Project Deliverables

<u>Task 1 Deliverable</u>: ***Outreach to Colorado Communities***

1. *Community Identification* – 20 communities were identified, building on previous research conducted by WRA and WaterNow. Factors included in the identification process include (but are not limited to):

    a. growth rate
    b. water supply security
    c. stage of water-land use integration
    d. existing membership in WaterNow or relationship with WRA/WaterNow
    e. recommendations from Colorado Water and Land Use Planning Alliance
    f. communities that have participated in the Sonoran Institute's Growing Water Smart workshop in the past and may be interested in additional support
    g. Colorado counties that may be facing unique water planning challenges due to the numerous water utilities that may operate within their county
    h. clusters of communities in a given area that may share similar water priorities and needs

2. *Community Outreach* – WRA and WaterNow conducted community outreach with nine identified and prioritized communities. Between January 2020 and March 2020, this outreach took place in the form of in-person meetings. Beginning in early March 2020 and for the remainder of the year, this transitioned to online meetings.

    - Attachment A is a summary document of outreach activities with targeted communities conducted between May and December 2020.

<u>Challenges and Lessons Learned</u>:

- As noted in earlier progress reports, one of the primary challenges of conducting outreach is identifying two community staff and one elected official who both have an interest in being interviewed and the available time needed. In many of the small and medium-sized communities that have been identified, staff do not always have the time for an interview. This became especially true in early March 2020 when many people began to work from home. That being said, WRA and WaterNow have been successful in identifying the right people from the list of communities and were able to successfully complete almost all of the desired interviews. Despite transitioning to all online and virtual meetings, many community staff and elected officials were still willing and able to participate.

- WRA and WaterNow have learned several lessons from our efforts to date. WRA found that directly incorporating the interviews into the MOUs and scopes of work for the communities selected for WaterNow's Project Accelerator program helps the community commit to identifying the appropriate staff and elected officials needed to complete the interview process. This is also a valuable tool for WRA and WaterNow to gain necessary information on a Project Accelerator community's prior water and land use planning efforts before launching into project work.

- Additionally, WRA and WaterNow learned the importance of using our networks to identify specific people from each community to interview. Despite a community having significant water and growth challenges, it often takes a personal connection for them to engage. For example, Northglenn participated in the Growing Water Smart Workshop this year, and follow-up conversations with WRA led to the community's willingness to be interviewed.

- A final lesson learned is the importance of conducting background research on current community issues, plans, and priorities. For example, reviewing a community's comprehensive plan for water challenges—and being knowledgeable about those issues—has made for more productive and engaged interviews.

Task 2 Deliverable: ***Direct Assistance to Colorado Communities***

WRA and WaterNow have been providing direct assistance to six Colorado communities throughout the past year. These communities and their associated projects were identified through outreach activities in Task 1, as well as through WaterNow's Project Accelerator program. As noted in the June 2020 progress report when there were four communities receiving direct assistance, WRA and WaterNow were expecting to support an additional two to four communities through the remainder of the year. Two additional communities are currently being supported in line with those expectations. While this report covers work under this grant to date, it is important to note that WRA and WaterNow are continuing direct assistance with additional Colorado communities, further building upon the lessons learned and experience gained through CWCB's grant support. For example, WRA and WaterNow are in the process of finalizing an MOU for a project with the City of Evans.

- Attachment B provides a summary of the direct assistance provided to these communities to date.

Challenges and Lessons Learned:

- Similar to the challenges identified in Task 1, identifying communities interested in receiving direct assistance can be difficult. As mentioned above, many of the small and medium-sized communities do not always have the time to take on new commitments. Even though WRA and WaterNow are providing free assistance, the staff can be hesitant to embark on a new project or provide project management for a new endeavor. Throughout the year, one of the primary tools that has benefited WRA and WaterNow is the utilization of WaterNow's Project Accelerator to select the communities to provide direct assistance. WaterNow adapted the outreach for the Project Accelerator program in Colorado to focus on initiatives that advance the integration of water and land use planning. Because a community needs to actively apply for the Project Accelerator program, they have already identified the water and land use policy or program they are interested in implementing. Further, applying for the program demonstrates that the policy or program is a priority for the community.

- Another primary lesson learned is the importance of getting a local elected official interested or excited about integrating water and land use planning. WRA and WaterNow have found that elected officials, especially in the small and medium-sized communities, are important for overcoming staff concerns about limited capacity.

- Even when provided with WRA and WaterNow's technical assistance to implement a program or project, cities and towns often move more slowly to adopt and implement a program than we would hope. For example, the City of Golden's draft ordinance had been finalized for nearly six months before it was passed by council because of city staff limitations and council priorities related to COVID-19. Partnering with cities and towns on project implementation necessitates a lot of flexibility into project timelines.

<u>Task 3 Deliverable</u>: ***Lessons Learned from Colorado Communities***

WRA and WaterNow developed a research protocol to analyze the interviews from Task 1 and used the qualitative research software Dedoose to conduct that analysis of the completed interviews. After the analysis was complete, WRA and WaterNow wrote a detailed report summarizing those lessons learned, opportunities, challenges, and priorities for the interviewed communities. WRA and WaterNow have also begun to identify potential avenues or venues for distributing the lessons learned report, including at a minimum through the Planning Alliance. Additional venues include APA Colorado Chapter's network and Colorado WaterWise members.

- Attachment C includes the lessons learned report, "*The State of Water and Land Use Planning Integration in Colorado: Learning from Colorado Communities*"

<u>Task 4 Deliverable</u>: ***Broad Educational Outreach***

Since the June 2020 progress report, WRA and WaterNow have conducted broad educational outreach in a variety of venues, including written publications and presentations at virtual events (as indicated below, see Attachment D for copies of publications and presentations). WRA and WaterNow contributed to an article for the Colorado Municipal League's October magazine edition of Colorado Municipalities, where the Frederick and Severance projects were discussed. WRA and WaterNow also co-authored an op-ed with two Golden city council members for the Golden Transcript, praising the recently passed graywater ordinance.

In late August/early September 2020, WRA participated in Sonoran Institute's and Babbitt Center's Growing Water Smart workshop by leading facilitation with the team from the City of Longmont. This four-day virtual workshop helped Longmont work through their water and land use challenges and ended with the creation of a year-long action plan that the city will be implementing. In September, WRA and WaterNow presented at the DOLA Small Community Workshop, in partnership with DOLA, CWCB, Frederick, and Severance. WRA and WaterNow highlighted their water and land use integration work, as well as the resources available for small communities.

In October 2020, WRA and WaterNow helped plan and facilitate three water and land use sessions at Colorado WaterWise's Annual Symposium. The sessions focused on water efficient landscape ordinances, landscaper certification programs in Colorado, and alternative on-site water supply options for new development and re-development.

- The water efficient landscape ordinance session presented case studies from the City of Frederick and the City of Aspen and additional speakers included Logan Burba from Element Water and Marjo Curgus from Del Corazon Consulting.
- The landscaper certification session featured representatives from the City of Greeley, the City of Fort Collins, and the Town of Castle Rock who have utilized the Qualified Water Efficient Landscaper training, Irrigation Association curriculum, and the National Association of Landscape Professionals; this session also included a discussion of the potential for developing a statewide landscape certification requirement.
- The alternative water supply session emphasized the potential for graywater and rainwater reuse in Colorado and featured representatives from the City of Denver, the City of Golden, Greyter Systems, and CSU Extension.

Also, in October, WRA participated in a water and land use panel for the American Planning Association Colorado Chapter's Planning Conference. The panel focused on codes, ordinances, and other regulations communities can utilize to further water efficiency. The speakers included Marjo Curgus from Del Corazon Consulting and Torie Jarvis from Dynamic Planning + Science.

In November 2020, WRA presented at Colorado Mesa University's Upper Colorado River Basin Water Forum on how growing communities can be more water efficient by integrating their water and land use planning. WRA specifically highlighted the work being done in Frederick, Severance, and Golden.

Finally, WRA and WaterNow continue to be active participants in the Colorado Land and Water Planning Alliance ("Planning Alliance") stakeholder group.

- Attachment D includes copies of publications and PowerPoint presentations from these educational outreach activities.

Challenges and Lessons Learned:

- One of the primary lessons learned from these efforts is the importance of identifying interested co-sponsors or co-facilitators to help conduct broad educational outreach. Well known partners among land use planners, such as the Colorado Chapter of the American Planning Association, are able to disseminate advertisements and information about education events and develop interest in attending those events. This is especially true if the events provide continuing education credits or similar incentives. Similarly, WRA and WaterNow serve on the Colorado WaterWise Board, which has proven helpful in education and outreach. Finally, WRA and WaterNow have a productive, working relationship with DOLA staff, which has also proven helpful in conducting education and outreach.

- An additional challenge was the necessity of pivoting to all virtual programming starting in March 2020 and the associated limitations on interactivity with virtual platforms compared to in-person events. WRA and WaterNow managed this by ensuring the educational content was as targeted as possible so that attendees left sessions with clear next steps for implementing water and land use strategies in their own communities. For example, we felt that a webinar on strategies for adopting more water efficient landscape ordinances and regulations would be more effective than a broad session on the host of solutions for integrating water and land use planning. WRA and WaterNow also conducted a number of one-on-one follow-up calls after these meetings with cities/towns interested in discussing their water and land use planning challenges and priorities and utilizing available resources.

Task 1 Deliverable – Outreach to Colorado Communities

1. **Community Identification:** WRA and WaterNow identified 26 priority communities based on a variety of factors, including growth rate, water supply security, stage of water-land use integration, existing WaterNow membership, recommendations from the Planning Alliance, participants in GWS, multiple water providers, and clusters of similar communities. Based on that research and set of factors, the following 26 communities were targeted for this outreach:

    1. Arapahoe County
    2. Boulder County
    3. Breckenridge
    4. Brighton
    5. Broomfield
    6. Centennial
    7. Commerce City
    8. El Paso County
    9. Elbert County
    10. Elizabeth
    11. Erie
    12. Firestone
    13. Frederick
    14. Frisco
    15. Golden
    16. Greeley
    17. Kiowa
    18. La Plata County
    19. Littleton
    20. Longmont
    21. Manitou Springs
    22. Northglenn
    23. Parker
    24. Pueblo County
    25. Severance
    26. Weld County

2. **Community Outreach:** From the list above, WRA and WaterNow have interviewed 2-3 individuals from nine communities (in some communities an elected official was unable to be interviewed). The following interviews have been completed:
    1. Boulder County
        i. County Commissioner
        ii. Water Resource Program Supervisor
        iii. Director of Community Planning & Permitting
    2. Breckenridge
        i. Water Division Manager
        ii. Land Use Planner
        iii. Mayor
    3. Centennial
        i. Senior Planner
        ii. Mayor
    4. Frederick
        i. Planning Director
        ii. Civil Engineer (water)
        iii. Town Trustee
    5. Frisco
        i. Land Use Planner
        ii. Water Foreman
        iii. Town Council Member
    6. Greeley
        i. Deputy Director Water Resources

    ii. Planner
    iii. Board Member
7. Northglenn
    i. Water Resources Administrator
    ii. Senior Planner
8. Parker
    i. Project Manager and Water Efficiency Specialist
    ii. Planning Manager
9. Severance
    i. Town Planner
    ii. Director of Public Works
    iii. Town Trustee

Task 2 Deliverable – Direct Assistance to Colorado Communities

The following summarizes the direct assistance provided to the six communities as of December 2020. All six communities have entered into MOUs or agreed-upon scopes of work with WRA and WaterNow for this work:

1. City of Golden: WRA and WaterNow helped the City of Golden develop and implement a graywater "laundry to landscape" (L2L) ordinance. We completed large portions of our direct assistance in 2019. Our efforts during this current grant period have been focused on helping the City officially adopt the L2L ordinance and implement pilot projects. WRA and WaterNow have coordinated with the City and an interested, expert contractor to facilitate implementation of two to three pilot L2L systems. At a public stakeholder event in 2019, WRA and WaterNow identified several homeowners interested in participating in the graywater pilot projects. This project slowed down for a few months so the City could ensure all internal processes are in place to implement the ordinance once it passes though City Council (e.g. fees associated with permits, department handling inspection). COVID-19 has also altered priorities for many communities, including Golden, over the past few months. Despite those setbacks, however, the City's Sustainability Board approved the finalized graywater ordinance at their June 24th meeting and City Council officially adopted the ordinance on September 10, 2020. The City has since created a webpage dedicated to this newly adopted ordinance, and WaterNow also published a blogpost on the successful adoption of the ordinance.

2. Town of Severance: WRA and WaterNow provided direct technical assistance to the Town of Severance to add a water efficiency element to its comprehensive plan the town is updating this year. To gather background information and additional context, WRA and WaterNow conducted informational interviews with a town trustee, the public works director, and the planning director. WRA and WaterNow also conducted three interviews with similar-sized towns in Colorado (Gypsum, Woodland Park, and Berthoud) to hear about their processes of incorporating water into their comprehensive plans. WRA and WaterNow then drafted proposed edits/additions to the existing comp plan draft that specifically identified ways to incorporate water efficiency. Severance planning staff reviewed these proposed additions and ultimately approved the majority of the recommendations. WRA and WaterNow then solicited Babbitt Center staff to review the updated comp plan draft, given their expertise on water and comp plans. After ultimately being approved by planning staff, the Severance Town Board voted to approve the new comp plan update on January 5, 2021. The comp plan can be found here, and WaterNow published another blogpost on this successful project.

3. Town of Frederick: WRA and WaterNow provided direct technical assistance to the Town of Frederick to update its landscape regulations to become more water efficient in the commercial/non-residential sector. In early 2020 WRA contracted with Element Water Consulting utilizing non-CWCB funds, given Element's expertise in Colorado landscape regulations and ordinances, to provide Frederick with recommendations for updating their regulations. Before Element began conducting their review and providing recommendations, WRA and WaterNow analyzed landscape regulations in ten other communities to understand how those communities approach landscape regulations and give Element specific examples to potentially follow. Eight of the communities we analyzed are in Colorado (Aurora, Berthoud, Brighton, Castle Rock, Erie, Greeley, Parker, and Thornton) and, to provide a regional perspective, two are outside of the state (Tempe, AZ and Sacramento, CA).

Building upon our analysis, Element drafted a memo outlining recommendations that include high-level organizational suggestions as well as specific ordinance language. Those draft recommendations were presented by WRA and Element to the Frederick Planning Department on May 11, 2020. Planning staff largely agreed with the draft recommendations and are meeting internally with additional town staff to determine specifics. For example, Planning staff agreed with modifying the ordinance to replace an existing turf minimum requirement with a turf maximum, but need to decide on the exact percentage. Similarly, Element presented a set of detailed irrigation system requirement suggestions at that May meeting to Planning staff, but they need to determine if they have the capacity to implement and enforce such detailed requirements. After that internal deliberation, Planning staff provided guidance to Element who provided a final draft set of recommendations in June. Planning staff approved the final recommendations, but have not yet presented them to the Planning Commission or Town Trustees, which they expect to occur in late winter/early spring 2021.

4. **City of Centennial:** WRA and WaterNow are providing direct community assistance to the City of Centennial to conduct a review of its Municipal Code, Land Development Code (LDC), and South East Metro Stormwater Authority's (SEMSWA) stormwater management manual to understand if and how some of their codes could be amended to improve indoor and outdoor water efficiency, reuse, and stormwater retention and detention. WRA and WaterNow systematically analyzed these resources using WaterNow's research protocol that analyzes the codes and manuals as they currently relate to indoor or outdoor water efficiency, onsite reuse, and on-site stormwater retention/detention. WRA and WaterNow used the analysis to query specific search terms (e.g., soil amendment, irrigation audit, graywater, impervious surface), to determine where Centennial's codes could be revised. After completing this review and presenting initial recommendations to Centennial staff, WRA and WaterNow then facilitated stakeholder meetings with key groups to solicit feedback on the proposed changes. This groups included SEMSWA staff, water providers who supply the city, and landscape design/architects. After incorporating the stakeholder feedback, WRA and WaterNow finalized 14 specific recommended updates to the LDC, and are waiting additional feedback from Centennial staff.

5. Summit County: WRA and WaterNow are providing direct community assistance to High Country Conservation Center (HC3) and Summit County to develop a regional water efficiency program. In 2018, the county published a regional Water Efficiency Plan, and in 2020 applied to WaterNow's Project Accelerator program to develop and implement the outdoor water efficiency program based on that plan. The programs of interest for the County include turf replacement and other outdoor efficiency incentives, water-wise education, landscape professional certification and training, and irrigation audits. WRA and WateNow initially interviewed key stakeholders from the Towns of Breckenridge and Frisco, including water utility staff, land use planners, and elected officials. WRA and WaterNow also researched communities around the west with similar characteristics (e.g., tourism economy, mountain/ski towns) who have created outdoor water efficiency programs, including Park City, UT, South Tahoe, CA, Flagstaff, AZ, Aspen, CO, and Eagle River Water & Sanitation, CO. Where appropriate, WRA and WaterNow spoke with staff responsible for implementing these programs to learn additional perspective on successes and challenges. In December 2020, WRA and WaterNow conducted a virtual stakeholder meeting with the Technical Efficiency Working Group, which included 15 attendees consisting of water providers, town staff, elected officials, and other key stakeholders. Following this research and stakeholder outreach, WRA and WaterNow have drafted specific recommendations for each of the outdoor efficiency programs and will be presenting those recommendations to county staff.

6. City of Greeley: WRA and WaterNow are providing direct community assistance to the City of Greeley to systematically evaluate their water conservation programs, to provide recommendations for updating those programs going forward. The city is interested in learning which conservation programs are the most successful, both in terms of water savings and financial impacts. Similar to other projects, WRA and WaterNow began by interviewing key stakeholders, including water utility staff, land use planners, and elected officials. Next, WRA and WaterNow began a systematic review of Greeley's water efficiency program data (including signing an NDA between the parties). This review began with background research on how other communities have conducted similar analyses to learn best practices. This included examining conservation program analyses from Aurora, Longmont, and Erie, and resulted in a summarizing memo presented to Greeley city staff. Next, WRA and WaterNow are examining spatial data on the conservation programs to get a better sense of the programs impact geographically. Concurrently, WRA and WaterNow developed and launched a survey for Greeley Water customers to help understand, quantitatively, what individuals think about the city's conservation programs. The survey will provide empirical data to help develop updates/recommendations to the existing water conservation programs. As of March 1, 2021, the survey has 264 completed responses, and will be available for additional participants through the month.

The State of Water and Land Use Planning Integration: Learning from Colorado Communities

March 2021

EXECUTIVE SUMMARY

The purpose of this report is to synthesize and document barriers, challenges, enabling conditions, resource needs, and priorities for adopting integrated water and land use planning solutions in Colorado communities. The overarching goal is to help inform future water and land use integration efforts throughout the state. In 2020, WaterNow Alliance and Western Resource Advocates conducted 24 informational interviews with water utility staff, land use planners, and elected officials in nine Colorado communities. The results of these interviews indicate that many communities have already taken – or are planning to take – some action to integrate their water and land use planning. However, a number of barriers are holding them back from taking more action, including staff capacity and knowledge, codes and regulatory hurdles, and competing priorities. Through these interviews, a number of recommended future actions were identified, including: initial steps communities can take when they are unclear where they should start, identifying existing programs that communities can utilize, and state-level policy actions that should be prioritized.

INTRODUCTION

Water and land use integration is recognized as a key strategy in Colorado's Water Plan that will allow communities to utilize existing water supplies efficiently despite climate change and population growth. In 2020, Western Resource Advocates (WRA) and WaterNow Alliance (WaterNow) conducted informational interviews with water providers, land use planners, and elected officials from Colorado communities to learn about their challenges, objectives, and priorities as they relate to water and land use planning integration. The goal of these interviews was not only to learn about the state of water and land use planning integration in the state but also to identify any lessons learned and specific opportunities that other Colorado communities might be able to utilize when implementing their own policies and programs. This memo summarizes results from the interviews and provides recommendations based on those lessons learned. Thank you to the Babbitt Center for Land and Water Policy, a center of the Lincoln Institute of Land Policy, and the Colorado Water Conservation Board for providing support and funding for this work.

BACKGROUND AND METHODS

To better understand the state of water and land use planning in Colorado, WRA and WaterNow conducted 24 informational interviews between January 2020 and November 2020 with primarily Front Range communities, as well as several tourism-based mountain towns. The goal for this project was to interview a water provider staff member, a land use planning/community development staff member, and an elected official from each community to gather information from all three perspectives given their differing relationships to water and growth. The communities were identified based on several variables including: high population growth, limited water supplies, diversity in water providers, and demonstrated interest in water and land use planning integration. As of January 2021, WRA and WaterNow have interviewed staff and elected officials from nine Front Range communities: the Town of Parker, the City of Centennial, the Town of Frederick, the Town of Severance, Boulder County, the City of Northglenn, the Town of Breckenridge, the Town of Frisco, and the City of Greeley[1]. Interviewees included Planning Directors, Senior Planners, Civil Engineers, Public Works Directors, Trustees, Council Members, and Water Resource Program Supervisors.

While the interview protocols for the three types of interviews were similar, each was tailored for the interviewees' respective positions[2]. In early 2020, these interviews were conducted in person, but beginning in mid-March they transitioned to virtual platforms due to the COVID-19 pandemic. When and if possible, staff from both WRA and WaterNow conducted the interviews with one person leading the conversation and the other primarily taking extensive notes. In-person interviews were recorded should there be any confusion or discrepancies in the notes. Virtual meetings were recorded if possible.

[1] See Appendix A for background details on selected communities including population size, population growth, water provider(s), and water supply details.
[2] See Appendix B for land use planner representative, water utility staff representative, and elected official interview questions.

Following the interviews, detailed notes from each interview were uploaded to the qualitative analysis software, Dedoose[3]. This online analyzing platform allows for the systematic analysis of each interview utilizing a set of variables and questions developed by WRA and WaterNow. The variables relate to each of the topics in the results section. Each interview has been coded by the various variables, which include specific water and growth challenges, water and land use department interactions, water and land use integration efforts, and challenges to those efforts, among many other variables. Once the interviews were coded, WRA and WaterNow were able to identify common themes, priorities, challenges, lessons learned, and opportunities across the nine communities. Please note that for anonymity reasons, the responses discussed below are not attributed to any individual or specific community.

RESULTS

The results of the informational interviews, described below, are organized around eight identified themes:

1. Common water and growth challenges among the communities
2. Unique water and growth challenges in the communities
3. Current water and land use integration efforts
4. Challenges and/or barriers to water and land use integration
5. Differences between land use planners, water utility staff, and elected officials
6. Ideas for how to best address barriers through external assistance
7. Opportunities for furthering water and land use integration
8. Common areas of interest for specific integrated planning policies, programs, and regulations

1. Common water and growth challenges among the communities

In general, all of the communities were concerned about how to plan for and manage future growth. In addition to water supply reliability concerns, many communities also discussed traffic, housing prices/affordability, and keeping the community's character (e.g., not losing the "small-town" feel). While some interviewees noted that they anticipate new growth to be more water efficient than in the past (e.g., smaller lot sizes, town homes, or modified landscapes), several expressed concern that this growth might continue to be large single-family home developments on large lots. Part of the issue identified is that the land development codes (LDCs) for many of these communities are relatively old, which has consequences for the type of growth seen in these communities. A land use code or land development code is a planning implementation tool used to implement a community's comprehensive plan that can include zoning regulations, annexation policies, impact fees, and more. Colorado being a "local control" state means updates to local codes are left entirely up to the local jurisdiction. Updating the

[3] https://www.dedoose.com/

code can be time and staff-intensive, so it is not uncommon for land development codes to be quite outdated. For example, one interviewee noted their LDC is 40 years old.

Overall, the concerns expressed regarding water were primarily focused on the reliability of future water supplies. While there was some discussion about climate change being a driver of this concern, the most common challenge identified was future growth and how to supply water to accommodate that growth. As one interviewee noted, the community's ability to provide water for new homes is the "800-pound gorilla in the room." In another community, water providers project that they will still need additional supplies in the coming decades even with "extreme conservation." When asked about growth challenges, one interviewee succinctly described the fundamental problem: "Water, water, water, water… That's the primary one. Everything else is relatively easily managed."

Another common concern among interviewees was the cost of water, especially those who receive Colorado Big Thompson Project (CB-T) supplies. Several interviewees discussed how dramatically the cost of CB-T shares has increased in recent years[4], leading them to consider alternatives to buying additional shares for growth. This commonly led the communities to consider modifications to landscape regulations, changes to lot sizes, or alternative water dedication policies as it is simply becoming too expensive to purchase additional CB-T shares. In one community, the land use planners have heard from developers that the cost of water has made it too cost prohibitive to build.

2. *Unique water and growth challenges in the communities*

Several communities expressed that there is some concern among existing residents about high rates of population growth and new development, and how this might affect them (e.g., increased water rates, traffic, etc.). Interestingly, an elected official from one of these communities noted their residents' concerns about growth are largely a public perception problem; the actual growth in their community has been stable and relatively low as a percentage of total population for some time. Accordingly, the elected official viewed the growth issue as largely a public messaging challenge for their staff.

One of the smaller communities interviewed indicated that their primary growth-related challenge is the speed at which it is occurring. This community, which has a population of less than 10,000, saw 800 new homes built in 2019 and is on track for additional 1,000 in 2020. Ensuring basic infrastructure, including water systems, for such substantial growth is challenging for a small community with limited staff capacity.

Several of the communities interviewed have agricultural economies. Elected leaders in particular expressed a community-wide desire to preserve the local agricultural economy, avoid buy and dry, and prevent open farmlands from being redeveloped. Additionally, one

[4] https://www.kunc.org/business/2018-05-29/price-of-key-northern-colorado-water-supply-reaches-new-peak

community noted that a lot of their industrial uses and manufacturing were also ag-based, leading to additional water challenges. In other words, the challenge was not just keeping water within the ag sector (e.g., irrigation), but also providing water for the ag-based manufacturing that occurs off the farm (e.g., cheese processing).

3. Current water and land use integration efforts

Pre-Application Meetings

The research team found a wide range of efforts to integrate water and land use planning among the communities interviewed. The first opportunity for land and water integration often happens at the developer's pre-application meeting. As one community described, it is at this initial meeting where the planning staff will direct the developer to speak with the water supplier at some point during the process. That is generally the extent to which water is discussed at those pre-application meetings, and the interviewee specifically noted that anything beyond that (e.g., discussions about water conservation) are rare. Alternatively, another community has insisted that developers speak with the relevant water providers before the pre-application meeting to ensure the developer understands the water-related components of their proposal, including requirements for raw water dedication/cash-in-lieu and water system development charges (i.e., tap fees).

This pre-application due diligence has been especially important in recent years as the costs associated with water and development have increased significantly. As noted in the previous section, CB-T shares have become significantly more expensive, and some water provider tap fees have increased. One interviewee described a specific case where a national hospital builder was shocked to learn that the tap fee for a new hospital was three times what the developer had budgeted. As will be discussed below, the increasing cost of water might incentivize additional integration efforts. Other communities require the developer to provide their own raw water dedication at the pre-application meetings, and one community requires the developer to prove adequate water supplies.

Water & Land Use Planning Staff Interactions

The interviewees described a wide spectrum of interactions between land use planners and local water providers. Some communities shared that engagement between planners and water providers was very limited, while others seemed to have strong and long-standing working relationships. In several communities, there appeared to be a trend in recent years towards more engagement between the two departments – this was associated with new, regular meetings, external workshops to facilitate engagement, and/or a shared priority to update a plan or code.

Some communities described a significant degree of regular interaction. In one community, where water services are provided by the municipality, the interviewee described "almost daily" interactions between planning staff and water utility staff addressing primarily

development proposals. Another interviewee from that same community noted that the planning and engineering sections (the water provider) have offices in the same small building, which enables much of that interaction, as they can easily "walk down the hall" to speak with each other. Another community has come up with a somewhat unique way of institutionalizing interactions between the two departments; all the town departments meet and discuss the city council's agenda and priorities immediately following biweekly council meetings. Both planning and water staff are typically in attendance so this practice facilitates discussions and collaboration.

Another interviewee noted that their community has made an explicit effort in the past year to better integrate water and land use planning, which has mostly taken the form of more organized and deliberate interactions between planners and water providers. The interviewee, who is a water provider, described how they have worked with planners on development proposals significantly more in the past year than in the previous four years. Another interviewee described a similar situation in their community, in that the relationship between planning and the water utility, "did go from nothing to quite a bit of a relationship/working partnership in the past three years." One interviewee from another community described how recent participation in an external workshop provided the opportunity to have their water utility and land use planning staff interact. Another community interviewed had recently updated their integrated water resources plan, and in an apparent shift from prior years, the water utility staff brought in the planning department to discuss the plan update.

Still other communities explained that there was very little engagement between the water and land use planning staff; for example, water staff was not involved in updates to water-related land development code updates. This lack of engagement was discussed by one interviewee in another community even when acknowledging, "we certainly could be collaborating and coordinating more." An interviewee from another community described interactions between the two departments as a "good relationship" but one that was limited to reviews of various projects and proposals. The interviewee opined that despite having a good relationship, it is not a very robust one, and that it would be valuable to have more substantive interactions throughout the development process. Similar sentiment was found in other communities where they acknowledged coordination would be helpful but did not seem to have taken specific steps in that direction.

Interviewees described a wide spectrum of engagement. Encouragingly, many communities felt that their water and land use planners' efforts were either already well integrated or that they were taking substantive steps towards integration. No communities expressed that their land use and water initiatives were becoming more segregated.

Specific Integration Actions

Several communities are actively pursuing water and land use integration efforts in the coming months and/or years. These integration policies and programs, described in more detail in Section 7, include: comprehensive plan updates to add or update a water element; updates to

landscape regulations to incentivize more efficiency that involve planners and water utility staff working together in a shift from past practice; and finally, coordination between land use planners and water staff on an LDC review for opportunities to improve water efficiency and management.

4. Challenges and/or barriers to water and land use integration efforts

Staff Capacity & Knowledge

Staff capacity issues were commonly identified as a significant barrier to water and land use integration efforts. For one community, the staff capacity challenge took the form of the planning department staff not having the training or knowledge to review irrigation plans, and therefore not understanding, evaluating, or requiring changes to those plans. Accordingly, the planning department did not feel like they were able to enforce the irrigation and landscape regulations in the municipal code. Further, several interviewees described how each planner has their own specialty, and if that does not include someone knowledgeable in water, then it is difficult to integrate water-related issues. Additionally, some planners noted the lack of time available to adequately research or learn best practices when it comes to integrating water and land use planning, as the incorporation of water into their work plans is quite complicated. In another community, interactions between planners and water providers were impacted by staff turnover and loss of institutional knowledge. For many years one specific water staffer would attend development meetings; after that person retired, water staff rarely attended the meetings. Conversely, one community noted that land use and water integration efforts were improving with a newer, more collaborative team of water and land use planning staff.

For most of the communities, staff lacked the time or resources needed/required to take on water and land use integration efforts. Local government planning departments are currently working at maximum capacity, so it would be difficult to add additional processes or requirements to the development process. As one interviewee noted, “The hard thing is things are happening so fast, so just having that time to sit down can be tricky; bodies and time are the biggest constraint.” Or as another interviewee from a different community described, “It’s a matter of time and resources. It would almost take the dedication of an entire staff person to do something [related to land use and water integration].” Similar constraints were noted from water utility staff—one interviewee described it as, “I just don’t have the time as I’m focused on treating water, fire flows, and water quality.”

One particularly interesting disclosure was that some water and land use planners may deprioritize integration because they do not perceive such integration as materially contributing to their respective missions. For example, one water provider indicated that the main challenge to integrated planning efforts is that their primary objective of providing safe and sufficient water to the community always takes the priority, so any new initiative or long-

term planning effort often takes a back seat due to staff capacity issues. They specifically noted this is common with new relationships (in this case, between planners and water providers); developing working relationships can take a significant amount of time and is seen as not necessarily contributing to the water provider's primary objective.

Finally, it was apparent from numerous interviews there were fundamental differences in capacity and knowledge between land use planners and water utility staff. For example, most planners interviewed described fundamental differences between the two departments that make collaborations challenging. These included "[each having] so many other priorities", "we have different goals", and "planners and engineers think about process and problem solving in different ways." Similarly, several water utility staff described structural challenges ("development ordinances aren't written in a way that's thoughtful with efficient water use"), a lack of understanding by the planners ("it would be helpful to at least have conversations, to have them understand the impact of land use zoning and water"), and not seeing the benefit of even doing so ("I don't really need or want to coordinate with the planners").

Access to Resources

The interviews revealed that there is also a dearth of readily available information for municipal staff to learn about water and land use planning policies. One interviewee, who works for a smaller community, noted that while there seems to be a lot of information circulating about what some of the bigger communities have been able to accomplish (e.g., Aurora), they did not see that same level of educational material relevant for smaller communities. Given substantial time constraints and the small size of their department, the interviewee does not have the time to conduct that outreach to small communities and learn directly from their peers.

Codes & Regulations

Another challenge found in several communities was that many of their regulations, codes, and ordinances are outdated and in need of updates. As one interviewee put it, their landscape regulations are, "just old." Interviewees from another community described how their older regulations and codes are problematic because they do not establish any water use efficiency requirements or parameters. Without such guidance, land use planners need to examine each development proposal on a case-by-case basis, which limits what they can do for water efficiency. In a different community, an interviewee commented that a water provider within their jurisdiction uses an older model to predict water demands. The chosen model does not incorporate the latest water efficient fixtures (e.g., low-flow toilets), which can lead to questionable water requirements in new developments.

Special Water Districts

Some of the communities interviewed have their own municipal water providers while others rely on services from one or more special district water providers. For the former, interactions between water provider staff and planning staff were generally less challenging. However,

several interviewees noted the difficulty of working with a special district not part of municipal government. One community, for example, is served by 12 different water providers. Sometimes collaborating with an outside organization is a logistical issue—their offices are in different buildings and in different parts of the community. In addition and more critically, special districts and municipalities can have different cultures, requirements, policies, and goals. One interviewee lamented that while the planning department has certain requirements meant to reduce urban sprawl, the water provider does not, which leads to enforcement challenges. As that interviewee described, "It's like the weird uncle coming in and telling them what to do."

A recurring theme for communities served by special districts is that water is not necessarily a priority for elected city officials that do not have jurisdiction over water service. Two communities identified this problem, sharing that their elected officials may lack the requisite knowledge to discuss water because they do not need to engage in decision-making on this topic. As one interviewee commented, because there is an outside organization providing water to the community, the elected officials spend their time focused on the many other issues within the municipality's jurisdiction.

Competing Priorities and Jurisdictional Challenges

Even in some cities and towns with a municipal water provider, elected decision-makers have not bought into the concept of prioritizing water use efficiency. These elected officials were seen as a potential barrier to land and water integration. For example, one land use planner expressed that historically they had difficulty passing updated water efficient landscaping standards through their elected decision-making body. Other interviewees discussed their concerns about their elected leaders who express preference for the aesthetic of green turf lawns and felt that "rock gardens" or xeriscape landscaping would not match the community's aesthetics, making water efficient landscapes less of a priority.

Another interviewee described the challenge as planners and engineers simply think about process and problem solving in different ways. Similarly, a land use planner from a different community described the difficulty of sorting through these issues with the water provider because they each look at the same issue with different end goals in mind (e.g., the water provider is concerned with providing adequate drinking water now and into the future whereas the land use planner is focused on approving new developments based on their current land development code). They noted it is not a criticism of the water providers, but rather a consequence of the nature and focus of their respective departments.

Conversely, one water provider opined that the planners did not seem to be familiar with the impact of land use zoning and water efficiency strategies on available water resources. For example, the planners did not seem to appreciate the water implications of certain plant species. In another community the challenge was described as differences in missions between the two departments: the planning department focuses on aesthetics and livability whereas the

water provider focuses on water conservation. In this case, historically, the planners had not considered water conservation until the water utility staff "bull-dozed" their way into meetings with planners. Once those conversations occurred, the planners were more receptive to conservation considerations.

In terms of jurisdictional challenges, several planners described a perceptional problem in that they thought they do not have the authority to get involved in water utility decision-making. As one interviewee described, "we don't have a lot of control of things like water rates." A similar sentiment was heard from water utility staff, as a couple interviewees suggested that the utility department does not have authority over land use code. One interviewee simply stated, "[water utility] doesn't have power over code." While not consistently heard during the interviews, this concern about regulatory jurisdiction was perceived to be a barrier in several communities.

Developer Community Motivations

Another challenge identified by an interviewee was that developers primarily care about costs over everything else, so unless there is strict enforcement of any water efficient planning codes or ordinances, they probably will not be realized in the development. The interviewee, who is a water provider, described giving feedback on some landscape plans for new developments, but did not think there would be any modifications as, "feedback is only as good to a developer as the rules that enforce it."

COVID-19 Impacts

Finally, ongoing impacts from COVID-19 were identified as a major challenge as the scale of the pandemic became clear over the course of the interviews. In addition to the obvious public health impacts, many of those interviewed described revenue shortfalls, budget cuts, program reprioritization, and hiring freezes/layoffs. In one community there was a 15% reduction in every department's budget for the remainder of the year. In other communities, especially ones where tourism is a primary economic driver, sales tax revenue was down significantly leading to substantial budget shortfalls. Relating to water and land use integration, most of the communities noted that new hires, initiatives, or programs were all put on hold because of how much uncertainty there was for the remainder of the year and into 2021. One interviewee indicated that their community tends to be quite conservative with any non-essential or new services or programs. Several communities also described the potential for long-term impacts for water and growth in that the economic impacts of the pandemic have altered or reduced their growth projections. When asked about their community's growth projections, one interviewee responded with, "[w]ell, it's hard to say now because growth projections were kicked in the butt by COVID."

5. ***Differences between land use planners, water utility staff, and elected officials***

There were notable differences in the description of interactions between the three types of interviewees. Land use planners primarily described interactions with water utility staff as simply revolving around specific development proposals, whereas water utility staff described in general a more comprehensive relationship that included additional interactions around ordinances, tap fees, and even daily interactions in some cases. Elected officials, in responding to questions about inter-departmental relationships, mostly described the situation as "they work closely" or "they generally do not" without much additional detail, as might be expected given that elected officials are generally several steps removed from these staff interactions.

Interestingly, another difference that emerged in several of the communities was that land use planners and elected officials were generally more optimistic about the state of the community's water resources and the security of their water rights portfolio to meet future water demands than their water utility counterparts. Not surprisingly, water staff, who are responsible for long-term supply forecasting and planning, and are therefore much closer to this information than political leaders or land use planners, generally expressed more concern about the community's water supply resilience and ability to meet increased future demands. For example, in one community, the land use planner described the community as "one of the best in Colorado in terms of water supplies, with no real issue of shortages." Conversely, the water utility staff described the community's water situation as, "we don't have enough water to meet huge population growth—our projection is that even with extreme conservation we'll need more water supply."

6. ***Understanding how to best address barriers through external assistance***

One of the questions asked during the interviews related to the benefit of external assistance and support to further integrate planning efforts. Two interviewees from the same community described how they are always looking for outside resources, support, and information, with the goal of keeping up to date on a variety of topics. This general interest in learning was evident throughout their interviews. During an interview with another community, WRA and WaterNow described their recent effort to analyze ten communities' landscape regulations as they relate to water efficiency. Like the other community, this interviewee expressed significant interest in seeing that analysis, to learn what some of their community peers have done with regards to landscape regulations.

A land use planner from one community specifically noted that one of their elected officials was particularly engaged and interested in water and growth, and was always encouraging staff to identify potential support, including outside funds, grants, and trainings. The planner noted that it really helped to have such an engaged elected official who actively encouraged them to apply for such support.

Other communities had more specific needs that could potentially be met with external support. For example, one community would like assistance and training for how to review and evaluate the landscape component of development proposals, including irrigation system design. That is not a skill staff could necessarily develop in-house, so external support would be

helpful. Similarly, several interviewees described the need for training/research on specific topics, such as best practices for landscape regulations and how to integrate water efficiency throughout a development code. Several interviewees who are planners noted that they or other staff in their department do not have water backgrounds, so that additional water-specific training would be helpful. Other communities noted they could use external support in updating various plans, including water efficiency plans, raw water master plans, and comprehensive plans. Several interviewees described how this external support is especially helpful for them as they don't identify with the commonly studied and prominent case studies (e.g., Aurora, Westminster). More case studies are needed about small communities and communities with private/multiple water providers.

7. Moving forward: building upon existing efforts and new opportunities for furthering water and land use integration

As indicated above, several of the communities interviewed were actively pursuing some sort of water and land use planning effort. Other communities identified water and land use integration opportunities that they were interested in exploring in the future. These efforts and opportunities are discussed below:

Landscape Codes

Four communities are currently in the process of—or considering in the future—updating their landscape codes to be more water efficient. Specific ideas included maximum turf regulations, more prescription on the types of plants allowed, and requirements for native vegetation.

One community has already drafted revisions and updates to parts of their landscape code but is waiting to present them to newly elected officials (the previous officials were not receptive to such code revisions). Another community is also revising their landscape codes (which had not been updated in 10 years), intentionally having both land use planners and water utility staff involved in the update. As noted by an interviewee from this community, "[w]e're on a path to make this a better process." The update will include more "water conscious" components such as efficient sprinkler systems, xeriscape principles, etc.

Comprehensive Plan

Another community is updating their comprehensive plan to include a water element, with the specific goal of eventually adding more prescriptive landscape codes. Currently, the community operates on a case-by-case basis but would like to get to a place where the landscape code has prescriptive language about what is and is not allowed. An interviewee from this community noted that the benefit of the update is not necessarily the end product, but rather the process of the update itself. If done properly, the process will bring together water and land use staff in a room to understand each other's issues. That will help those staff better understand common goals, challenges, and values, ultimately forming a stronger working relationship. Another community, also in the process of updating their comprehensive plan, noted that not only will

water utility staff be involved, but there will be a specific equity component, highlighting a unique opportunity for water and land use integration.

Water & Land Use Planner Coordination

Interestingly, only four communities were actively trying to find ways to improve day-to-day coordination and communication between their planning department and water providers. This ranged from simply opening lines of communication between the two organizations all the way to modifying the development review process so the two are working closely together on all development proposals.

Special Water District Coordination

One community served by a private water provider expressed a desire for the community and the water provider to have similar water efficiency requirements. The interviewee noted that this would provide the city with more authority and backing when reviewing development proposals.

Graywater

Three of the communities expressed interest in allowing graywater systems. This interest ranged from permissive ("If someone wanted to do graywater, I wouldn't actively oppose it") to enthusiasm for adopting a graywater ordinance. However, the interviewees were hesitant to push for a graywater ordinance due to perceived uncertainties around state regulations, public health, plumbing issues, and water rights.

Elected Official Education

Several interviewees noted the importance of educating elected officials on these topics. For example, one interviewee described doing a "water presentation" to every new council following elections, to make sure they are up to speed on the latest water-related issues. Several interviewees noted how even if elected officials say water is a top priority, sometimes it is not clear if those officials have the motivation to follow through with support for water and land use initiatives. According to one interviewee regarding their elected officials, "we still have a lot of education we need to do with them, as they are more focused on the energy side of sustainability, not necessarily water." One interviewee even requested that WRA and WaterNow present to the newly elected board to get them up to speed on water and land use topics, suggesting that sometimes education from external sources can be just as, if not more, effective than from municipal staff.

Non-Potable Supplies

Another community recently updated their municipal code to require developers to dedicate their own water, which may entail procuring CB-T shares. Utilizing non-potable supplies (e.g., ditch water) reduces the need for more expensive (and difficult to acquire) potable water, such as CB-T shares. Part of the program now allows developers to apply for an alternative supply by

conducting a demand analysis with support from city staff. The goal of the program is to incentivize the use of non-potable supplies for outdoor irrigation as an alternative supply.

Incentive Programs

All nine of the communities interviewed are either currently, or expressed interest in, providing incentive and/or education programs to encourage more water efficient landscaping. These programs include sprinkler audits, turf replacement incentives, Garden-In-A-Box programs, smart water meters, and demonstration gardens.

In terms of process, one community expressed the desire for primarily incentive-based regulations and programs to encourage more water efficient design and landscaping, as opposed to regulatory requirements. For example, they are considering installing demonstration gardens in high-profile/community entry way areas and are interested in providing a water efficient plant list to developers and property owners. An interviewee from that community noted how their residents tend to enjoy educational programs that have been offered in the past, so that could be one avenue for encouraging water conservation practices.

DISCUSSION

The interviews provide key information about attitudes, perceptions, and current status of water and land use integration efforts and lead to a number of key findings and lessons learned. As described above, most of the interviewees expressed some concern about the reliability of future water supply in the face of growth and development, drought, and increasing cost to purchase new supply. Many communities had already taken – or were currently taking – action to integrate their water and land use planning. However, the degree of their interest and perceived ability to move forward with integration differed between the communities, and a number of barriers held them back from taking more action including staff capacity and knowledge, codes and regulatory hurdles, and competing priorities. Notable distinctions were also identified between the three categories of interviewees. Generally, land use planners were less concerned about water supply security than their water counterparts, and water utility staff often did not feel they had the authority – or saw the value in – coordinating with land use planners – even when doing so could support their water-related objectives. Elected officials appeared to have interest – but little direct involvement – in integrated water and land use planning.

Looking forward, it appears these communities, at the very least, understand some important and substantive steps they could take towards water and land use integration. The communities were able to articulate the types of external resources that would be most useful to support them in implementing new policies and programs (e.g., landscape ordinances, elected official education, efficiency incentive programs, etc.).

RECOMMENDATIONS

This report is intended to serve as a resource to Colorado communities – and the broader community of Colorado stakeholders interested in water and land use planning – that will inform future water and land use integration steps and future community engagement needs. In addition to providing information about the communities interviewed—including challenges, goals, priorities, barriers, and enabling conditions from which other communities might learn from—these interviews also revealed strategic recommendations for how other communities might begin or strengthen water and land use planning in their communities, and how additional outside resources could best support them.

The interview process clarified that communities exploring land use and water integration are very much open to and interested in support about how best to prioritize integrated planning efforts.[5] The preliminary results from these informational interviews lend themselves to identifying those options. Below is an initial list of recommendations for communities to consider:

1. If your community is in the process of updating its comprehensive plan (or plans to soon), consider how water can be explicitly included in that update. Incorporating water efficiency into a comprehensive plan is a critical first step in integrating water conservation into the land use decision-making process. Inclusion of this language can help to direct your community's future land development code updates, water efficiency incentive programs, and other actions. There are numerous resources available to support communities with their comprehensive plan updates. For example, the state passed legislation in 2020 to provide direction for including water efficiency in comp plan updates and to direct DOLA to offer technical assistance and education to interested communities.[6] Another resource available to communities is the Babbitt Center's Incorporating Water into Comprehensive Planning Manual, which provides detailed recommendations for comp plan language and numerous case studies of communities who have already included water efficiency.[7]
2. Review your community's landscape regulations and compare with peer communities to identify potential opportunities for updates. For example, the WRA and WaterNow analysis of 10 communities' landscape regulations is available upon request and will help communities systematically review their own regulations. South Metro Water Supply Authority's Model Regional Landscape & Irrigation Ordinance is another excellent resource for identifying best practices for water efficient landscape ordinances[8].

[5] Personal communications with Anne Castle, Senior Fellow at the Getches Wilkinson Center for Natural Resources, Energy and the Environment Anne Castle co-authored "Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts: Addendum to 2012 Guidance Document": https://dnrweblink.state.co.us/cwcbsearch/ElectronicFile.aspx?docid=208193&dbid=0

[6] HB 20-1095: Local Governments Water Elements in Master Plans: https://leg.colorado.gov/bills/hb20-1095

[7] Incorporating Water into Comprehensive Planning Manual: https://www.lincolninst.edu/incorporating-water-comprehensive-planning

[8] South Metro Water Supply Authorities' Model Regional Landscape & Irrigation Ordinance: http://southmetrowater.org/education/resources/model-landscape-irrigation-ordinance

3. Identify potential sources of unconventional alternative water supplies (e.g., graywater, rainwater, non-potable) and necessary first steps to incentivize greater adoption of those supplies (e.g., ordinance development, incorporating into system development charge structure). Again, examples from peer communities can help illuminate how to overcome real or perceived barriers. If there are concerns around state regulations, public health, plumbing issues, or water rights, conducting public education and outreach—including sharing case studies from peer communities—might help overcome those perception challenges.
4. Establish regular meetings and opportunities for land use planners and water utility staff to discuss upcoming integrated water and land use planning actions, longer-term goals, identified challenges, and priorities facing each department/organization. As discussed above, this could occur prior to or following city council/town board meetings, pre-application meetings, or on a separate schedule.
5. Educate elected officials about the importance of water and land use integration, which might help open opportunities for greater coordination and communication between land use planners and water providers (e.g., make it more of a priority).

The interviews also revealed the importance and value of outside resources to support communities (especially those that are resource- and capacity-limited) in integrating their water and land use planning objectives. In addition to the reports noted above, additional opportunities are provided here:

1. **Project Accelerator:** WaterNow Alliance's Project Accelerator provides up to 250 hours of pro bono assistance to advance a community's sustainable water project and/or priorities. In Colorado, these projects are typically centered around integrating water and land use planning. Past examples and more information can be founded on WaterNow's website[9].
2. **Growing Water Smart:** Sonoran Institute's and Babbitt Center for Land Use & Water Policy's Growing Water Smart program is a 3-day intensive training that brings together teams of 5-7 local water and land use decision-makers from a city or water district to collaborate on long-term water security and address water-related growth and development challenges. The program also includes follow-up technical assistance funding. Growing Water Smart may be particularly helpful to promote stakeholder engagement in communities with independent water districts.
3. **Colorado Water and Land Use Planning Alliance**: Convened in December 2017, the Colorado Water and Land Use Planning Alliance is a non-formal, multi-stakeholder group of representatives from state agencies, local governments, advocacy organizations, research organizations, and others who come together with the purpose of coordinating to develop resources, provide technical assistance, and track progress on water and land

[9] WaterNow Alliance's Project Accelerator Program: https://waternow.org/our-work/our-work-projects/project-accelerator/

use integration across Colorado. You can join the Alliance's quarterly meetings to stay up to date on available water and land use integration resources[10].

4. **Elected Official Education**: Several interviewees noted the value of active and informed local water decision makers. There are numerous organizations in Colorado available to support staff in educating local leaders about water and land use challenges, whether this is a one-on-one presentation to city councils or workshops around specific – and sometimes complex - water topics such as conservation-oriented tap fees or alternative transfer methods (ATMs). For example, WaterNow Alliance hosts a Water 101 workshop during our Annual Summit specifically for elected leaders. These educational resources will give local leaders the tools they need to both encourage and guide their staff towards integrated water and land use solutions. Outside organizations can play an important role in educating and developing conscientious water decision-makers that will provide encouragement and feedback to staff around water wise development.[11]

Finally, this series of interviews brought to light new policy actions that could be taken at the state-level to encourage the integration of water and land use planning.

- **Colorado Water Conservation Board & Department of Local Affairs Funding:** The primary reason stated for not further integrating water and land use planning was a lack of staff capacity and/or resources to develop a program or policy, and this challenge has been exacerbated by local funding cuts related to COVID-19. CWCB and DOLA should advocate for increased grant funding to support communities in integrating their water and land use planning including funding for: comprehensive plan updates, landscape ordinance amendments, conservation-oriented system development charge development, etc. CWCB and DOLA can also provide support in spreading the word about other relevant federal grant opportunities, such as the Bureau of Reclamation's WaterSMART program[12].
- **Small Community Case Studies:** Several interviewees noted that the Colorado communities commonly featured in educational materials are often larger, better-resourced, Front Range cities. These featured communities often face different challenges and realities than smaller communities and communities outside of the Front Range. Organizations focused on education and outreach around water and land use planning should be conscientious about including examples from small, under-resourced, and geographically diverse communities[13].

CONCLUSION

[10] Colorado Water & Land Use Planning Alliance: Contact Christy Wiseman, Land Use and Water Planner with the Colorado Department of Local Affairs (DOLA) christy.wiseman@state.co.us

[11] Several non-profits working in this space include (but aren't limited to): WaterNow Alliance, Western Resource Advocates, Colorado WaterWise, Water Education Colorado, Sonoran Institute, and Babbitt Center for Land Use & Water Policy

[12] US Bureau of Reclamation WaterSMART Program: https://www.usbr.gov/watersmart/index.html

[13] For example, DOLA's 2020 Annual Small Communities workshop featured a session around integrated water and land use planning.

If 2020 was any indicator, Colorado – like the rest of the West – is getting hotter and drier. Colorado is in its worst drought since 2012. 100% of the state is experiencing some level of drought, with 90.6% of the state under at least severe drought conditions as of January 26th, 2021. In August 2020, the Pine Gulch fire grew into the largest wildfire in Colorado's history. Compounding this issue, in many Colorado communities, high and sustained rates of population growth is placing more and more stress on limited water supplies and the cost of new supply is climbing.

To address these challenges, it's imperative that staff, management, and elected representatives of Colorado's cities, towns, and water providers take action now to develop as water efficiently as possible. Many communities are already taking important steps to integrate their water resources and land use planning, and they're recognizing that there's more work to be done to build resilient communities.

The Code Says What? Writing Regulations to Save & Protect Water Resources

Colorado APA Conference 2020
Growing Water Smart

JOHN BERGGREN

Western Resource Advocates

John.berggren@westernresources.org

TORIE JARVIS

NWCCOG QQ & ??

MARJO CURGUS

Principal, Del Corazón Consulting

delcorazonconsulting@gmail.com

SPEAKERS

AGENDA

2:00 | Welcome & Introductions

2:15 | Integrating Water & Land Use in the Code

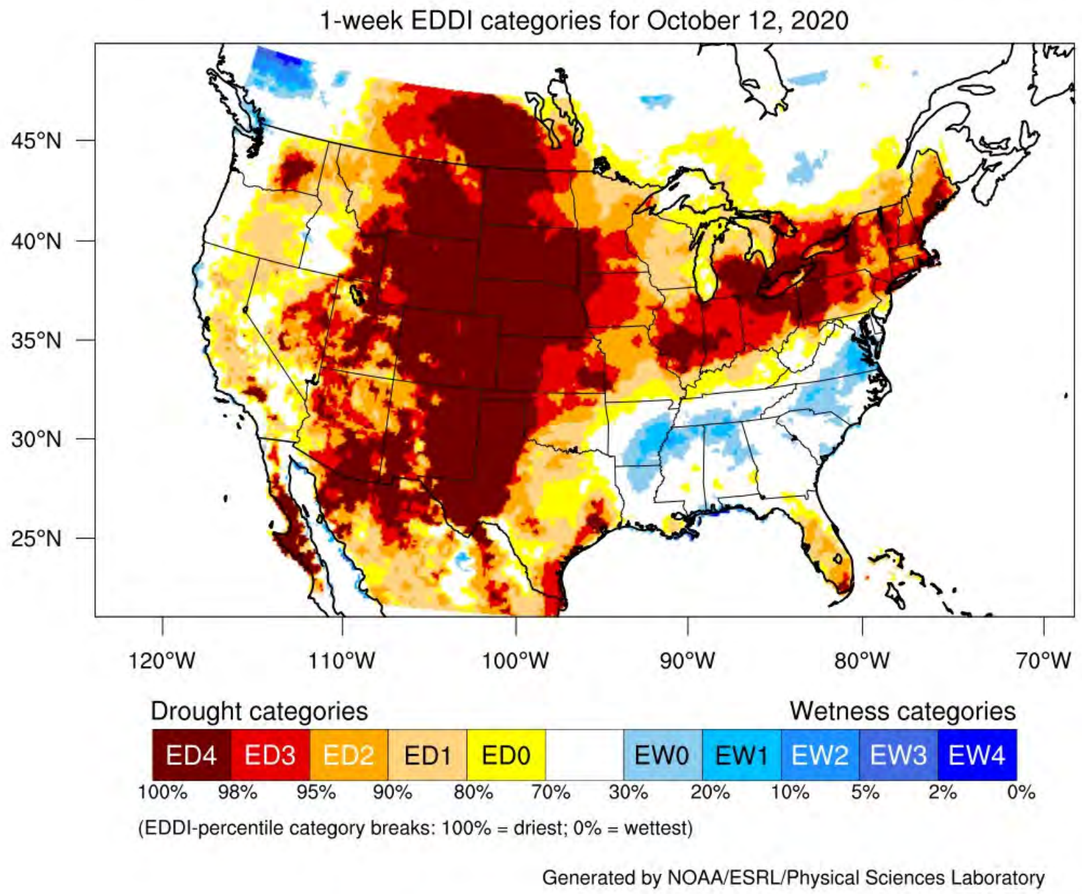
- *How integrating water and land use has changed over time.*
- *Water supply standards*
- *Water quality standards*
- *Water efficiency standards*

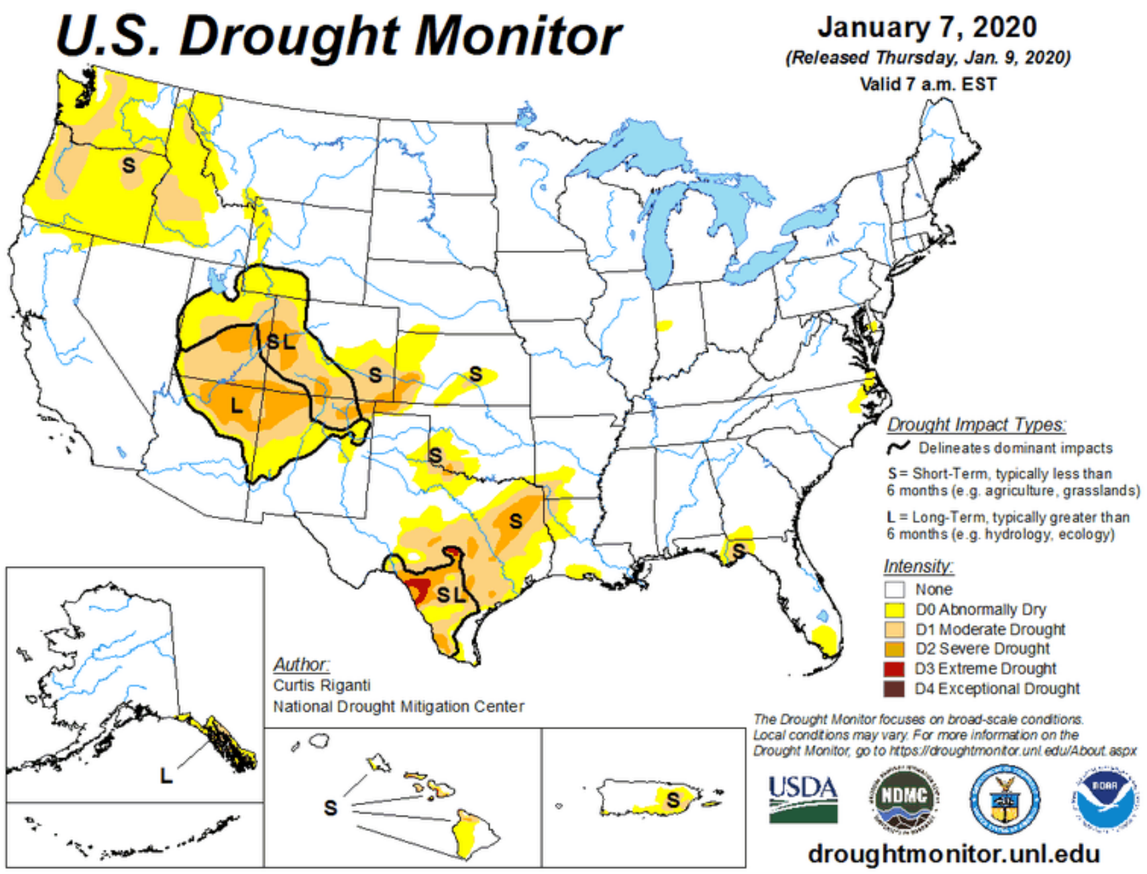
3:00 | Q&A

3:30 | END

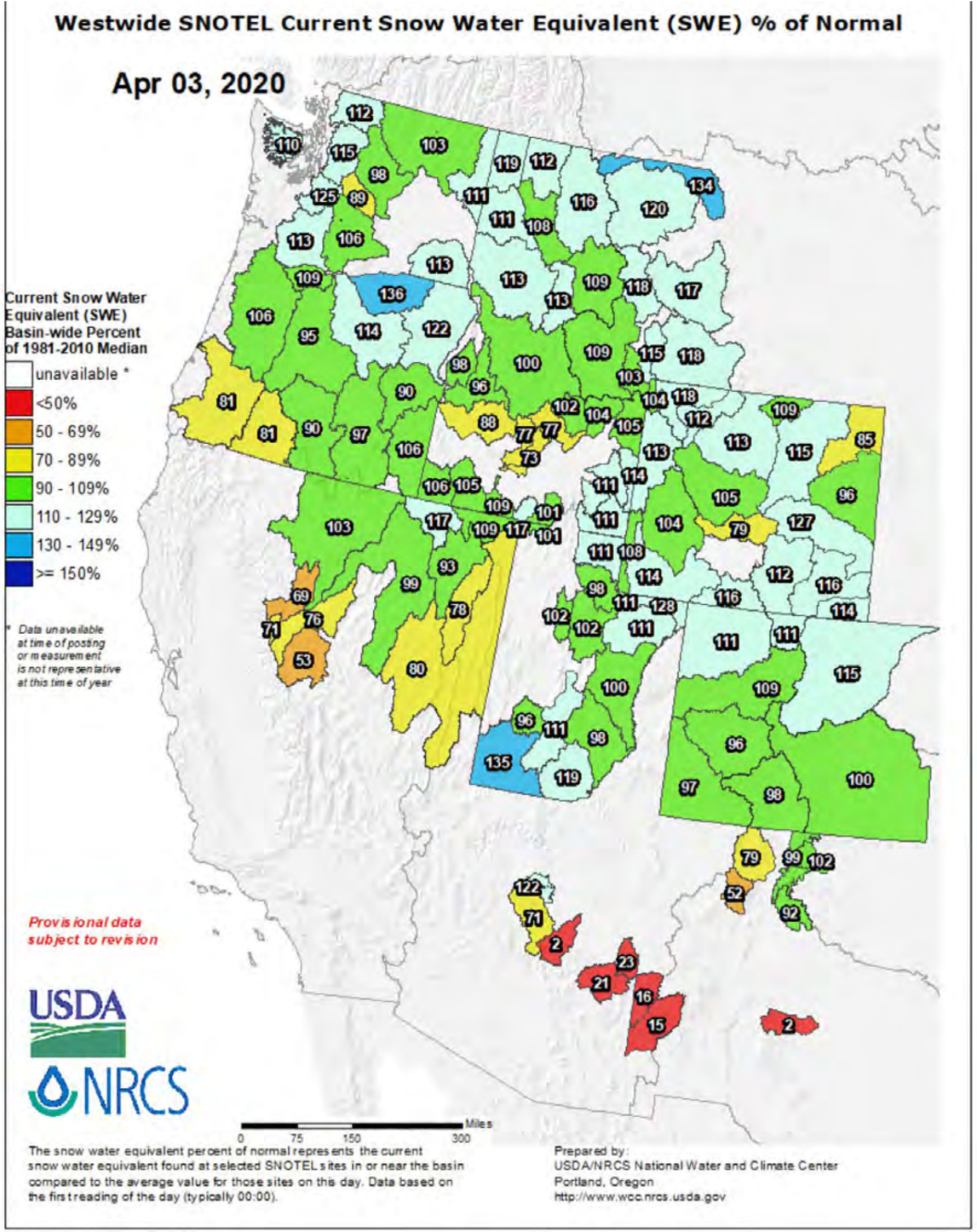
Why are we here today?

- Climate change is no longer something we plan for in the future…





Why are we here today?



WHO IS JOINING US TODAY?

Share your name, title, and where you work in the chat along with one reason you are interested in better managing your water resources.

1. WATER QUALITY STANDARDS

QQ Water Quality Protection Standards Guide

http://nwccog.org/wp-content/uploads/2018/06/2018.06.20.-NWCCOG-Model-Water-Quality-Prot.-Stnds-FINAL-with-appendices.pdf

LAND USE AND COLORADO'S WATER PLAN

"Every community can do better on water conservation and efficiency via locally determined measures, such as, but not limited to, reinvestment in aging infrastructure, community education, enhanced building codes, and water-sensitive land-use planning."

Guiding statement for County Commissioners Boulder County, City and County of Denver, City and County of Broomfield, Eagle County, Grand County, Pitkin County and Summit County, Comments on the Colorado Water Plan *(March 5 - May 1, 2015), Item No. 67. May 1, 2015*.

STATE WATER PLAN LAND USE PLANNING GOAL

By 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.

The CWCB will work with the Department of Local Affairs, local governments, water providers, Colorado Counties Inc., Colorado Municipal League, the Special District Association, councils of governments, and homebuilders (Colorado Association of Homebuilders) to examine and strengthen the tools they collectively possess to help Colorado reach this objective.

LOCAL WATER QUALITY PROTECTION

LOCAL GOVERNMENT AUTHORITY
NON-POINT SOURCE PROTECTION MECHANISMS

- Subdivision controls
- Special use permits
- Zoning use restrictions
- Building permit
- 1041 permits
- Conservation easements
- 208 Plan compliance requirement
- Minimum/maximum lot size
- Impervious surface ratios
- Slope restrictions
- Open space dedication
- Erosion and sediment control
- Revegetation
- Water body setbacks
- Spill and prevention control
- Floodplain requirements

CONSIDER THE WATER QUALITY NEXUS

1041 PERMITTING AUTHORITY *(CRS § 24-65.1-101, et seq.)*

Establishes permitting criteria for local governments to use in planning for and regulating such projects. The 1041 powers are intended to allow local governments to retain and increase their control over projects with statewide impacts.

Local gov't may develop regulations for specific state activities and areas such as natural hazard areas, areas of natural statewide importance, or activities such as site selection for water and other utilities, mass transit facilities, airports, or highway interchanges.

Criteria can include protection of surface water quality, groundwater quality, aquatic habitat, and efficient use of water resources, adequate water supplies for development, etc.

APPROVING SPECIAL DISTRICTS (*CRS § 32-1-101 to 32-1-1605)*

Counties and municipalities approve service plans

In many areas, special districts fuel development by providing funding for infrastructure and services. "Developer" districts often allow a proposed land use to proceed when there is no local capacity.

No special districts have land use powers or responsibilities.

LOCAL GOVERNMENTS CAN REGULATE ON FEDERAL LAND

Local governments can regulate the environmental impacts of private land uses on federal lands unless a federal statute expressly prevents the regulation.

California Coastal Commission v. Granite Rock, 480 U.S. 572 (1986).

THE QQ WATER SAVINGS RESOURCE GUIDE & CODE PROVISIONS

https://nwccog.org/water-savings-guidance/

Policy Self-Assessment Tool https://drive.google.com/file/d/1ue5LLfAmwZiJeveMfs1WFWI3ddBNK5m2/view?usp=sharing

WHERE & HOW WE BUILD MATTERS FOR WATER SAVINGS

1 SMALLER LOT SINGLE FAMILY DEVELOPMENT

Studies found 10 to 60% water savings with increased density of single-family residences.

2 MULTI FAMILY DEVELOPMENT

Multifamily units consume 35 to 50% less water than single family detached homes. If a high-density development requires cooling towers, the savings may decrease or be eliminated.

3 EFFICIENT LANDSCAPING AND IRRIGATION

Landscape code requirements can reduce outdoor water use by 35-50%.

4 INDOOR WATER USE

Water efficient fixtures and appliances, building and plumbing codes can have significant savings.

Type of Standard

Prescriptive

Suggestive

Voluntary Design Guidelines	Landscape Standards
Voluntary Water Use Restrictions	Water Conservation Ordinance

Voluntary

Mandatory

Strength of Standard

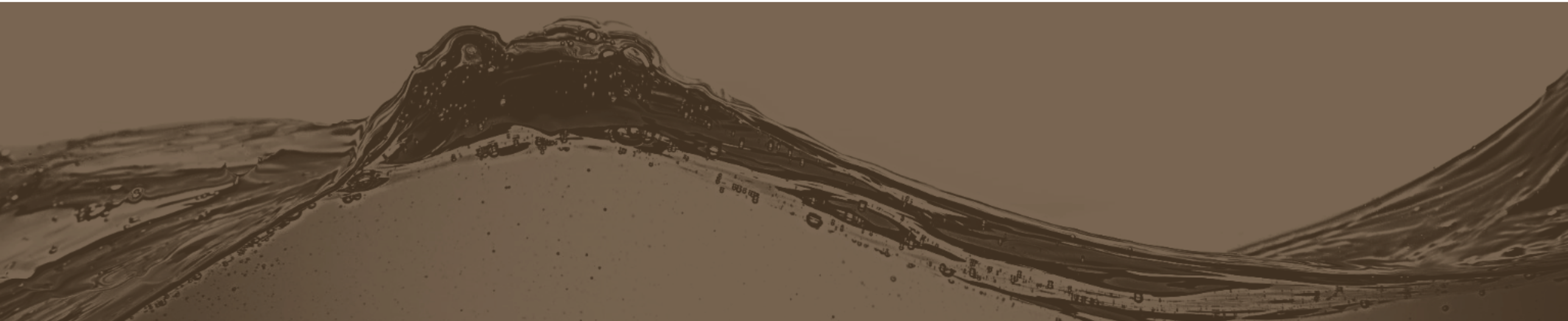
WATER RELATED STATE POLICIES

C.R.S. §31-23-206(1)(d) Master Plans

C.R.S. §29-20-301-306 Adequate Water Supply

C.R.S. §37-97-103 Water Meter Requirements

HB 19-1231 Water Efficient Indoor and Outdoor Fixtures



2. WATER SUPPLY STANDARDS

CO WATER ADEQUACY RULE
29-20-301

"sufficient for build out of the proposed development of terms of

QUALITY, QUANTITY, DEPENDABILITY, & AVAILABILITY

to provide a supply of water for the type of development proposed and may include reasonable conservation measures and water demand management measures to account for hydrologic variability."

State of Colorado Requirement for Applying Water Adequacy Review		
	Counties	Municipalities
Size of Development for Adequacy Determination	2 or more lots	50 or more lots
State Engineer Review	Required	Not Required, Optional
Determination Timing	Flexible within development review	Flexible

BREAKING DOWN WATER SUPPLY STANDARDS

YOU ARE ANSWERING THESE QUESTIONS	THAT MATCH THESE REQUIREMENTS
1. How much water is requires for the new development?	= water demand calculation
2. Where is the water going to come from?	= the water source(s)
3. Is the water supply adequate and sustainable?	= adequacy verification process
4. Is the water supply potable?	= water quality test
5. How will the water be delivered?	= water system design
6. When will you require proof?	= plan approval process

ADEQUACY VERIFICATION PROCESS

WATER PROVIDER W/ WATER SUPPLY PLAN ON FILE

Letter of commitment.

Plan must meet these standards and have reviewed/updated w/in last 10 years.

- Minimum 20-year planning horizon.
- Lists water conservation measures implemented in area.
- Lists water demand management measures for development, if any.
- Description of water source of entity.
- Description of water supply entities obligations.
- Any other info required by local government.

WATER PROVIDER W/O WATER SUPPLY PLAN

Letter must prove willingness and ability to serve and be prepared by profession engineer or water supply expert from entity.

- Estimate of water supply requirement for development.
- Description of water source.
- Estimate of water yield under different hydrological conditions.
- Water conservation measures for development, if any.
- Water demand measures for development, if any.
- Any other info required by local government.

WELLS

Water Supply Report

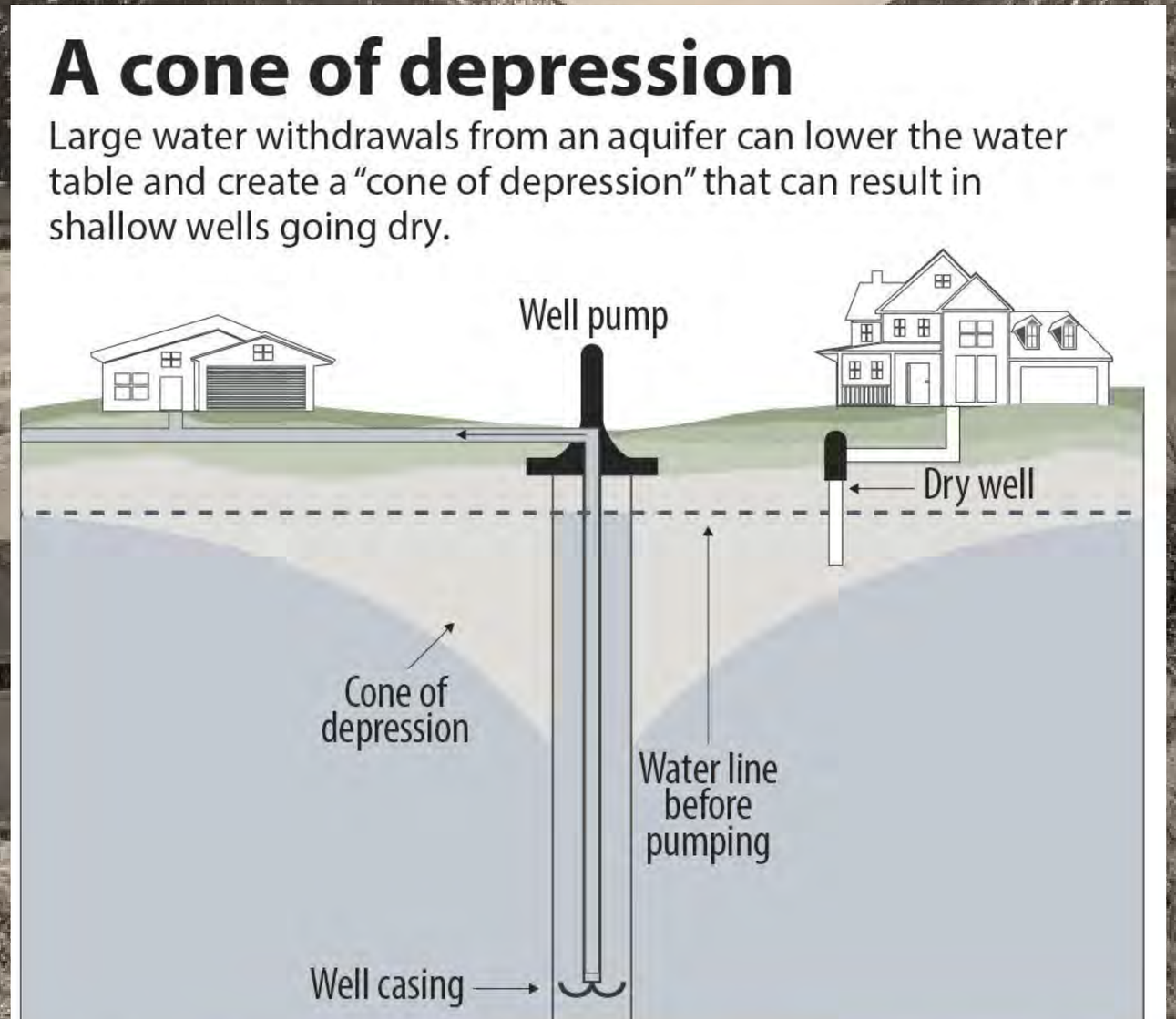
- Estimate of water supply requirement for development.
- Description of water source.
- Estimate of water yield under different hydrological conditions.
- Water conservation measures for development, if any.
- Water demand measures for development, if any.
- Any other info required by local government.

WHY IT MATTERS FOR WELLS?

EFFECTS OF OVERPUMPING OF GROUNDWATER

1. Change the direction of groundwater flow.

2. Lowers the water table (and cone of depression)
   - Makes it necessary to dig/redig deeper wells
   - Decreases stream flows
   - Can change vegetation



2. WATER SUPPLY STANDARDS BEST PRACTICES

1. Identify Permitted Water Source (well, provider, dedications, nonpotable, cisterns, recycled, etc.)

2. Provide Proof of Water Rights (legal)

3. A Requirement/ Methodology for New Development Water Demand (per development or household, indoor/ outdoor)

4. Specific Water Supply Adequacy Verification Process (review process)

5. Specific Water System, Distribution, and Connection Standards (infrastructure)

6. Define Potable Water Standards and Verification Process (water quality)

7. Link Water Supply and Zoning

8. Include Conservation & Efficiency Requirements

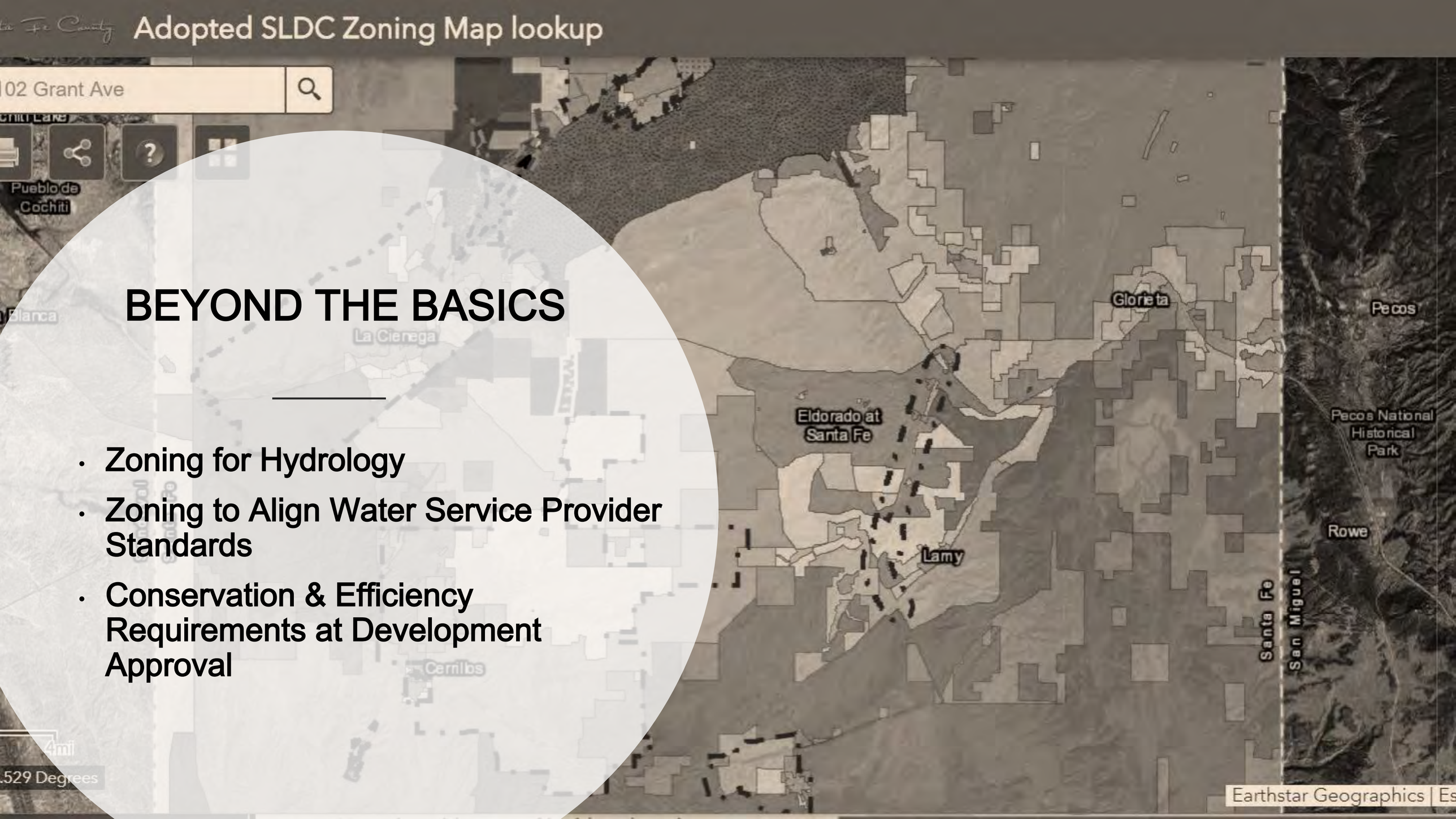
9. Clarify Timing for When Proof Required in Approval Process (municipal versus county)

GUNNISON COUNTY EXAMPLE

1. General Standard
2. Connection to Existing Systems
   a. Within 400’
   b. Within Urban Service Area
3. Existing System Not Accessible
   a. Install Water Supply System
   b. Submit Evidence of Adequacy of Individual Supplies
4. Calculation of Adequacy of Supplies (indoor/outdoor)
5. Fire Water Supply
6. Compliance with Colorado Drinking Water Standards
7. Water Rights

Well Testing Criteria

a. Continuous Pumping 24 hrs
b. Monitoring for Recovery 24 hrs
c. 1st hour pumping criteria
d. Required Monitoring Devices
e. Frequency of Level Measurements
f. Water Sample to Test for Compliance with Drinking Water Standards
g. Quality Professional
h. Unique Seasonal Requirements



BEYOND THE BASICS

- Zoning for Hydrology
- Zoning to Align Water Service Provider Standards
- Conservation & Efficiency Requirements at Development Approval

3. WATER EFFICIENCY

WATER EFFICIENT OUTDOOR WATER USE

Reduce the amount of water needed for irrigation by enhancing soil conditions, appropriate plant types and landscape design.

Decrease water waste by improving site-specific water efficiency through irrigation system design, best practices and technology.

Establish a maximum amount of water permitted for landscapes with water budget and/or **limit use of potable water** through alterative water sources.

OUTDOOR WATER EFFICIENCY BEST PRACTICES

PLANT MATERIALS

1. Add Soil Amendments
2. Specify Plant Material
3. Include Firewise and Water Efficient Landscapes
4. Require Restrictive Covenants

IRRIGATION EFFICIENCY

1. Require Mandatory Irrigation Scheduling
2. Require Efficient Irrigation System
3. Require Landscape Water Use Estimates and Maximum Allowable Water Budget
4. Separate Irrigation Meters
5. Prohibit Water Waste

WATER SUPPLY

1. Require Water Harvesting and Rain Gardens
2. Permit Alternative Water Sources
3. Utilize Water Connection Charge Incentives

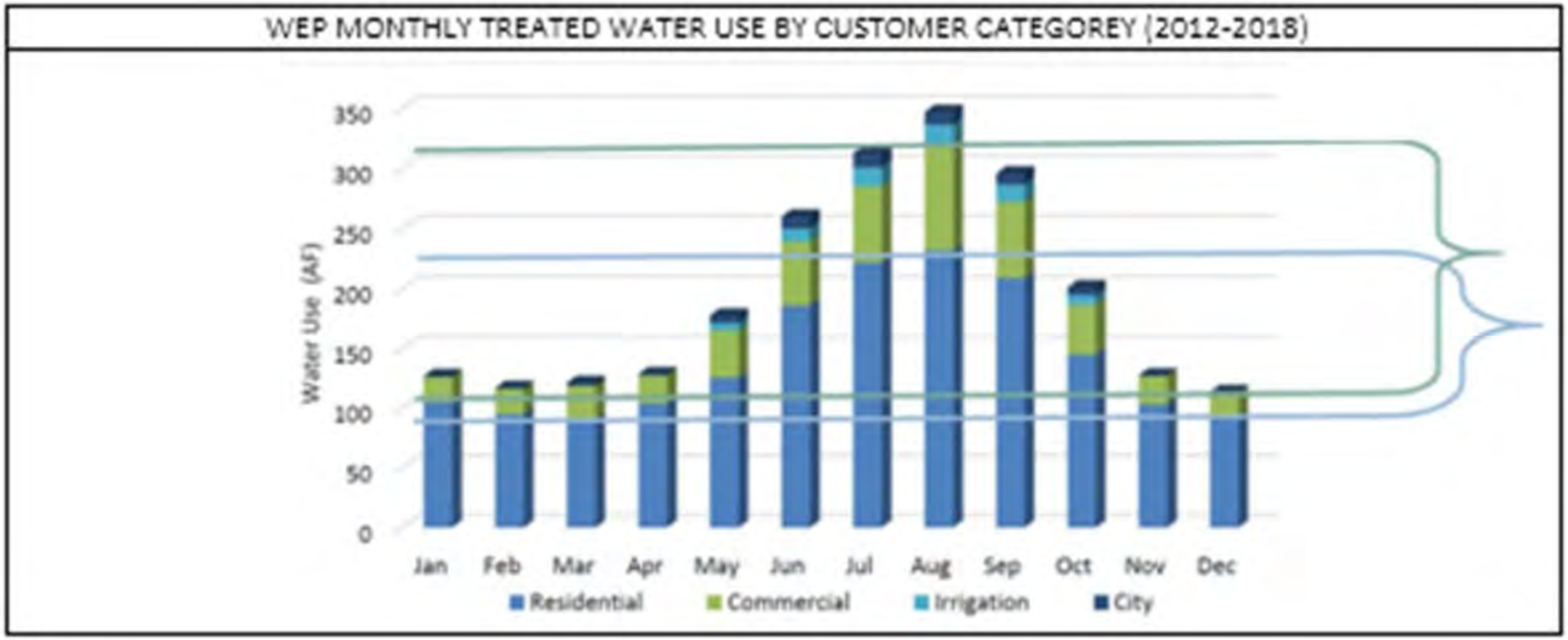
WATER EFFICIENCY IRRIGATION SYSTEMS

Water Efficient Irrigation Systems

- Water-use management plan or water budget.
- Hydrozones that group similar water demands by irrigation zone.
- Non-potable water source.
- Separate irrigation meters.
- Irrigation system design.
- Smart irrigation system controllers.
- Irrigation shutoff valve.
- Master valves and flow sensors.
- Rain sensors.
- Soil moisture sensors.
- Efficient emitters.

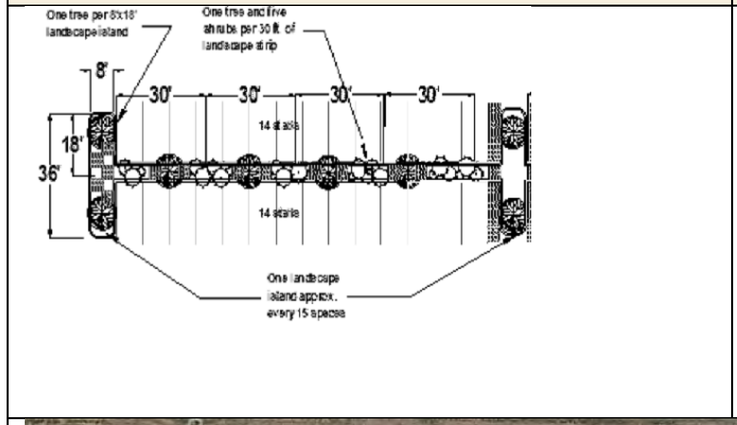
- Overhead (spray) irrigation.
  - Allowable only where sufficient width exists to prevent waste.
  - Pop-up height consistent with mature height of plants being watered – minimum of 6 inches.
  - Pop-up spray heads equipped with internal check valves, internal pressure regulations, and matched precipitation rate spray and rotary nozzle.
  - Rotors equipped with internal check valves and pressure regulations are more efficient than spray heads.
  - Head-to-head coverage.
- Drip systems.
  - Point source drip or subsurface drip irrigation for all trees, shrubs, perennials and annuals.
  - Internal check valves at each drip emitter and for subsurface drip systems.
  - Subsurface drip irrigation may be used for turf or grass areas.
  - Bubblers may be substituted for drip emitters.

MANAGING PEAK DEMAND & INEFFICIENT USE OF WATER

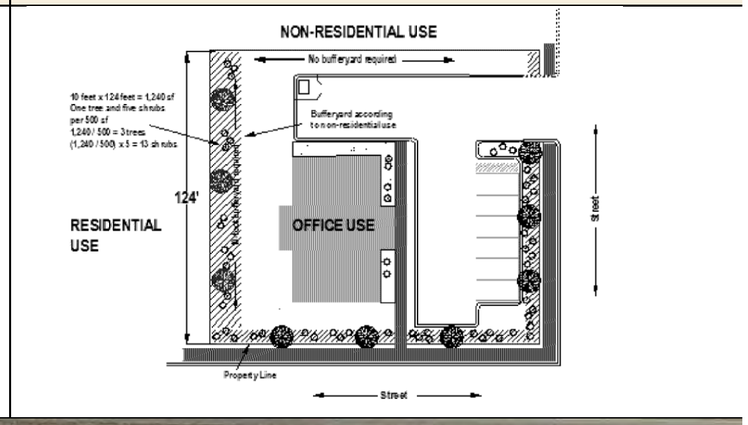


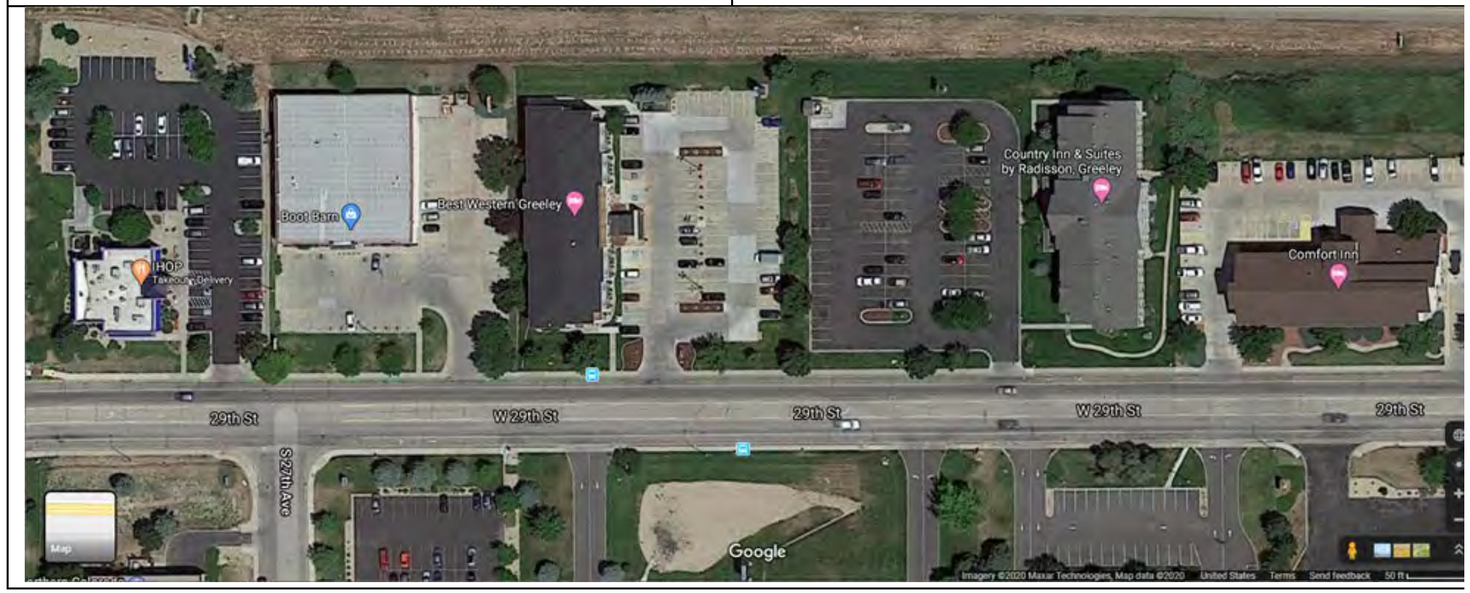
Lot sizes, buffers, landscape requirements, setbacks, parking lot requirements, and streetscapes ALL impact water demand.

Parking Lot Landscape Requirements Illustration



Buffer Requirements Illustration





DESIGN STANDARDS MATTER

AURORA

MULTIFAMILY LANDSCAPE RENOVATION DEMONSTRATION SITE

Renovation Size: 5.1 acres (Phase 1)

RESULTS	Pre-Renovation	Post-Renovation
Irrigation Water Use*	1,295,565 gallons/year	385,096 gallons/year
Irrigation Water Cost**	$9,069 /year	$2,696 /year SAVINGS of $6,373 /year, and $31,865 /year potential for all phases
Maintenance Cost***	Existing	20%-40% REDUCTION
Curb Appeal	Limited	ENHANCED

OUTDOOR WATER EFFICIENCY LOW HANGING FRUIT?

PLANT MATERIALS

1. Add Soil Amendments
2. Specify Plant Material
3. Include Firewise and Water Efficient Landscapes
4. Require Restrictive Covenants (HOAS)

IRRIGATION EFFICIENCY

1. Require Mandatory Irrigation Scheduling
2. Require Efficient Irrigation System
3. Require Landscape Water Use Estimates and Maximum Allowable Water Budget
4. Separate Irrigation Meters
5. Prohibit Water Waste

WATER SUPPLY

1. Require Water Harvesting and Rain Gardens
2. Permit Alternative Water Sources
3. Utilize Water Connection Charge Incentives