by the Board of Supervisors and the City of Tucson Mayor and Council.”

With adoption of this Comprehensive Plan update, Pima Prospers successfully employs smart growth tools and regulations and links water and land use planning. The urban form is joined by infrastructure availability, resource efficiency and economic development to create resilient communities.

A Pima Prospers implementation steering committee has been formed to oversee 700 action items, guided by a work plan with identified and prioritized tasks to enact the adopted policies. Updated progress reports are submitted quarterly.

Given a large portion of CIP action items are associated with Pima Prospers, future CIP reporting will come from the Implementation Work Plan quarterly progress reports.

Key CIP Successes:

- Pima Prospers and its fusion with other plans; WISP, Conservation Lands System (CLS), Economic Development Plan, County budget, bond and capital improvement programs interlinked to ensure universally shared vision. (CIP 2.2)
- Focused Development Investment Areas Element identifies appropriate growth areas and land uses, balancing regional resources with growth management strategies of appropriate scale and character for the area. (CIP 1.1, 2.1)
- Cooperation between Tucson Water and other water providers to wheel renewable water supplies; direct delivery reduces groundwater pumping in the region. (CIP 19)
CIP Going Forward:

- Eventual development of suitable growth areas and water provider service area policy; location of growth, service area policy and infrastructure impact reliability of a sustainable water supply. Changes in land use, water policy and infrastructure capacity will be continual assessed and reported.
- Directing growth, projecting future population and mapping growth scenarios; comparing new growth model mapping with WISP scenario benchmarking could be a useful tool to investigate population growth, optimization of urban form and development of the four focused growth areas identified in WISP. (CIP 2.4)

The 2015 Year End Report left some action items in a continued status or unresolved with further action after Board adoption of Pima Prospers. These remaining CIP items could be deemed complete in that useful evaluation has served its purpose or discernment of any benefit must be done on a case-by-case analysis.

Carry-Over CIP Action Items:

CIP 4: Explore policy to provide for pre-zoning in growth areas as part of updates to the Plans. (2.1)

Continues on a case-by-case basis; over 250 acres of county initiated rezonings of residential & industrial land uses in the DMAFB environs and State land (Pima Prospers 3.1(1)(b)). Infill incentive district planning initiated for identified growth areas (Flowing Wells, TIA/I10 corridor) to include Zoning Code updates, most notably the Multiple Use (MU) zone (Pima Prospers 3.2(2)).

CIP 11: Revise County’s Cluster Ordinance to improve water efficiency of new development. (1.1)

Pima Prospers expands the application of water efficiency incentives for new development, not singularly focused on cluster form.

CIP 12: Evaluate improvement districts as a tool to purchase natural areas/riparian habitat. (2.3)

More appropriate on a case-by case basis where the benefits accrue to the localized area of taxed property owners; not a region wide tool.

- With closure of these action items, the CIP element is complete in its entirety.

Respect For Environment

This element is mostly complete with the exception of Program 4, Refinement of a Lower Santa Cruz River Management Plan.

Collaboration for Environmental Restoration, Program 1, focus is various habitat conservation plans and public/private cooperation in coordinating regional restoration.

Preservation/Protection of Riparian Areas, Program 2, was purposed to support acquisition of riparian habitat while addressing threats to public land, in part by revising or implementing regulatory frameworks to better protect acquired land.

Multiple Benefit Capital Improvement Projects, Program 3, seeks to expand water harvesting and ecological features built into capital projects and budgets.

The WISP Report committed to shared policy goals that prioritized preservation of existing riparian habitat by minimizing additional loss and protecting against vulnerability to climate change and human action, while engaging the recovery of viable ecosystem functions through restoration.

Key RFE Successes:

- Implementation of Conservation Effluent Pool (CEP) and Conserve 2 Enhance (RFE 5.0)
- County MSCP & Section 10 Permit issuance (RFE 12)
- Lower Santa Cruz Living River Project (RFE 4.0)
- RFCD Green Infrastructure & Low Impact Development (RFE 3.0)
RFE Going Forward

- Competing goals and needs; efforts to maximize and make efficient use of effluent while at the same time ensuring the future of existing riparian habitat along the Santa Cruz River. Reclaimed water use and recharge augments the reliability of water providers supply portfolio but the tradeoff is less water remaining in the river. With changing infiltration and flow regimes, it is uncertain how much water is needed to maintain existing habitat.
- Committing water to the environment; balancing consumptive use with environmental needs and determining where and how to use environmental water. CEP water has not been utilized although a task force has advised potential projects. Recent proposals favor long-term dedication of CEP water to the Santa Cruz. Nevertheless, no application for use of CEP has been made and proposals to divert effluent from the Santa Cruz have been considered.

Carry-Over RFE Action Items:

RFE 2: Establish a Regional Restoration Working Group to inventory resources, develop criteria for restoration and identify initial projects. (2.2)

A Restoration Working Group was never defined nor mentioned in WISP Phase 1 & 2 Reports. WISP stakeholders continue to advocate on behalf of varied interests through the Community Water Coalition and the Tucson Regional Water Coalition. The CEP Task Force, partnering with stakeholders, inventoried potential restoration projects based upon specific criteria.

RFE 5: Work with Audubon and Army Corps of Engineers (ACOE) on watershed-based approach to utilizing group’s 404 in-lieu mitigation fees/funds. (2.1)

Effort has been redirected to development of an Army Corps prospectus for a Canoa Ranch In-Lieu Fee Program.

RFE 16: Develop response/management guidelines by responsible agency to address threats to public land. (1.1)

A Risk Assessment/Action Strategy is being developed for the Cienega Creek watershed to document current conditions, potential future conditions and necessary actions to sustain the ecosystem.

RFE 22: Develop a joint policy on rainwater harvest, stormwater retention, non-potable use, recreation and ecological features in CIP budgets. (3.1)

Region-wide adoption of Low Impact Development/Green Infrastructure (LID/GI) policies, a 2015 PAG Resolution supporting same and RFCD LID/GI Guidance Manual incorporate water harvesting features into municipal infrastructure planning. RFCD LID Working Group coordinates policy guidance, case study and cost benefit analysis.

Program 4: Lower Santa Cruz River Management Plan

RFE 23: Finalize Tres Rios del Norte Feasibility Study, broad concept for Santa Cruz River (SCR), review alternatives with Restoration Working Group. (4.2)

RFE 24: Develop refined estimates of evapotranspiration and infiltration along SCR. (4.2)

RFE 25: Construct project at former gravel pit using effluent and stormwater – evaluate best management of transition to stormwater. (4.3)

RFE 26: Conduct scenario planning to evaluate differing effluent flows, options to maintain riparian & aquatic habitat along SCR. (4.2)

With the adaptation of the Tres Rios del Norte study to more practical smaller, individual projects, effluent partners are scrutinizing potential projects in terms of larger water management strategy. Tucson Water is proposing to relocate a portion (5,000 AFY) of their effluent to the downtown area in a constructed recharge/riparian restoration project-Agua Dulce. Marana has approved development of a conceptual plan for the El Rio Preserve riparian restoration project on the west bank of the Santa Cruz. The County is pursuing an inexpensive, replaceable constructed recharge option (“low bar”) to incentivize the current effluent dependent habitat stretch.
The Living River Project provides insight into the changing effluent flow, water quality and infiltration in the Santa Cruz after extensive wastewater treatment upgrades. A more comprehensive understanding of the altered flow and habitat is well suited to serve as the basis of a management plan especially given the project’s management framework of experts in the Technical Committee.

The Lower Santa Cruz River Basin Study, managed by the Southern Arizona Water Users Association (SAWUA), of which Pima County is a member, and the Bureau of Reclamation, is analyzing water supply and demand imbalances under various scenarios and resultant effect on effluent availability for the river habitat. An environmental sub-team will provide input on preserving the effluent dependent reach of the Santa Cruz.

While valuable efforts, establishment and administration of a management plan is not the end goal for any of these projects though they could be leveraged into an ongoing regional adaptive management river plan (see attached memorandum from the Regional Flood Control District). As an initial step toward formulating such a plan, RFCD is planning a community engagement project to gather information about public values and needs related to the flowing portions of the Lower Santa Cruz River.

Water Supply

Water Supply and Water Quality, Program 1, Effluent Management, Program 2, and Drought Management, Program 4 are substantially complete. The exception is Program 3, Regulatory/Policy Advocacy for Effluent Reclaimed Water, Stormwater and Gray Water.

Water management assumptions have evolved in the five years since WISP adoption. Variability and uncertainty in operational and climate aspects of water supply require adapting management plans.

As example, the WISP action item “City purchases full CAP allocation and increases recharge” is prudent but conditions have changed with Lake Mead close to shortage. The City is now joining drought contingency efforts and forgoing 20% of its recent annual CAP allocation to preserve elevation in Lake Mead and delay shortage declaration. Given the mandated reductions during shortage, and the magnitude to which the cuts impact CAP, protecting Lake Mead volume safeguards the region’s water supply.

The City’s Effluent Master Plan refocuses the delivery of renewable water from imported Colorado water to local recycled water. With questions of the long-term availability of Colorado water, decreasing dependence on imported water vulnerable to shortage helps diversify the City’s water portfolio.

Before 2010, Excess CAP water was available but rapidly declining as long-term contract holders utilized allocations. Since then, no Excess CAP has been available to M&I pools to satisfy even temporary supply- in other words, there is no volume within CAP to expand supply but rather severe reductions could be coming. In the interim, local water providers are storing unused CAP water for the future.

CAP’s System Use Agreement is the successive effort to Project ADD Water. This contract is a comprehensive umbrella framework that enables firming, wheeling and exchange of CAP and non-Project (other than CAP) water through the CAP canal. Additional supply can be wheeled and exchanged and stored water recovered through the canal, maximizing beneficial use of existing infrastructure.

Key WS Successes:

- Completion of ROMP and water quality improvement (WS 2.2)
- Development of County effluent plan- SPUR (WS 20)
- Update of County Drought Management Plan and Vulnerability Assessment (WS 5.0)
- Inter-AMA Firming Project between Tucson-Phoenix (WS 1.0)
- Local Drought Impact Group drought status and impact monitoring, report and recommendation (WS 5.0)
- WEST Center research and testing (WS 2.3)
- Water Innovation potable reuse demonstration award (WS 4.0)
WS Going Forward:

- Maximizing use of effluent and local renewable water, balancing effluent for direct reuse, environment and aquifer recharge; effluent is an increasingly important supply, competition for its applied use will increase.
- Potable reuse; at some point, given drought and a Lower Basin structural water deficit, direct or indirect potable reuse is likely to become necessary.

Carry-Over WS Action Items:

WS 7: Develop joint recharge project in Southeast area — proposed as SHARP. (2.1)

City and County partnered on South Houghton Area Recharge Project (SHARP) through site selection, design, and permitting phases. Development in Southeast area has remained limited following housing downturn. Sufficient flow to justify water reclamation facility is lacking. Without nearby effluent source, cost of supplying recharge and lack of clear use to County negates benefit. City is proceeding solely.

WS 12: Assess impact of gray water on sewer system. (2.5)


Program 3, Regulatory/Policy Advocacy: This program seeks changes allowing for Groundwater Savings Facility credits for turf irrigation, numeric rather than technical based standards for reclaimed, flexibility in water quality and permitting for environmental projects using reclaimed and allowing remediated groundwater in reclaimed system. (3.0)

Dependent on legislative action. Blue Ribbon Panel recommendations reconsidered as part of Governor’s Water Augmentation Council. Pima County has successfully reclassified Tres Rios WRF to an A+ reclaimed facility using monitoring numerical indicators in the permit. This was achieved by negotiating with ADEQ rather than seeking rule change. Comments regarding the need for GSF credits for turf irrigation in an urban setting were submitted to ADWR during the recent Fourth Management Plan public comment period. Comments regarding the need for facilitating environmental project reuse were submitted to ADEQ’s reclaimed water stakeholder process.

Demand Management

This element is substantially complete.

The cost and timing of new water supply acquisition can be forestalled by demand reduction efforts, buying time for water providers allowing for adaptation of resource management strategy.

Tucson Water has recorded a continual decline in water demand; a low of 117 gallons per capita day (80 gpcd residential) in 2015- representing a 26% reduction since 1980 despite twofold population growth. A SAWUA funded dynamic modeling and scenario study examined changes in water consumer base, municipal water demand, operations and revenue requirements for providers.

Successful conservation locally serves the larger purpose of protecting Lake Mead levels and avoiding mandated CAP reductions.

Key DM Successes:

- RFCD LID/GI Working Group and development of a LID/GI Guidance Manual. (DM 5.0)
- AutoCASE/Envision Rating monetizes LID/GI net social benefit for economic and risk analysis and certification. (DM 5.0)

DM Going Forward:

- Decreasing demand and effluent; lower influent means reduced effluent volume, continual increasing reclaimed volume paired with population growth may not be realized to the degree previously assumed, impacting reclaimed water use planning.
New, innovative conservation and efficiency strategies will be required; delaying a Colorado River shortage may depend on keeping one foot of elevation in Lake Mead. The probability of reduction to municipal allocation by 2026 has increased by 25% based on updated hydrologic study. Conservation will be required—either to sustain the reservoir or to absorb CAP reductions if unsuccessful.

Carry-Over DM Action Item:

DM 4: Evaluate outdoor water use requirements, water budgeting methods, drought tolerant plant lists and appropriate watering practices for urban desert landscapes. Use results to inform development of more efficient and consistent outdoor water use standards and practices. (3.1)

Pima Prospers goals direct landscape water use efficiencies. 3.4 (2)(9)(n)

Conclusion

The City/County Water Study was deliberative in linking future water reliability with how jurisdictions integrate water, wastewater and stormwater resource planning with land use and environmental goals across the region. The Study was also ahead in realizing the need to diversify from a heavy reliance on an imported renewable water supply and development of more local supply options.

The Action Plan has been successful in guiding policy in linking land use and water planning, establishing a water supply for the environment, improving renewable water supply and effluent management and furthering increased use of stormwater to lower demand. Each element of the Water Study, Comprehensive Integrated Planning, Respect For Environment, Water Supply, and Demand Management, has been advanced through County and City projects and planning. Regional water management has benefited from additional wheeling agreements and planned expansion of wet-water management (recharge and recovery in area of impact).

Post Action Plan priorities to advance include a Lower Santa Cruz River Management Plan, adaptive reclaimed water management strategies to balance use and County engagement in state management, CAP system use planning and drought contingency planning.

There is a need for better integration of water supply with environmental needs. There is a lack of progress on allocating CEP effluent for environmental purposes. Additionally, the current state recharge program does not incentivize the development of a renewable water supply by managed in-channel recharge— even though it is inexpensive and is recognized as a multi-benefit project due to riparian and wildlife habitat supported by flows through natural washes and streams. Full credit for recharge volume is limited to constructed recharge projects, forcing a competition between water supply for off-channel projects and environmental restoration.

The Colorado River is unlikely to supply Lake Mead with enough inflow to meet a structural deficit, drought and increasing population in a future of climate uncertainty. Adhering to and augmenting WISP goals will guide Pima County’s contribution to water sustainability, locally and Basin-wide.
October 4, 2016

TO: John M. Bernal, P.E., Deputy County Administrator for Public Works  
FROM: Jackson Jenkins, Director  
SUBJECT: Water and Wastewater Infrastructure, Supply and Planning Study (WISP)

This memorandum responds to your June 3, 2016 memorandum regarding the City of Tucson’s final WISP Report and assessment of actions for continuing efforts to address water supply topics. We recently received the City of Tucson’s final report (attached). The report addresses three key areas:

**Land Use:** Similar to the County’s Comprehensive Plan update, *Pima Prosper*, the City states the Study and Action Plan guided and informed development of *Plan Tucson General and Sustainability Plan* as “foundational pieces”.

For successful integration of land use and water resource planning, appropriate future growth areas need certainty of reliable water service. The Study identified four potential growth areas; Southlands, Houghton Corridor, Southwest area, and Infill & Redevelopment. The City states *Plan Tucson* directs growth to suitable areas by adhering to the Future Growth Scenario Map from the Study’s technical documents and its service area policy is aligned to annexation goals.

**Tucson Water Service Area Policy:** Following the WISP Study’s completion, the City’s service policy was changed in 2010 and later refined in 2013 with the Citizens Water Advisory Committee’s (CWAC) recommendations.

The service area policy designates a Non-Expansion Area for development in unincorporated Pima County, outside of obligated and proposed service areas. Expansion into proposed service boundaries may require annexation into the City. A designated Non-Expansion parcel could receive service if the request meets certain criteria:

1. The parcel must be abutted on three sides by parcels served by Tucson Water;
2. Parcels must contain less than 20 acres of net developable land; or if commercial, less than 50 acres. The mixed use threshold is 50 acres if the residential portion is less than 20 acres;
3. Commercial development that meets the Primary Jobs Incentive of $5 million in new or expanded facility investment, creating 25 new jobs at 150% of mean annual earnings can request service.

An annual review of the service area policy is undertaken by the Citizens’ Water Advisory Committee to include stakeholder engagement. Any proposed revisions to policy are forwarded to Mayor and Council.

An Administrative Review Board was established to allow for appeals of water service denials by reviewing decisions to ensure service policy was correctly applied. The previous denial process was closed to the appellant and the public. County staff monitors Review Board appeals and few cases are brought to the
agenda (four denials were brought in 2014); staff also reviewed the number, location and type of denials following the service policy refinement.

In addition to the expansion criteria, a Water Policy Decision Making Framework is stated to guide staff in furthering proposed Inter-governmental agreements, regulations and policies.

**Water Supply:** The City’s report addresses water supply through several initiatives. The Water 2050 Plan addresses contingencies for drought both locally and on the Colorado River. After many years of drought, the probability for a shortage of Colorado River is estimated to be fifty percent in 2018. Although first shortage tier does not affect the city’s municipal allocations, CAP and the US Bureau of Reclamation are developing a contractual agreement to wheel Non-Project Water through the CAP canal which would allow the delivery of new water resources within the state to CAP users. County staff are monitoring the CAP System Use Agreement effort that could expand firming, wheeling and exchange. The City’s updated 2050 Plan also contains response strategies to prepare the community for eventual shortage conditions to CAP deliveries.

Tucson Water’s potable demand continues to trend downward; the residential average is 81 gallons per person per day. Tucson Water is implementing rebates for high-efficiency toilets, irrigation efficiency improvements, rainwater harvesting and gray water application, as well as education and water-waste enforcement. The recycled water program identifies best practices and makes recommendations for maximizing the use of Tucson’s local renewable water supplies.

With the largest Central Arizona Project (CAP) municipal water allocation, Tucson Water can meet current customer demand and the addition of approximately 360,000 new customers. Tucson Water recharges 144,172 acre feet/year of CAP water at its Clearwater facilities then recovers about 100,000 acre feet for annual demand, thus banking over 40,000 acre feet each year. Tucson Water wheeling agreements have been successful in facilitating the direct delivery of other water providers’ CAP allocations, replacing groundwater pumping in areas lacking connection to the CAP canal.

Tucson Water continues to work with regional water providers to firm and wheel water supplies locally.

**Recommendation:** With the various water resource planning activities and strategies being developed, it is recommended that County staff continue reporting on the implementation of WISP goals, recommendations and action plan items. Staff will also continue monitoring the Tucson Water’s Water Service Area Review Board and tracking service denials as well as reviewing any service policy changes that may be recommended through the Citizens Water Advisory Committee. Local government and water providers’ agendas are also routinely screened for relevant policy items. In addition, the annual plans of the Arizona Water Banking Authority and Central Arizona Groundwater Replenishment District are reviewed for progress in bringing water resources to Pima County.

Should you have any questions, I am available at your convenience.

**Attachments**

c: Linda Mayro, Director Office of Sustainability and Conservation
Kathy Chavez, Admin Support Services Manager - OSC
MEMORANDUM
Public Works Administration

DATE: June 3, 2016

TO: C.H. Huckelberry
County Administrator

FROM: John M. Bernal
Deputy County Administrator

RE: Water and Wastewater Infrastructure, Supply and Planning Study (WISP)

I have recently requested that the Regional Wastewater Reclamation Department consult with their Tucson Water counterparts about the possibility of continuing the WISP effort beyond the original programming period of five years that ends in 2016. As noted in the attached May 26, 2016 memorandum, Tucson Water is preparing their fifth and final year-end report and will share this document with Pima County prior to finalizing. The specific proposal to continue with the WISP effort is not immediately favored by the Tucson Water staff and apparently will not be given further consideration.

I agree with the RWRD report that the elements in the Pima County Comprehensive Plan Update, Pima Prospers, give considerable attention to water resources and the proper management of such resources that are available to Pima County. In particular, the Physical Infrastructure Chapter of Pima Prospers has a Water Resources Element in the action plan and, from review of the updated status reporting for Pima Prospers Implementation, advances are being made to complete the various tasks required under the Water Resource Element.

Given that Tucson Water is the region's major water supplier, I believe that we should await their final WISP report to assess what actions are being proposed for continuing the various efforts that were acknowledged in the last five years of continuous attention to this matter. If the City of Tucson report does not effectively address water supply topics, I recommend that we initiate further discussions at the staff level to ascertain what actions might be jointly taken to assure that we adequately analyze and review this important topic.

The continued growth and development in our community is heavily dependent on a secure water supply. Actions that were identified in a WISP guided our directions over the last several years and need to be continued to assure that the reliable supplies are sustained. Obviously, the actions that we have taken in our Regional Wastewater Reclamation Department have also improved the quality of our effluent such that the impacts to the riverine environment are positive and are improving the natural environment that we have so heavily emphasized in adopting our Multiple Species Conservation Plan and the, soon to be achieved, Section 10 Permit.

Therefore, no immediate action needs to be taken on this matter. I am available to discuss this topic if you determine that other actions are necessary.

JMB:jgs

Attachment

Cc: Jackson Jenkins, Director, RWRD
    Linda Mayro, Director, OSC
    Carmine DeBonis, Director, DSD
    Carla Blackwell, Deputy Director, DSD
    Kathleen M. Chavez, Water Policy Manager, RWRD
May 26, 2016

TO: John M. Bernal, P.E., Deputy County Administrator - Public Works

FROM: Jackson Jenkins, Director - RWRD

SUBJECT: Water and Wastewater Infrastructure, Supply and Planning (WISP) Study
         Your May 11, 2016 Memorandum

As you requested, staff has explored with our City of Tucson counterparts whether there is an interest in initiating a new Water and Wastewater Resources Study to address continuing challenges of meeting water and wastewater service demands for our region.

My staff met with Tucson Water staff on May 16, 2016. Tucson Water reports there have been no discussions internally about a second WISP effort. They noted that both the city and county general plans, Plan Tucson and Pima Prospers, have been adopted. Tucson Water is preparing its fifth and final WISP year-end report and will be sharing it with the County in the near future. Tucson Water staff recommends a joint close-out memorandum to their respective city and county management.

The Water and Wastewater Infrastructure Supply and Planning (WISP) Study and subsequent Action Plan adopted by the Board has reached the end of its programming period. A Report Card has been provided annually, reviewing achievement of the goals, recommendations and Action Plan items by the County and City of Tucson. Some Action Plan items have proved problematic, not as widely beneficial as envisioned or narrowly crafted in relation to actual implementation. This is not a critique of the WISP Study or Action Plan as the goals and recommendations provide overarching direction to a sustainable water future and while a specific Action Plan item may not have been achieved, the intent of the predominant goal may have been realized through alternative means or the attempted implementation provided valuable experience or “lesson learned”.

The following list of unrealized or re-tasked action items contains the Action Item with the identified recommendation and overall goal. Also included is the latest update from the 2015 Report Card.

**Comprehensive Integrated Planning (CIP)**

1. **CIP 11:** Revise County’s Cluster Ordinance to improve water efficiency of new development. (1.1)

   Recommendation 1.1: Require and encourage smart growth principles

   Goal 1.0: Encourage sustainable urban forms

   2015 Report Card: CONTINUING. COUNTY LEAD. Review of the County’s Cluster ordinance for changes, including water efficiency, considered after the Plan update adoption. If water efficiency application was limited to the cluster ordinance, little would be accomplished given how few cluster projects are done. This has been expanded overall in a voluntary, incentivized manner well beyond cluster development in Pima Prospers.
2. CIP 12: Evaluate improvement districts as a tool to purchase natural areas/riparian habitat. (2.3)

Recommendation 2.3: Acquire open space to define desired growth areas

Goal 2.0: Direct growth to suitable growth areas

2015 Report Card: County concluded research into the creation of an improvement district to purchase the 280-acre Painted Hills property in the Tucson Mountains but found approach problematic- taxing a small group of property owners for a region-wide benefit. As a tool, this Action Plan Item may be more appropriately applied when benefits accrue to a more localized area.

Water Supply (WS)

1. WS 14: Pursue bond funding for reclaimed expansion benefitting public use projects. (4.1)

Recommendation 4.1: Expand financing options

Goal 4.0: Foster increased use of reclaimed water

2015 Report Card: COMPLETED. COUNTY LEAD. NRPR submitted bond project scope for funding extending reclaimed water lines to county parks. RFCD has extended reclaimed water lines to the new Paseo de la Iglesias Project on the Santa Cruz River Park between Ajo and 29th Street, and NRPR continues to evaluate opportunities to extend reclaimed lines on other sections of the Santa Cruz River Park along with other County parks. Bond packages dependent upon voter support and approval.

2. WS 22: Advocate for regulatory changes to expand use of gray water through Blue Ribbon Panel (BRP) participation. (2.5)

Recommendation 2.5: Evaluate greywater expansion

Goal 2.0: Maximize and make efficient use of effluent and other locally renewable water supplies


3. WS 23: Lobby for ADEQ to recognize rainwater harvesting and green infrastructure as stormwater management Best Management Practices. (2.6)

Recommendation 2.6: Encourage rainwater harvesting

Goal 2.0: Maximize and make efficient use of effluent and other locally renewable water supplies


4. WS 24: Change ADWR policy to provide Groundwater Savings Facility credits for turf irrigation through participation in BRP. (3.1)

Recommendation 3.1: Address groundwater credits for incentives to convert to reclaimed
Goal 3.0: Address regulatory barriers to maximizing local supplies


5. WS 26: Flexibility in water quality and permitting for riparian and environmental projects using reclaimed – BRP. (3.3)

Recommendation 3.3: Work with ADEQ and DWR on water quality standards for riparian projects

Goal 3.0: Address regulatory barriers to maximizing local supplies


6. WS 27: Regulation changes to allow remediated groundwater in reclaimed system – BRP. (4.5)

Recommendation 4.5: Evaluate other uses for reclaimed and remediated water for municipal and environment needs

Goal 4.0: Foster increased use of reclaimed water


Respect for the Environment (RFE)

1. RFE 5: Work with Audubon and Army Corps of Engineers (ACOE) on watershed based approach to utilizing group’s 404 in-lieu mitigation fees/funds. (2.1)

   Recommendation 2.1: Develop regional policy on regulatory compliance projects

   Goal 2.0: Identify needs and opportunities for future restoration

   2015 Report Card: CONTINUING. COUNTY LEAD. County adapting Action Item by development of a new Army Corps of Engineers prospectus for Canoa Ranch In-Lieu Fee Program.

2. RFE 23: Finalize Tres Rios del Norte Feasibility Study, broad concept for Santa Cruz River (SCR), review alternatives with Restoration Working Group. (4.2)

   Recommendation 4.2: Develop a “Lower Santa Cruz River Management Plan”

   Goal 4.0: Ensure the future of riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River

   2015 Report Card: CONTINUING. COUNTY LEAD. Purchase of land completed in 2012, El Corazon de Tres Rios Del Norte proposed multi-phase plan, Congressional authorization approved. Latest ACOE Feasibility Study is being amended to refocus on the area near the SCR / Rillito / CDO confluence.
3. **RFE 25:** Construct project at former gravel pit using effluent and stormwater — evaluate best management of transition to stormwater. (4.3)

Recommendation 4.3: Build upon pilot restoration demonstration projects to develop a portfolio of multi-purpose projects.

Goal 4.0: Ensure the future of riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River.

2015 Report Card: CONTINUING. COUNTY LEAD. As component of El Corazon de Tres Rios Del Norte proposed project.

Should you have any questions, please feel free to let me know.

Attachment

C: C.H. Huckelberry, County Administrator
   Kathleen M. Chavez, Water Policy Manager
MEMORANDUM
Public Works Administration

DATE: May 11, 2016

TO: Jackson Jenkins, Director
    Regional Wastewater Reclamation

RE: Water and Wastewater Infrastructure, Supply and Planning (WISP) Study

The March 15, 2016 memorandum, prepared by Kathy Chavez, was transmitted to the County Administrator under both of our signatures. No further action has been taken as of yet, with respect to this 2015 year-end progress report. I have, however, briefly reviewed with the County Administrator the concept of initiating a new WISP study that would be undertaken jointly by the City and the County for a future planning period. In particular, I note that while the current five-year implementation for WISP has reached completion, there are several ongoing County programs that were enumerated in the March 15th memorandum. Presumably, the City of Tucson is similarly advancing certain actions that were envisioned under the planning study developed by the two jurisdictions.

Please have your staff explore, with their respective City of Tucson counterparts, whether there is an interest in initiating a new Water and Wastewater Resources Study to address continuing challenges of meeting the water and wastewater service demands for our region. Before embarking on this new study, we must formalize the initiation of such an effort with a written communication to the City Manager's office.

JMB:jgs

Attachment

Cc: C.H. Huckelberry, County Administrator
    Kathleen M. Chavez, Water Policy Manager, RWRD
MEMORANDUM

DATE: August 12, 2016

TO: Honorable Mayor and Council Members

FROM: Timothy Thomure, P.E.
Director
Tucson Water

SUBJECT: 2015 Annual Report - City/County Water and Wastewater Study Action Plan

I am pleased to report to you on progress that has been made in the fifth and final year of the City/County Water and Wastewater Study Action Plan for Water Sustainability. Mayor and Council adopted the five-year Action Plan in November 2010, and since then it has helped guide the City’s efforts toward water reliability and sustainability. A copy of the Plan and all background materials on the Study are available on-line at http://tinyurl.com/WISP-Plan. Below is a summary of progress made during the five-year Action Plan, through 2015:

- **Plan Tucson** – The November 2013 voter ratification of a new General Plan for the City of Tucson provided for the incorporation of goals and policies from the City/County Water Study into the City’s primary long-range planning guidance document. The Study and the Action Plan were foundational pieces in the preparation of Plan Tucson. Additionally, Plan Tucson furthers specific action items from the City/County Water Study such as the Future Growth Scenario Map, which directs growth to suitable growth areas and areas with existing infrastructure. The City/County Water Study recognized that achieving a sustainable water future requires a rational plan for growth that addresses the form, location, and cost of growth, as well as the efficient and sustainable allocation of water to serve growth.

- **Water 2050 Plan** - An update of the Tucson Water Plan 2050 was completed in 2012. All aspects of the revised Plan deal with contingencies for drought both locally and on the Colorado River, the primary source of Tucson’s potable water supply, via the Central Arizona Project canal. The updated Plan included consideration of CAP supply shortages after 2040, a date that was considered conservative based on information then available from the Central Arizona Water Conservation District and the Bureau of Reclamation. Probabilities of shortage were presented to the water community at the end of 2012 with the “Colorado River Basin Water Supply and Demand Study.” Recent BOR projections indicate an increasing likelihood of CAP supply shortages as early as the 2020s. However, actions taken by Tucson Water have prepared the community for eventual shortage conditions, as detailed by the response strategies presented in the updated Plan 2050.

- **Water Conservation** – Tucson Water potable demand continues to trend downward with a residential average of 81 gallons per capita per day (GPCD), and 117 GPCD for average total demand in 2015. Through the end of FY 2015, the conservation fee collected for every ccf (hundred cubic feet) of water sold has resulted in over 889 million gallons of savings, more than $6 million invested in community incentives, over 38,000 high-efficiency toilet and urinal
installations, and over 900 irrigation efficiency, rainwater harvesting, and graywater applications received. Tucson Water continues to provide funding for three education partners: Arizona Project WET, SmartScape, and the Environmental Education Exchange. In FY 2015, these partners educated over 43,000 students, provided training for over 580 teachers and 2,500 local professionals, and reached over 4,700 adults, resulting in a projected water savings of 1.5 million gallons. The conservation division continues to have a strong water-waste enforcement team, with two conservation inspectors visiting nearly 800 commercial water customers in FY 2015. The division also collaborates with the Zanjeros water audit team to provide information for residential customers.

- **Rainwater Harvesting** – Through the end of FY 2015, the rainwater harvesting incentives program processed over 800 applications with more than $1 million invested in community incentives. The program promotes passive and active rainwater harvesting systems with a projected water offset of over 12.2 million gallons, representing the estimated cumulative storage capacity of installed systems since the start of the program.

- **Recycled Water Program** - Introduced in December 2013 as the Recycled Water Master Plan, the Recycled Water Program is now being implemented by Tucson Water. This critical step in the creation of a sustainable water future identifies best practices and makes recommendations for maximizing the use of Tucson’s local renewable water supplies. The purpose of Tucson Water’s Recycled Water Program is to use the City’s effluent resources to maximize wet-water supply benefits and overall water resource reliability for Tucson Water customers. Early stages of the Program’s implementation have included community outreach through staff presentations, surveys, and focus group discussions, while preliminary technical activities have included treatment train and conveyance route studies. Full implementation of the Program will take place over the next 10-15 years.

- **City Water Service Area Policy** – The continued implementation of the City’s Water Service Area Policy is a critical element in creating a sustainable water future by defining where water resources and infrastructure will be directed based on social, economic, and environmental considerations. The Water Service Area Policy is aligned with the City’s annexation goals which help bring additional state shared revenue to the region.

- **Wheeling Agreements** - Tucson Water continues to facilitate the delivery of renewable supplies to areas previously reliant on groundwater by entering into wheeling agreements with other water providers. Wheeling agreements also help to ensure property owners outside the Tucson Water Service Area have water service options. Wheeling agreements are now in place with Oro Valley, the Pasqua Yaqui Tribe, Vail Water Company, and Metro Water District. These entities are able to utilize their CAP allocations to serve their customers, rather than relying solely on groundwater.

- **Mixed Use Development and Infill** - The Mayor and Council have taken several actions toward the goal of a more sustainable urban form, with positive impacts on future water use, water infrastructure, and energy costs. Construction of the Modern Streetcar is the most significant effort the City has made toward encouraging infill and investment within the downtown and university areas. Other related initiatives include the Streetcar Land Use Planning process, the various economic incentives in place to encourage investment, the redevelopment of the Ronstadt Transit Center as a mixed use transit center, the Urban Land Institute Advisory Service Panel, and amendments to the Infill Incentive District.

- **Water Quality** - Tucson Water continues to be vigilant in the monitoring of and reporting on water quality. The Advanced Oxidation Process Treatment Facility to treat 1,4 Dioxane was
built during the five-year Action Plan period and has been operating continuously since March 3, 2014. Water samples taken at the designated Point-of-Entry (POE) into the distribution system reflect less than detection levels of both 1,4-dioxane and TCE.

- **New Water Supplies** - Tucson Water continues to work with regional partners to develop procedures for acquisition and finance of new water supplies. The U.S. Bureau of Reclamation and the CAWCD Board are developing a standard wheeling agreement that would make it possible to purchase additional supplies and have them delivered to Tucson. In the meantime, Tucson and Phoenix have entered into an Inter-AMA self-firming agreement, which will be a wet-water benefit to both cities during any potential shortage of our CAP allocations. After a successful pilot period that began in late 2014, Tucson Water staff is working with Phoenix and CAP staff to expand and extend the agreement.

- **Reclaimed System Modifications** – During the five-year Action Plan period, Tucson Water completed construction of three new recharge basins at its Reclaimed Water Treatment Plant. The additional basins allow more consistent capture of effluent from the new Agua Nueva Wastewater Reclamation Facility, ensuring that customers' reclaimed water demands can be accommodated. Necessary modifications to the Reclaimed Treatment Plant's disinfection facilities were also made, ensuring that the reclaimed system remains in compliance with its permit limitations while also utilizing effluent from Agua Nueva WRF. In the southeast area of the City, the Southeast Houghton Area Recharge Project (SHARP), a joint project of Tucson Water and Pima County Regional Wastewater Reclamation Department, is progressing.

- **Habitat Conservation Plan** - In consultation with the U.S. Fish and Wildlife Service (F&W) and a Technical Advisory Committee, Tucson Water and the Office of Conservation and Sustainable Development completed development of a Habitat Conservation Plan (HCP) for Tucson Water's retired farm properties in Avra Valley. The HCP will help balance the community's long-term water supply needs with the needs of plants and wildlife on Tucson Water's Avra Valley lands. With the establishment of a land-management contract with BKW, Tucson Water is confident it is ready to successfully execute the HCP. The final draft has been reviewed by F&W, and Tucson Water has submitted its application for an Incidental Take Permit on its HCP lands.

- **Conserve2Enhance** – The C2E program funded two Enhancement Projects in 2015, one neighborhood project in the Feldman's neighborhood and one project at Sky Islands High School (formerly TUSD School, Anne E. Rogers Elementary). To date, a total of nine projects have been funded by C2E with a total investment of $56,000 from community donations through www.conserve2enhance.org and through the Utility Services bill checkbox for “Open Space and Riparian Enhancement.” The Feldman’s Neighborhood Association received $7,000 to create a series of street-side water harvesting basins in the right-of-way to capture stormwater from First Ave. These basins were excavated and built in the fall and have already received stormwater from several rain events and are working as designed. This impressive neighborhood continues to hold trainings to educate neighbors and inspire action. Sky Islands High School received $5,000 to implement the first phase of their site master plan, which involves creating basins along their school entry drive to mitigate flooding, create new native habitat, and enhance the appearance of the school entrance. The C2E program also had a formal groundbreaking celebration at the Palo Verde Neighborhood Park, complete with a sign unveiling, plant watering and speeches by Mayor Rothschild, Tucson Clean & Beautiful Director Joan Lionetti and Tucson Water representatives. To date, 192 C2E participants have saved 8.7 million gallons of water and, in 2015, over 800 checkbox donors contributed nearly $11,000. As a result of all C2E projects, over 300 plants and trees have been planted more than 40 water harvesting features have been installed throughout Tucson.
• **Conservation Effluent Pool** – The CEP Task Force developed a list of potential candidate projects that could be supported by the 10,000 acre-feet of effluent/reclaimed water available through the CEP. The Task Force developed evaluation criteria for assessing the environmental, social, and economic benefits associated with projects. A draft report describing these potential projects and their benefits is under development.

**Background on the City/County Water Study and Action Plan**

In February 2008, the Mayor and Council and Pima County Board of Supervisors approved a scope of work for a joint Water Infrastructure, Supply and Planning Study. The purpose of the Study was to improve City/County collaboration on water and wastewater issues and to define and plan for a sustainable water future for the region. The scope set forth a five-phase scope of work, with a City/County effort initiating the process. To provide independent review and oversight of staff work, the Council and Board appointed a Joint City/County Oversight Committee (Committee), consisting of four members each from the Citizens Water Advisory Committee and the Regional Wastewater Reclamation Oversight Committee and two members each from the jurisdictions’ Planning and Zoning Commissions, for a total of 12 members. At the explicit direction of the Council and the Board, staff and the Committee implemented a broad-based public process for engaging the community in Phases I and II.

Phase I was completed in April 2009 with both governing bodies endorsing the Phase I Report. The goal of Phase I was to assemble basic information on City and County water and wastewater systems and resources and to identify the elements that must be addressed as part of water sustainability. A key outcome from Phase I was improved cooperation and fact sharing between the two largest water utilities in the region, a necessary basic foundation in moving toward a sustainable water future.

Key findings from Phase I included:

- Our water and wastewater systems are generally reliable, well maintained and newer than those found in many other cities. However, these systems are aging, and both water and wastewater rates will need to increase in the future to fund the rehabilitation of our systems and to meet increasingly stringent water and wastewater quality standards.
- Due to past investments in acquiring and delivering Central Arizona Water Project (CAP) water, Tucson Water has a reliable and renewable water supply that can meet the needs of current residents and provide for a significant amount of growth (approximately 360,000 additional customers).
- Faced with a variety of uncertainties, we need to be prudent with our water resources. Global warming, climate change, and long-term drought could affect local water demand, rainfall amounts and future flows of the Colorado River.
- Any expansion of the Tucson Water service area must be done thoughtfully and with deliberation. The recent past shows that demand-based service expansion is not sustainable or prudent. Planning for and directing growth to areas where it is most appropriate should guide future water service decisions.
- Additional water resources will likely be needed in the future and the time to plan for this is now. Obtaining new water resources, which will be more expensive than what we are familiar with today, will require regional cooperation.
- Sustainability requires that we think more broadly about water resource management, beyond just clean, safe water for people, to considering environmental and economic needs for water and allocating water for these purposes.

Phase II began immediately following Phase I in the spring of 2009. The scope of work for Phase II called for the City and County to reach agreement on a set of water resource development and conservation goals, including:
Agreement on population growth, water, urban form, land use planning and infrastructure.
Integration of land use planning with water resources and infrastructure.
Increasing the use of reclaimed or recycled water on turf irrigation to substitute for groundwater use.
Develop renewable water sources for the City/County area.
Develop a consolidated drought management plan.
Implement consistent water conservation standards.
Respect for the environment.

Fourteen technical papers were prepared by staff and outside parties during Phase II on these topics. The technical papers were presented at Committee meetings for review and comment by Committee members and the public. The Phase II Report included perspectives from both City and County staff and the Oversight Committee. The Phase II Report set forth 19 City/County shared goals and 56 recommendations organized around four critical aspects of water sustainability:
- Comprehensive, integrated planning
- Respect for the environment
- Water supply
- Demand management

On February 17, 2010, the Mayor and Council approved Resolution No. 21478 adopting the City/County Water and Wastewater Study Phase II Report. One of the follow up items called for in the Resolution was the development of an Action Plan to implement the Phase II goals and recommendations.

The Action Plan was developed by a joint City/County staff team working together over a 6 month period with the input of stakeholders and citizen oversight committee members. The Plan described specific steps the City and County would take toward water sustainability over a 5 year period (2011-2015).

The Plan included a set of 87 specific actions grouped within 14 programs, with a goal of implementation over 5 years to achieve the following outcomes:
- Water, wastewater, and stormwater resources would be planned in an integrated fashion.
- More renewable water resources including effluent, reclaimed, stormwater and rainwater and greywater would be put to beneficial use in an efficient manner.
- Water resource policies would be aligned with economic goals.
- Collaborative efforts would be undertaken to acquire new water, to achieve greater flexibility in use of existing supplies, and to align and enhance standards for water use efficiency.
- Improved water quality resulting from regional wastewater treatment facility upgrades (i.e. the Regional Optimization Master Plan or ROMP) would be matched to needs for recharge, environmental restoration and public amenities such as parks, golf courses and ball fields.
- Land use, infrastructure and water resources planning would be linked to foster optimal use of renewable water resources in future growth areas and to increase water and energy efficiency outcomes in new development.
- Water would be dedicated and allocated to environmental needs, sensitive riparian ecosystems would be preserved and maintained, and cost-effective and collaborative environmental restoration projects would be advanced.
- Public values would be considered in water resources planning and public awareness of the environmental and human benefits of increased water use efficiency would be increased.

In these challenging economic times, the financial constraints facing the City and County loomed large over the action planning process. Staff did not feel it was prudent to make this plan contingent on the securing of new resources. Rather, staff focused on how to best move water sustainability efforts forward in light of the current economic times. The Action Plan did not rely on new resources to move forward,
but was intended to be integrated into existing programs and organizational structures of the City and County.

**Water Policy Decision Making Framework** – As part of the February 17, 2010, Resolution adopting the City/County Water and Wastewater Study Phase II Report, the Mayor and Council approved a Water Policy Decision Making Framework in response to concerns raised by SAHBA and the Tucson Regional Water Coalition related to the economic and cost impacts of the Study recommendations. The framework served as a filter, providing staff a set of factors that were analyzed prior to coming forward with any proposed IGAs, regulations, or policies related to water policy:

<table>
<thead>
<tr>
<th>Water Policy Decision Making Framework</th>
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<tbody>
<tr>
<td>1. Financial costs (to the City, to Tucson Water ratepayers, to private parties, and on Tucson Water’s bond coverage ratio)</td>
</tr>
<tr>
<td>2. Economic impacts (jobs, housing, tax base)</td>
</tr>
<tr>
<td>3. Environmental impacts</td>
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<tr>
<td>4. Impact on Tucson Water’s resources, per capita water demand, and water quality</td>
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<tr>
<td>5. Effect on drought/climate change preparedness</td>
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<tr>
<td>6. Impact on public infrastructure, services, and fiscal sustainability</td>
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<tr>
<td>7. Impact on location of growth, urban form, and land use</td>
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<tr>
<td>8. Energy costs</td>
</tr>
<tr>
<td>9. Opportunity costs (does this foreclose other opportunities)</td>
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<tr>
<td>10. Social equity considerations/community’s ability to pay</td>
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</tbody>
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Feel free to contact me if you have any questions.