City of Loveland

LOVELAND PLANNING COMMISSION MEETING
AGENDA
Monday, July 08, 2019
500 E. 3rd Street – Council Chambers
Loveland, CO 80537
6:30 PM

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LOVELAND PLANNING COMMISSIONERS: Patrick McFall (Chair), Michael Bears, Jeff Fleischer, Rob Molloy, David Hammond, Milo Hovland, Susan Peterson, and Deborah Tygesen.

CALL TO ORDER

I. PLEDGE OF ALLEGIANCE

II. REPORTS:

a. Citizen Reports

This is time for citizens to address the Commission on matters not on the published agenda.

b. Current Planning Updates

1. **Monday, July 22, 2019 Agenda Preview**
    - i. **Wireless Telecommunications Code & UDC Amendments - PH**
    - ii. **Mineral Addition Zoning Document Amendment - PH**

c. City Attorney's Office Updates

d. Committee Reports:

1. **Zoning Hearing Officer: Increase in Variance Applications**

e. Commission Comments

III. APPROVAL OF MINUTES

Review and approval of the June 10, 2019 meeting minutes

IV. REGULAR AGENDA

1. Raw Water Study – Larry Howard, Water Resources Manager-- Informational Item

In April of 2019, Water Division staff completed a water use study titled: "Summary of Indoor vs. Outdoor Water Use Study Summary". Water Division staff has been asked to provide a summary of the findings of the study as the cost of residential water rights has an effect on the cost of residential development and ultimately on housing.

The main purpose of the study was to analyze the current water use of residential developments. The two key goals of the study were to analyze residential structures built after low flow fixtures were mandated in 1994 and 1997, and to analyze the current trends of water users within the City of Loveland. Data from 2008 to 2017 was analyzed for these goals. Both indoor and outdoor water usage was calculated for three main types of dwelling units: Single Family Detached, Single Family Attached, and Multi-Family. Based on the study, the staff determined the potential water rights required for each of the three types of dwelling units.

The main findings of the study were the following: Indoor water usage per dwelling unit has decreased for all analyzed types; outdoor water usage per lot has decreased for all types of analyzed housing developments; single family detached units on average use substantially more water for both indoor and outdoor use than other types of dwellings within the analyzed data set. Finally, staff recommends updating the residential water rights requirement to be more in line with the observed water usage trends.

2. Taft Avenue Rezoning – Emily Tarantini, Current Planning -- Public Hearing

This is a public hearing for the Planning Commission to consider the City of Loveland's request to rezone seven residential lots located along the west side of Taft Avenue to the south of Eisenhower Boulevard.

The lots have been purchased by the City to accommodate the additional right-of-way needed for the Taft Avenue widening project. All of the lots are zoned R1e (Established Low-Density Residential) and have been developed with single family homes. Several of the homes are now demolished. The requested zoning is B (Developing Business District) which allows for a variety of commercial, office and multifamily residential uses.

Staff is recommending approval of the request, believing that the proposed rezoning is in alignment with applicable City policies and that the requested zoning is more appropriate to the conditions associated with the Taft Avenue widening. Staff further believes that all key issues have been resolved. The role of the Planning Commission is to conduct a public hearing and forward a recommendation to City Council for final action.

V. ADJOURNMENT

SUPPLEMENTARY INFORMATION

Public Hearing Procedures

The purpose of a public hearing is for the Planning Commission (PC as used below) to obtain full information as to the matter under consideration. This includes giving all interested parties the opportunity to speak (provide testimony) at the hearing. The public hearing is a formal process. Below is the typical hearing sequence to be followed by the Planning Commission. ***Annotations have been provided for clarity.***

1. **Agenda item is recognized by the Chair**
2. **Public hearing is opened***
3. **Staff presentation**
   (May include clarifying questions to staff from Commissioners)
4. **Applicant presentation**
   (May include clarifying questions to applicant from Commissioners)
5. **Public comment**
   (All public comment should be made from the podium upon the PC Chair acknowledging the citizen speaking. Citizens should provide their name and mailing address in writing at the podium, and introduce themselves. The PC may ask clarifying questions of the citizens. At a public hearing, the PC does not respond to questions from citizens; questions directed to the applicant or staff should be requested through the Chair.)
6. **Applicant response**
   (The Chair typically requests that applicants respond to comments and questions raised during public comment)
7. **PC questions to staff, the applicant and possibly to citizens who presented**
   (Commissioners may use this step in the process to gain a more detailed understanding of relevant information)
8. **Close public hearing**
   (Unless specifically permitted by the Chair, further testimony is not allowed after the public hearing is closed)
9. **Motion**
   (Motions are made by a PC member with possible conditions)
10. **Motion is seconded**
    (A 2nd is required before the motion can be considered; a motion that fails to obtain a second dies)
11. **PC discussion**
    (The PC discusses the application and whether it satisfies the required findings)
12. **PC Chair requests that the applicant agrees to any conditions prior to a vote**
    (If an applicant does not accept the proposed conditions, the PC may deny the application)
13. **Vote**
    (*The decisions of the PC must address relevant findings of fact. These findings are specified in adopted plans and codes, and serve to guide zoning and annexation decisions. Relevant findings are itemized in the Staff Report and referred to in the recommended motion.)*

*** Note that the Planning Commission may place time limits on presenters. All presenters should communicate clearly and concisely, refraining from duplicating detailed information that has been provided by others.**

CITY OF LOVELAND
PLANNING COMMISSION MINUTES
June 10, 2019

A meeting of the City of Loveland Planning Commission was held in the City Council Chambers on June 10, 2019 at 6:30 p.m. Members present: Chairman McFall; and Commissioners Bears, Fleischer, Hammond, Hovland, Molloy, Peterson and Tygesen. Members absent: None. City Staff present: Kerri Burchett, Principal Planner; Laurie Stirman, Assistant City Attorney; Lisa Rye, Planning Commission Secretary.

These minutes are a general summary of the meeting. A complete video recording of the meeting is available for two years on the City's web site as follows: https://loveland.viebit.com/

CITIZEN REPORTS

There were no citizen reports.

CURRENT PLANNING UPDATES

1. **Kerri Burchett, Principal Planner,** stated that she would be providing staff support for the evening in Robert Paulsen's absence.

2. **Ms. Burchett** announced that **Tim Hitchcock** has resigned from the Planning Commission, since he has been appointed to the Human Services Commission. He has served as a Planning Commissioner since July, 2017. His service, along with his work on the Unified Development Code (UDC), is greatly appreciated. Applications will be accepted to fill his position.

3. **Ms. Burchett** notified the commission that there are no items on the June 24, 2019 meeting agenda, and requested a motion to cancel the meeting.

   Commissioner Milo Hovland *made a motion to cancel the June 24, 2019 Planning Commission meeting; upon a second by* ***Commissioner Bears*** *the motion was unanimously approved.*

4. **Ms. Burchett** provided a preview to the agenda for the Monday, July 8th Planning Commission meeting. The Taft Rezoning project will be brought before the Commission for recommendation, along with a UDC Amendment regarding wireless telecommunications.

CITY ATTORNEY'S OFFICE UPDATES

Laurie Stirman, Assistant City Attorney, noted there is nothing to report.

COMMITTEE REPORTS

There were no committee reports.

COMMISSIONER COMMENTS

Commissioner McFall stated that he appreciates the service of **Commissioner Hitchcock** over the past few years, and he will be missed.

APPROVAL OF THE MINUTES

Commissioner Peterson *made a motion to approve the* ***May 13, 2019*** *minutes; upon a second from* ***Commissioner Bears,*** *the minutes were approved unanimously.*

REGULAR AGENDA

1. Camp Bow Wow – Conditional Use – Public Hearing

Project Description: This is a public hearing for a Conditional Use application. The applicant is proposing the establishment of a 6,000 square foot dog daycare facility at 1227 Des Moines Avenue. The property is zoned I – Developing Industrial, and is developed with a building and associated parking and landscaping. The dog daycare use requires Conditional Use approval from the Planning Commission to operate at this location.

The role of the Planning Commission is to conduct a public hearing and make a decision on the Conditional Use application based on whether the proposal meets the required findings. Barring appeal, the Planning Commission's decision is final.

Commissioner McFall opened the public hearing at 6:41 p.m.

Troy Bliss, Current Planning, explained that this is the first conditional use application to come before the Planning Commission. He presented the four levels of use, as described by the Unified Development Code (UDC). These uses include Conditional Use, which comes before the Planning Commission; Adaptable Use, which requires a neighborhood meeting; Limited Use, which requires an administrative review with limited standards to ensure compatibility with the neighborhood; and lastly, Use by Right, which is administratively reviewed and subject to only general standards of the UDC.

Mr. Bliss explained that the UDC states that if a building or site proposed for a animal kennel is not located along an arterial street or a collector's street, the application is forced into a

conditional use process. Since Des Moines Avenue is a local street, this project is being brought to the Planning Commission as the decision making body on this conditional use.

Mr. Bliss shared that based on the staff's analysis, he believes this use is appropriate to be approved as a conditional use. Should the Planning Commission decide to approve the application, it would also be approving a variation to a standard in the UDC regarding lot size for this type of use, as the property is smaller than the acre size lot requirement. Other development standards such as parking, hours of operation, and noise have been met; therefore, it has been demonstrated that the use is appropriate.

Kelly Hess, applicant, described Camp Bow Wow as being North America's largest pet franchise, with locations in both Fort Collins and Longmont. The proposed site plan was presented, including drawings of exterior plans and signage, pictures of the "camp-themed" lobby with boarding accommodations and outdoor play areas. Ms. Hess explained that there would be 54 "cabins" in the proposed facility.

CITIZEN COMMENTS:

There was no public comment.

Commissioner McFall closed the public hearing at 6:55 p.m.

Commissioner Molloy *moved to make the findings listed in this Staff Report dated June 10, 2019, and based on those findings approve the conditional use to allow a dog daycare facility for Lots 14-16, Block 4 – Loveland Business Plaza First Addition, subject to the conditions listed under the Staff Recommendation.* ***Commissioner Bears*** *seconded the motion.*

Commissioner McFall asked the applicant if she accepted the conditions. **Ms. Hess** responded that she accepts the conditions.

The motion was unanimously approved.

2. Mehaffey Enclave Annexation & Zoning – Public Hearing

Item Description: This is a public hearing to consider annexation and the establishment of zoning for a 42.7- acre property located in Northwest Loveland. The site is located along the south side of W. 29th Street and the west side of N. Wilson Avenue. The property is the remaining portion of the Mehaffey Farm. The City of Loveland Parks and Recreation Department is the applicant and has been working in cooperation with the property owner, Raymond Mehaffey, on the annexation and zoning application.

While this application has generated interest among nearby residential neighbors, Planning Division staff believes that key issues have been resolved. The City's development review team (DRT) finds that the application is consistent with state statutes and with applicable City policies and regulations, and therefore supports the application. The Planning Commission's role is to conduct a public

hearing and forward a recommendation to the City Council on both the annexation and zoning application.

Commissioner McFall opened the public hearing at 6:58 p.m.

Emily Tarantini, Current Planning, presented the application for the proposed project, which requests the annexation of 42.691 acres of the Mehaffey enclave. Two zoning districts are being requested; PP-Public Park on the western side (Lot 1 – 18.981 acres) and DR-Developing Resource on the eastern side (Lot 2 – 23.62 acres). It was stated that Lot 1 would be owned by the Parks Department and Lot 2 would continue to be owned by the Mehaffey family.

Ms. Tarantini explained that approximately 26 – 30 residents attended a neighborhood meeting on May 20th. Residents had questions related to traffic, both vehicular and pedestrian access, potential development of the site area, along with safety and maintenance of the area. She stated that Kiowa Drive and Mehaffey Drive would most likely be extended through the site. West 29th Street is classified as a major arterial, and is designed to accommodate an increase in traffic volume; furthermore, a Traffic Impact Study will be required with each development application as they come in to ensure compatibility with that road classification. Ms. Tarantini mentioned that the proposed plan for the western portion of the site is an expansion of Mehaffey Park with the potential for a Recreation Center; and, the eastern portion would continue to be farmed by the Mehaffey family for the foreseeable future, and would likely be eventually developed with residential uses. She shared that pedestrian connections to the future park will be required and reviewed with development applications, and that there are plans for a detached sidewalk with tree lawns to protect pedestrians. Finally, she stated that basic maintenance of the park site would be performed by the Parks Department.

Ms. Tarantini described the site area as having a land use designation of Low Density Residential, and an overlay designation of Complete Neighborhood, according to the City's Comprehensive Plan. She further explained that compatible zoning districts for the area include R1, R1e, and PUD. Compatible land uses would include single-family homes, limited duplexes and multi-family homes, recreational/parks, churches, and schools. It was stated that within the annexation agreement, the City is allowing the Mehaffeys to continue their farming operations on the eastern portion of the property.

Ms. Tarantini finished by stating that the findings show that the annexation complies with Colorado state statutes regarding annexation, the property is situated within the City's Growth Management Area, and the property represents an entire enclave that has been surrounded by property within the City for over 3 years. Based on these facts, City staff is recommending approval of the annexation and zoning, subject to the conditions listed in the staff report.

Bryan Harding, Parks and Recreation Planning Manager, explained that the City's Master Plan provides guidance for the acquisition of future development. The Parks Department has a forecast of community growth in the area, and they strive to stay current with the growth by providing updated and improved facilities for the community whose priorities are health and fitness, access to open lands, and more recreation space and opportunities. Mr. Harding explained that the parcel is a desirable asset to the Parks Department since the location is in

proximity to the existing Mehaffey facilities, is situated in the fastest growing northwest Loveland area, and the size of the property can accommodate a variety of options. He added that The City of Loveland is under contract to purchase the western portion of the property from the Mehaffey family with a proposed closing of September 2019. The acquisition of the land would be purchased in three separate parcels to accommodate City budget needs, with the full purchase being completed in 2021.

Mr. Harding explained that there are no current plans for development of the property being purchased by the Parks and Recreation Department. The purpose of the annexation and zoning action is to establish and preserve areas within the City for public recreation facilities, parks, and open space. Future development will be Parks and Recreation based, but will depend on the budget for development, the decision of voters based the ballot outcome this fall, and will be subject to public review, approvals, and permits.

Commissioner Molloy questioned if there is a binding contract that states tracts will be purchased separately over several years. Mr. Harding answered that the contract states that the land to be purchased over three years as three separate tracts. Commissioner Molloy asked if the other tracts could be farmed during this process. Mr. Harding stated that farming of the land by the Mahaffey family may continue until the purchases of the tracts are complete.

CITIZEN COMMENTS:

Marsha Johnson, resident, shared that she was unable to attend the neighborhood meeting, and is unaware if anyone was opposed to the project. She spoke about a large increase in noise, traffic, and activity in her neighborhood due to the addition of a fire station, Loveland Classical School, and Mehaffey Park. She shared that she is opposed the possibility of a recreation center and a library, and she does not want access to these areas via her neighborhood streets. Ms. Johnson added that she is aware of the bad environment around the downtown library, which encourages drug deals and homeless people loitering, and is concerned that this might be introduced into her neighborhood with the addition of the proposed buildings. She spoke of her concern over safety, vandalism, noise, and blocked views. She stated that her property value would most likely decrease, since her backyard fence will be right next to the park area, which provides easy public access to her backyard. She suggested that since the City has spent money on developing the downtown area, she would like to see some expansion area in the downtown that would encourage citizens to go there. She believes that, due to proximity, Fort Collins residents will be likely to use the proposed area.

Commissioner McFall closed the public hearing at 7:19 p.m.

Ms. Tarantini responded to the concerns of the neighborhood resident. The Unified Development Code has specific standards that must be met regarding separation of new developments from existing neighborhoods, along with specific height requirements. She shared that a noise study can be requested, and that noise complaints can be filed with the City's code enforcement.

Ms. Burchett reminded commissioners that this evening they are voting only on the annexation and zoning of the property, and that they are not voting on extension of streets nor development of the area.

Mr. Harding stated that noise issues can be addressed through adjusting park hours, and complaints should be directed to the Loveland Police Department immediately. Security cameras have been installed at Mehaffey Park and at other Park locations, and there is an increase in police patrols in the area. He stated that parks and recreation areas would not serve the downtown area well, since they do not contribute to tax revenues for the city, which is the goal of the revitalization of downtown. The Department desires to acquire land while they still have the opportunity; and, if the City does not take advantage of this land, there will most likely be a residential subdivision built there. When the land is ready to be developed, it was assured that the Parks Department will take measures to minimize the impact of a new development on the existing neighborhood, such as preserving views with lower rooflines and nighttime light pollution friendly lighting. Mr. Harding stressed that this is not a proposal for a recreation center or future park, but the future development will be dependent on the voter's decision in the fall.

Commissioner McFall asked if anyone was opposed to project at the neighborhood meeting. **Mr. Harding** answered that he is unaware of opposition, but there were fair concerns shared regarding traffic, and added that there were good and challenging questions asked by residents.

COMMISSIONER COMMENTS:

Commissioner McFall shared that the commissioners have heard many discussions regarding the desire to keep the City looking the way we found it, but the commissioner's responsibility today is to vote on the annexation and zoning only, and the development of the land will go through the required processes in the future.

Commissioner Molloy *moved to make the findings beginning on page 6 of the Planning Commission staff report dated June 10, 2019 and, based on those findings, recommend that City Council approve the 42.691 acre Mehaffey Addition, subject to the conditions beginning on page 11 of this report dated June 10, 2019, as amended on the record, and zone the western 18.981 acres to PP-Public Park and zone the eastern 23.710 acres DR-Developing Resource.* ***Commissioner Bears*** *seconded the motion.*

Commissioner McFall asked the applicant if he accepted the conditions. **Mr. Harding** responded that he agrees to the conditions.

The motion was unanimously approved.

ADJOURNMENT

Commissioner Molloy *made a motion to adjourn; upon second by* ***Commissioner Hovland****, the motion was unanimously adopted.*

Commissioner McFall adjourned the meeting at 7:39 p.m.

Approved by:_____
Patrick McFall, Planning Commission Chair

_____
Lisa Rye, Planning Commission Secretary

Water and Power Department
Service Center • 200 N. Wilson Avenue • Loveland, CO 80537
(970) 962-3000 • (970) 962-3400 Fax • (970) 962-2620 TDD
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MEMORANDUM

TO: Joe Bernosky, Director of Loveland Water and Power
THROUGH: Roger Berg, Water Utilities Manager
FROM: Larry Howard, Water Resources Manager &
Michelle Erickson, Technical Specialist
DATE: June 18, 2019
SUBJECT: Indoor vs. Outdoor Water Use Study Summary

Currently our raw water requirements for residential developments are calculated based on municipal code 19.04.020 as follows: (1.6 AF x net lot acreage) + (1.4 AF x acreage of each lot greater than 15,000 sq. ft.) + (0.23 AF x number of dwelling units)

The table below explains each component of this raw water requirement equation.

Factor	Description
1.6 AF x net lot acreage	**Outdoor Irrigation:** The raw water requirement for irrigated open spaces is 3.0 acre feet (AF) of water per acre. For residential dwellings, the assumption used is that on average about 53% of each lot is irrigated (1.6 AF/3.0 AF = 53%). Use of this factor simplifies the calculation, avoiding having to do measurements of irrigated areas for each residential lot.
1.4 AF x acreage of each lot greater than 15,000 sq. ft.	**Large Lot Irrigation:** The factor of 1.4 AF is added to the areas above 15,000 square feet. It is assumed these areas would be irrigated open space requiring 3.0 AF of water per acre. The City already requires 1.6 AF of the 3.0 AF for the normal outdoor irrigation factor, this additional factor of 1.4 AF when added together provides the necessary 3.0 AF per acre (1.6 AF+1.4 AF =3.0 AF).
0.23 AF x number of dwelling units	**Indoor Water Use:** The factor of 0.23 AF is used for indoor water use for each domestic unit. This factor was previously calculated by staff and equates to 205 gallons per unit per day.

Staff performed a study to determine the average indoor and outdoor water usage and raw water requirements by housing type. We studied the outdoor component of the equation above of 1.6 AF times the net lot acreage for single family attached and single family detached dwellings. (Multi-family dwellings typically have separate dedicated irrigation taps that provide water for outdoor use.) We also studied the indoor

component of the equation above of 0.23 AF times the number of units for multi-family, single family attached and single family detached dwellings. If these factors vary significantly from the 1.6 factor for outdoor use and the 0.23 factor for indoor use, City Council may consider adjusting the factors accordingly.

Larry Owen, from M.Timm Development, Inc., commented that Loveland's current charge for indoor water rights is high when considering that current housing standards use more efficient water fixtures than in the past. Mr. Larry Owen wrote a letter to the City requesting the indoor raw water requirement be reduced to **0.15 AF/unit** from its current value of **0.23 AF/unit**, based on information provided by M. Timm Development, Inc. If changed, the modified value would then be applied to the developer's project, Tanima Peak Apartments. He claims "the water consumption in their apartments have been shown to be dramatically less than in single family homes," citing fewer square feet and lower occupancy per unit to be the cause.

A study by M. Timm Development for 606 apartments within the Longmont, Loveland and Evans areas was cited by Mr. Owen, which showed average indoor water use to be 0.1024 AF/unit. The study adds 8% for system losses and a 40% "drought buffer" resulting in the 0.15 AF/unit value that he proposes. There was no explanation provided on how the percentage for system losses or the drought buffer were determined. His study uses only one year of consumption that occurred in 2014 for the following apartment complexes:

- 104 units - Thompson Valley (Loveland)
- 212 units - Crescent Cove (Evans)
- 290 units - Grandview Meadows (Longmont)

The goals of this internal City of Loveland study are to evaluate whether the City's residential water right requirements need to be updated, determine if there is a difference in indoor water usage between multi-family developments and single family households, and determine their overall water consumption and subsequent raw water requirements.

Study Process

To determine an adequate study period, it was desired to include a time period after the requirements for water efficient fixtures were made. In 1992, the Energy Policy Act was signed into law and mandated the following low flow fixture requirements in new residential structures:

- 1.6 gallon per flush toilets
- 2.2 gallon per minute at 60 psi bathroom faucets
- 2.5 gallon per minute at 80 psi showerheads

This law went into effect January 1, 1994 for residential buildings, which includes single family attached and detached residences, and January 1, 1997 for commercial buildings, which includes multi-family dwellings. For our study, homes built since 1994

and multi-family dwellings built since 1997 were selected to represent what future water use might look like.

Water consumption data was acquired from utility billing to show actual consumption in gallons for each month. The study includes ten years of data for most sites from 2008 through 2017, giving a representation of water use through wet, dry and average water years. GIS maps were created to show the locations of the multi-family, single family attached, and single family detached residences included in the study.

City Council has directed that the City will continuously maintain a minimum quantity of raw water supplies to handle a 100-year drought, which has a 1 in 100 probability of occurring. To correlate with the 1 in 100 probability, staff used the 99% confidence interval, which is a range of values providing 99% certainty that it contains the true mean of the population for the actual average indoor water use by housing type: multi-family, single family attached, and single family detached.

The next steps were to apply the losses that are incurred throughout the City's water system to the values indicated at the upper end of the 99% confidence interval and to apply a vacancy rate on multi-family dwellings.

Residential Indoor Water Use by Housing Type

For all residential housing types studied, the winter quarter was used and extrapolated to an annual basis for all water meters showing outdoor irrigation occurring. Otherwise, the full annual data was used in determining indoor water use.

Annual Indoor Water Use for Multi-Family Dwelling Units

Eleven representative multi-family complexes were selected across the City for evaluation. See the map in Appendix 1 for the subdivision locations. The following is a list of the multi-family complexes and the average indoor water use per dwelling unit for each complex throughout the study period, and the number of water meters and dwelling units per complex that were examined. Most of these complexes have separate dedicated irrigation meters. Staff used the full year's worth of data for the meters that do not provide irrigation water. For the meters that provide both indoor usage and outdoor irrigation water, only the water consumption during winter quarter was used, to exclude outdoor irrigation from this study. More detailed information is available in Appendix 4.

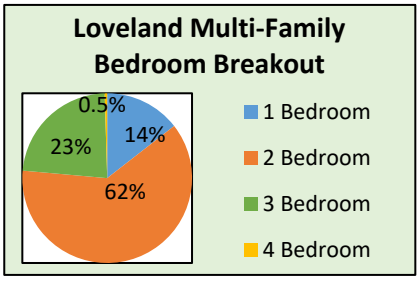
Average Annual Indoor Water Use for Multi-Family Residences

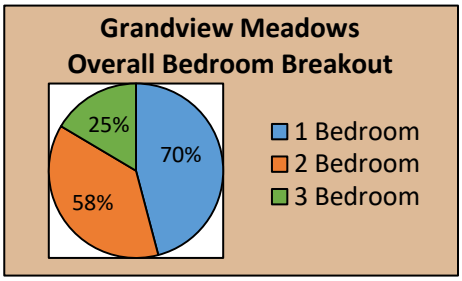
Multi-Family Complex *Subdivision*	**Average Annual Indoor Water Use** (Acre Feet per Dwelling Unit)	**Number of Dwelling Units**	**Number of Meters Examined[1]**
1. Waterford Place Apartments *Waterford Place 2nd*	0.14 AF/unit	128	7

2. Thompson Valley Apartments *Thompson Valley 2nd*	0.10 AF/unit	104	8
3. Peakview by Horseshoe Lake *Windsong 7th*	0.10 AF/unit	156	13
4. Reserve at Centerra *Rocky Mountain Village 1st*	0.17 AF/unit	128	13
5. The Buttes Apartments *Cooper 1st*	0.09 AF/unit	114	8
6. Eagle Ridge Apartments *McWhinney 11th*	0.11 AF/unit	168	14
7. High Plains Village Condos *Rocky Mountain Village 2nd*	0.12 AF/unit	116	24
8. Justice Center Apartments *Factory Place Addition*	0.15 AF/unit	7	2
9. Lakeshore at Centerra – Condominium Apartments *Rocky Mountain Village 5th*	0.10 AF/unit	192	24
10. Condos at Tulip Creek *Millennium SW 5th*	0.11 AF/unit	18	3
11. Stone Creek Townhomes *Millennium SW 2nd*	0.13 AF/unit	36	6
Weighted Average Billed Usage	**Weighted Average 0.12 AF/unit**	**1,249**	**122**
Upper Limit of the 99% Confidence Interval	**0.13 AF/unit**		

[1] *No dedicated irrigation meters were included in the meters studied. Most meters studied were exclusively for indoor use. Winter quarter data only was used for those meters that exhibited both indoor and outdoor use.*

The average annual indoor water usage for the multi-family dwellings studied including one, two, three and four bedroom units was 0.12 AF/unit with a standard deviation of 0.03 and the upper level of the 99% confidence interval at 0.13 AF/unit.





Of the multi-family units studied, 85% had either 2 or 3 bedrooms as shown in the chart to the right as compared to the majority of the apartments in the M. Timm Development's study, which had 70% being one bedroom apartments. This may help explain why the average Loveland multi-family water use is 0.12 AF/unit as compared to the proposed water use by Larry Owen or M. Timm Developments to be 0.1024 AF/unit. Multi-family dwellings with single bedroom units tend to show a lower water use. Overall, M. Timm Development's apartment units have fewer numbers of bedrooms and are smaller in

size than the average multi-family units found in this study. It is not expected that variance in square feet per bedroom would affect overall water use per unit.

Annual Indoor Water Use for Single Family Attached Dwelling Units

To study the indoor water use of single family attached homes, staff selected homes from thirteen subdivisions built after the 1994 residential plumbing code changes went into effect. See the map in Appendix 2 for the subdivision locations. To exclude possible outdoor irrigation water from the study, the monthly average during the winter quarter months of December through February was multiplied by 12 to determine the overall annual indoor water usage. More detailed information is available in Appendix 5.

Average Annual Indoor Water Use for Single Family Attached Residences

Subdivision	Units per Building	Average Annual Indoor Water Use (Acre Feet per Dwelling Unit)	No. of Dwelling Units
1. Picabo Hills	4 - 8	0.10 AF/unit	7
2. Townhomes at Stone Creek	2	0.07 AF/unit	9
3. Vanguard- Famleco 11th	4-5	0.10 AF/unit	8
4. Shamrock West	2-7	0.11 AF/unit	10
5. Winona 1st	2	0.13 AF/unit	10
6. Schroeder Office Park 1st	2	0.12 AF/unit	7
7. Westwood	2	0.13 AF/unit	10
8. Vanguard-Famleco 12th	2	0.13 AF/unit	7
9. Thompson Valley 2nd	2	0.13 AF/unit	11
10. Mariana Butte 12th	2	0.07 AF/unit	10
11. Mariana Butte	2-3	0.11 AF/unit	10
12. Millennium SW 5th	4	0.12 AF/unit	8
13. Mirasol 1st	2	0.07 AF/unit	10
Weighted Average Billed Usage		**0.11 AF/unit**	**117**
Upper Limit of the 99% Confidence Interval		**0.12 AF/unit**	

The average annual indoor water usage for single family attached homes studied was 0.11 AF/unit per year with a standard deviation of 0.04 and the upper level of the 99% confidence interval at 0.12 AF/unit.

Annual Indoor Water Use for Single Family Detached Dwelling Units

To study the indoor water use of single family detached homes, staff selected 120 homes from fifteen subdivisions built after the 1994 residential plumbing code changes went into effect 1994. See Appendix 3 for the subdivision locations. To exclude possible outdoor irrigation water from the study, the monthly average during the winter months of December through February was multiplied by 12 to determine the overall annual indoor water usage. More detailed information is available in Appendix 6.

Average Annual Indoor Water Use for Single Family Detached Residences		
Subdivision	**Average Annual Indoor Water Use** (Acre Feet per Dwelling Unit)	**No. of Dwelling Units**
1. Hunters Run	0.15 AF/unit	10
2. Alford Lake 1st Sub	0.16 AF/unit	9
3. Alford Lake 4th Sub	0.21 AF/unit	7
4. Mariana Butte 13th Sub	0.13 AF/unit	6
5. Blackbird Knolls 2nd Sub	0.16 AF/unit	8
6. Winona 3rd Addition	0.21 AF/unit	3
7. Garden Gate 1st Sub	0.19 AF/unit	9
8. Seven Lakes North Addition	0.14 AF/unit	4
9. Anderson Farms 5th Sub	0.29 AF/unit	4
10. Vanguard-Famleco 12th Sub	0.15 AF/unit	12
11. Buck 2nd Sub	0.16 AF/unit	12
12. Anderson Farm 7th Sub	0.14 AF/unit	12
13. Rocky Mountain Village 2nd Sub	0.13 AF/unit	12
14. Millennium SW 2nd Sub	0.17 AF/unit	10
15. Kendall Brook 1st Sub	0.14 AF/unit	2
Weighted Average Billed Usage	**0.16 AF/unit**	**120**
Upper Limit of the 99% Confidence Interval	**0.17 AF/unit**	

The average annual indoor water usage for single family detached homes studied was 0.16 AF/unit per year with a standard deviation of 0.06 and the upper limit of the 99% confidence interval at 0.17 AF/unit.

Residential Outdoor Water Use by Housing Type

We studied single family detached and single family attached housing units demonstrating outdoor irrigation usage. Because most multi-family dwellings built after the new plumbing code went into effect have separate dedicated irrigation meters rather than meters with mixed indoor and outdoor usage, we excluded studying the outdoor usage component for multi-family dwellings.

Annual Outdoor Water Use for Single Family Attached Dwelling Units

To study the indoor water use of single family attached homes, staff selected homes from six subdivisions built after the 1994 residential plumbing code changes went into effect and for which demonstrated outdoor water usage. We calculated the outdoor water usage by deducting the winter quarter average extrapolated to an annual basis to account for indoor water usage from the average annual water usage. More detailed information is available in Appendix 7.

Average Annual Outdoor Water Use for Single Family Attached Residences

Subdivision	Units per Building	Average Annual Outdoor Water Use (Acre Feet per Acre)	No. of Dwelling Units
1. Shamrock West	2-7	0.57 AF/acre	10
2. Winona 1st	2	0.64 AF/acre	10
3. Schroeder Office Park 1st	2	0.88 AF/acre	7
4. Westwood	2	0.85 AF/acre	10
5. Vanguard-Famleco 12th	2	1.53 AF/acre	7
6. Thompson Valley 2nd	2	0.84 AF/acre	11
Weighted Average Billed Usage		**0.86 AF/acre**	**55**
Upper Limit of the 99% Confidence Interval		**1.28 AF/acre**	

The average annual outdoor water usage for single family attached homes studied was 0.86 AF/acre per year with a standard deviation of 0.46 and the upper level of the 99% confidence interval at 1.28 AF/acre.

Annual Outdoor Water Use for Single Family Detached Dwelling Units

To study the outdoor water use of single family detached homes, staff selected 114 homes from fourteen subdivisions built after the 1994 residential plumbing code changes went into effect 1994 that exhibited outdoor water usage. We calculated the outdoor water usage by deducting the winter quarter average extrapolated to an annual basis to account for indoor water usage from the average annual water usage. More detailed information is available in Appendix 8.

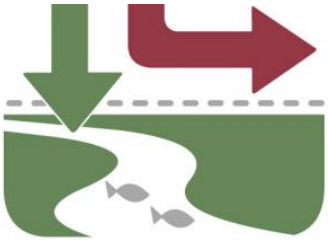
Average Annual Outdoor Water Use for Single Family Detached Residences		
Subdivision	**Average Annual Outdoor Water Use** (Acre Feet per Acre)	**No. of Dwelling Units**
1. Hunters Run	0.73 AF/acre	10
2. Alford Lake 1st Sub	1.30 AF/acre	9
3. Alford Lake 4th Sub	0.94 AF/acre	7
4. Blackbird Knolls 2nd Sub	0.62 AF/acre	8
5. Winona 3rd Addition	0.56 AF/acre	3
6. Garden Gate 1st Sub	1.27 AF/acre	9
7. Seven Lakes North Addition	1.61 AF/acre	4
8. Anderson Farms 5th Sub	0.54 AF/acre	4
9. Vanguard-Famleco 12th Sub	0.89 AF/acre	12
10. Buck 2nd Sub	0.80 AF/acre	12
11. Anderson Farm 7th Sub	1.08 AF/acre	12
12. Rocky Mountain Village 2nd Sub	0.65 AF/acre	12
13. Millennium SW 2nd Sub	1.54 AF/acre	10
14. Kendall Brook 1st Sub	1.01 AF/acre	2
Weighted Average Billed Usage	**0.98 AF/acre**	**114**
Upper Limit of the 99% Confidence Interval	**1.37 AF/acre**	

The average annual indoor water usage for single family detached homes studied was 0.98 AF/acre per year with a standard deviation of 0.52 and the upper limit of the 99% confidence interval at 1.37 AF/acre.

System Water Losses

Water systems require more raw water entering the system than what actually reaches the end billed customer. These system losses need to be accounted for and applied to the annual billed consumption to determine the annual raw water requirements. For more information, see Appendix 9. Below is the breakout of the losses applied to the study data:

1. Raw Water Delivery Losses



Scenario 1: Forgo Most Junior Water Right Available - Under the City's Carriage Contract with Northern Water and the U.S. Bureau of Reclamation, orders for water deliveries into Green Ridge Glade Reservoir must be made by 3 pm the day prior to delivery. When the river is dropping, the River Commissioner makes an estimated guess at that time of what water will be available to the City the following day. To stay within the City's legal diversion entitlement for the following day, staff often places an order that does not include the most junior water right potentially available, often resulting in a loss of water. (The alternative, which is not attractive to the State of Colorado, is to continue an out-of-priority diversion for the day it occurs and then replace it the following day with an order of CBT water given to the River Commissioner.) The loss in water ordered versus water rights available potentially occurs for the period of approximately 75 days, between mid-June through the end of August each year. During this period of time, staff often uses a priority anywhere up to about priority number 13. The average of the City's water rights up to priority number 13.5 is 5.73 Acre Feet (2.86 cubic feet per second x 2 = 5.72 AF).

5.72 AF	Average junior water right not taken, but available
x 75 days	Number of days between mid-June through end of August
429 AF	Annual loss on forgoing most junior water right available

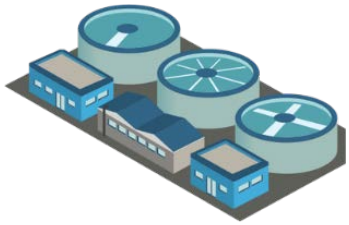
Scenario 2: Plant Cuts Back River Diversions after Water Ordered **–** If staff orders water to be delivered through the Big Thompson River and the operators cut back the water production in the plant, they also must cut back the amount of water diverted from the river causing water to be lost downstream. (i.e. rain causes demand to drop, plant maintenance issues require stopped or lowered water production, water turbidity makes river water untreatable, etc.) This is particularly important when the City is taking the full amount of water it is entitled to divert.

Scenario 3: Leave Flows in the River – Native waters can only be diverted at the City pipeline, directly into the water treatment plant, when carriage capacity under the City's carriage contract is limited or nonexistent. During that time, if the river water is untreatable due to poor water quality, the water must be left in the river without being diverted even though the City is entitled to it.

Staff began tracking the losses described in scenarios two and three in May of 2018 with an initial estimate for the combined losses at 1%, to be used until further data becomes available. Total raw water delivery losses were estimated at 3.95% of the total raw water delivered at the City's headgates.

2. **Evaporative Water Loss**, includes evaporation occurring off the surface of Green Ridge Glade Reservoir and the seven decant ponds at the Water Treatment Plant. Green Ridge Glade Reservoir has approximately 160 surface acres and the seven decant ponds are approximately 4 surface acres total in surface area and the annual net evaporative loss is 27.5 inches. This loss equates to 2.42% of the total raw water delivered between 2015-2017 to the water treatment plant equating to approximately 380 AF per year.

3. **Treatment Loss**, results from water used in the treatment process at the Water Treatment Plant, but that does not enter into the water distribution system. Treatment loss equates to 3.54% of the total raw water delivered and is measured by the amount of water sent to the river outfall between 2015-2017.



4. **Conveyance Loss**, is the amount of loss that occurs in the water distribution system before reaching the end customer. It is calculated by determining how much water enters the distribution system minus the sum of all authorized water consumption. The City of Loveland calculates its water distribution system losses, based on industry best practices following the American Water Works Association's, M36 Manual: Water Audits and Loss Control methodology. This loss equates to 13.64% of the total raw water delivered between 2015-2017.

5. **Community Benefit Use:** Water used for fire training, firefighting and for maintaining our water distribution system (hydrant flushing, tank cleaning, etc.) benefits the entire community. All water customers pay for a portion of this water usage, called here "community benefit use," equating to 0.96% of total raw water delivered between 2015-2017.

Vacancy Rate for Multi-Family Dwelling Units

Because each single family dwelling in this study had its own water meter, staff excluded months of vacancy when zero consumption occurred. For multi-family dwellings, each building provides water to multiple units so it was necessary to account for the vacant multi-family dwellings to estimate actual maximum use. To do so, staff averaged Loveland's quarterly apartment vacancy rates from 3rd Quarter 2008 through 1st Quarter 2018 found in Loveland's Annual Data and Assumptions Reports and the Colorado Division of Housing Multi-Family Housing Vacancy and Rental reports, which equated to a 4.22% vacancy rate for multi-family units. See Appendix 10.

Raw Water Requirements Based on Housing Type

The following charts outline the calculated mean, the upper limit of the 99% confidence interval and system losses and vacancy factor used to determine the average annual raw water requirements needed for each new residential dwelling unit based on housing type for indoor verses outdoor water use.

Average Raw Water Required for Annual Indoor Water			
Dwelling Unit Type	**Multi-Family Dwellings**	**Single Family Attached**	**Single Family Detached**
Average Billed Water Usage	0.12 AF/Unit	0.11 AF/Unit	0.16 AF/Unit
99% Confidence Interval Upper Limit	0.13 AF/Unit	0.12 AF/Unit	0.17 AF/Unit
Raw Water Delivery Loss	3.95%	3.95%	3.95%
Evaporative Loss	2.42%	2.42%	2.42%
Treatment Loss	3.54%	3.54%	3.54%
Conveyance Loss	13.64%	13.64%	13.64%
Community Benefit Use	0.96%	0.96%	0.96%
Vacancy Rate	4.22%	*	*
Average Annual Raw Water Requirement for Indoor Water Use by Housing Type	**0.16 AF/Unit**	**0.15 AF/Unit**	**0.22 AF/Unit**

*Note: Because City records include individual meter readings and records for the single family dwelling units, it was not necessary to apply a vacancy rate. Instead, periods of vacancy were excluded from the analysis.

Average Raw Water Required for Annual Outdoor Water		
Dwelling Unit Type	**Single Family Attached**	**Single Family Detached**
Average Billed Water Usage	0.86 AF/Acre	0.98 AF/Acre
99% Confidence Interval Upper Limit	1.03 AF/Acre	1.10 AF/Acre
Raw Water Delivery Loss	3.95%	3.95%
Evaporative Loss	2.42%	2.42%
Treatment Loss	3.54%	3.54%
Conveyance Loss	13.64%	13.64%
Community Benefit Use	0.96%	0.96%
Vacancy Rate	*	*
Average Annual Raw Water Requirement for Outdoor Water Use by Housing Type	**1.28 AF/Acre**	**1.37 AF/Acre**

*Note: Because City records include individual meter readings and records for the single family dwelling units, it was not necessary to apply a vacancy rate. Instead, periods of vacancy were excluded from the analysis.

Comparison to other Communities

Loveland's current and observed raw water requirements fall within the range of what neighboring communities are charging, with some communities charging more and others less than Loveland.

The table below outlines the raw water requirements for residential dwellings of Loveland compared to other Northern Colorado water providers.

Entity	Calculation & Source
City of Loveland (current)	(0.23 x 1 unit) + (1.6 x net acres) + (1.4 x lot area >15,000 sf) *Source: Loveland Municipal Code Section 19.04.020*
City of Fort Collins	**Single Family, Duplex, & Mobile Homes** 1.92 x [(7.048 x lot size sf)+(12,216.9 x Bedrooms)]/325,851 **Multi-Family for Greater than 2 Dwelling Units** 1.92 x [(9.636 x lot size sf)+(13592.8 x Bedrooms)]/325,851 *Source: Fort Collins Municipal Code Section 26-148*
East Larimer County Water District	**Residential** Lot Size (sf) CBT or North Poudre Irrigation Co AF 1 - 2,999: 0.3653 AF 3K- 4,999: 0.4899 AF 5K- 6,999: 0.5672 AF

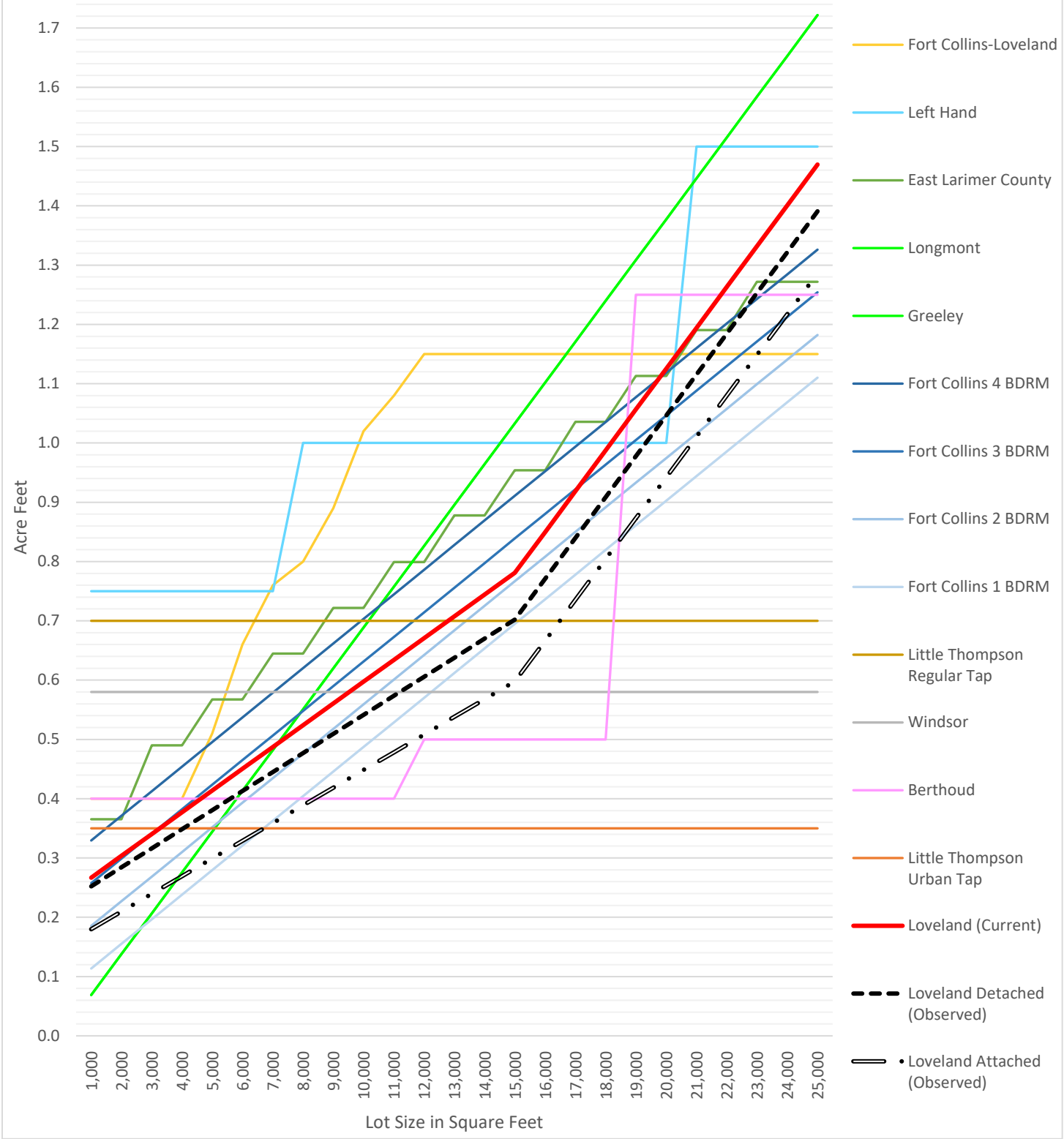
	7K- 8,999: 0.6446 AF 9K-10,999: 0.7219 AF 11K-12,999: 0.7993 AF 13K-14,999: 0.8776 AF 15K-16,999: 0.954 AF 17K-18,999: 1.0356 AF 19K-20,999: 1.113 AF 21K-22,999: 1.1903 AF >23K: 0. AF 1.2719 AF **Multi-Family** 0.2578 AF x Dwelling Units *Source: 2018 Raw Water Requirements Schedule*
Little Thompson Water District Urban Tap	0.35 Acre Feet *Source: Development – Tap Fees Webpage*
Little Thompson Water District Regular Tap	**Single Family:** 0.70 Acre Feet **Multi-Family:** 0.23 AF *Source: Development – Tap Fees Webpage*
City of Greeley	3 AF of raw water per acre of land *Source: Greeley's Raw Water Dedication webpage*
City of Longmont	3 AF of raw water per acre of land *Source: Longmont Municipal Code Section 14.05*
Town of Berthoud	0.2 AF for indoor and 0.2 AF for outdoor **Single Family** <12K sf = 0.4 AF * 1 12K-18K sf =0.4 AF * 1.25 >18K sf = 1.25 AF minimum 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation **Duplex** <12K sf = 0.40 AF * 2 12K-18K = 0.40 AF * 2.5 >18K = 0.40 * 2.5 minimum 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation **Multi-Family (3 or more units)** 0.40 AF * 0.5 * DU + Irrigation 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation *Source: Berthoud Municipal Code Section 30.10-105 H & J*
Town of Windsor	**Single Family:** 0.5 AF+17% shrinkage factor = 0.58 AF **Multi-Family:** 0.15 AF + 3 AF per irrigated area + 17% shrinkage factor *Source: Municipal Code Section 13-2-80*

Fort Collins – Loveland Water District	**Single Family** Lot Size (sf) AF <=4K 0.40 4,001-5,000 0.51 5,001-6,000 0.66 6,001-7,000 0.76 7,001-8,000 0.80 8,001-9,000 0.89 9,001-10,000 1.02 10,001-11,000 1.08 >11,000 1.15 **Multi-Family:** 0.40 AF per DU *Source: 9-1-2018 Tap Fee Schedule*
Left Hand Water District	**Single Family** <7K sf in platted subdivision = 0.75 AF >7K – 20K in platted subdivision = 1 AF Rural lots not in platted subdivision = 1 AF >20K sf in platted subdivision = 1.5 AF **Multi-Family** 0.42 AF/DU *Source: 2018 District Policies*
City of Loveland (observed) *Average observed water requirements from 2008 to 2017 of sites included in this study.*	**Single Family Detached** (0.22 x 1 unit) + (1.4 x net acres) + (1.6 x lot area >15,000 sf) **Single Family Attached** (0.15 x 1 unit) + (1.3 x net acres) + (1.7 x lot area >15,000 sf) **Multi-Family*** (0.16 x 1 unit) + (1.3 x net acres) + (1.7 x lot area >15,000 sf) **For multi-family dwellings, only the indoor factor of 0.16 was studied. Because the indoor water usage was most similar to single family attached dwellings, we updated the outdoor factors to be consistent with the observed water requirements of single family attached dwellings.*

Following is a table and chart of the acre feet of raw water required for single family residences based on lot size and water provider.

Acre Feet of Raw Water Required for Development of Single Family Homes based on Lot Size & Water Provider																
Lot SF	Loveland (Current)	Loveland Detached (Observed)	Loveland Attached (Observed)	Fort Collins 1 BDRM	Fort Collins 2 BDRM	Fort Collins 3 BDRM	Fort Collins 4 BDRM	East Larimer County	Little Thompson Urban Tap	Little Thompson Regular Tap	Greeley	Longmont	Berthoud	Windsor	Fort Collins-Loveland	Left Hand
1,000	0.3	0.3	0.2	0.1	0.2	0.3	0.3	0.4	0.4	0.7	0.1	0.1	0.4	0.6	0.4	0.8
2,000	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.7	0.1	0.1	0.4	0.6	0.4	0.8
3,000	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.5	0.4	0.7	0.2	0.2	0.4	0.6	0.4	0.8
4,000	0.4	0.3	0.3	0.2	0.3	0.4	0.5	0.5	0.4	0.7	0.3	0.3	0.4	0.6	0.4	0.8
5,000	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.6	0.4	0.7	0.3	0.3	0.4	0.6	0.5	0.8
6,000	0.5	0.4	0.3	0.3	0.4	0.5	0.5	0.6	0.4	0.7	0.4	0.4	0.4	0.6	0.7	0.8
7,000	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.4	0.7	0.5	0.5	0.4	0.6	0.8	0.8
8,000	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.4	0.7	0.6	0.6	0.4	0.6	0.8	1.0
9,000	0.6	0.5	0.4	0.4	0.5	0.6	0.7	0.7	0.4	0.7	0.6	0.6	0.4	0.6	0.9	1.0
10,000	0.6	0.5	0.4	0.5	0.6	0.6	0.7	0.7	0.4	0.7	0.7	0.7	0.4	0.6	1.0	1.0
11,000	0.6	0.6	0.5	0.5	0.6	0.7	0.7	0.8	0.4	0.7	0.8	0.8	0.4	0.6	1.1	1.0
12,000	0.7	0.6	0.5	0.6	0.6	0.7	0.8	0.8	0.4	0.7	0.8	0.8	0.5	0.6	1.2	1.0
13,000	0.7	0.6	0.5	0.6	0.7	0.8	0.8	0.9	0.4	0.7	0.9	0.9	0.5	0.6	1.2	1.0
14,000	0.7	0.7	0.6	0.7	0.7	0.8	0.9	0.9	0.4	0.7	1.0	1.0	0.5	0.6	1.2	1.0
15,000	0.8	0.7	0.6	0.7	0.8	0.8	0.9	1.0	0.4	0.7	1.0	1.0	0.5	0.6	1.2	1.0
16,000	0.8	0.8	0.7	0.7	0.8	0.9	1.0	1.0	0.4	0.7	1.1	1.1	0.5	0.6	1.2	1.0
17,000	0.9	0.8	0.7	0.8	0.8	0.9	1.0	1.0	0.4	0.7	1.2	1.2	0.5	0.6	1.2	1.0
18,000	1.0	0.9	0.8	0.8	0.9	1.0	1.0	1.0	0.4	0.7	1.2	1.2	0.5	0.6	1.2	1.0
19,000	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.1	0.4	0.7	1.3	1.3	1.3	0.6	1.2	1.0
20,000	1.1	1.0	0.9	0.9	1.0	1.0	1.1	1.1	0.4	0.7	1.4	1.4	1.3	0.6	1.2	1.0
21,000	1.2	1.1	1.0	0.9	1.0	1.1	1.2	1.2	0.4	0.7	1.4	1.4	1.3	0.6	1.2	1.5
22,000	1.3	1.2	1.1	1.0	1.1	1.1	1.2	1.2	0.4	0.7	1.5	1.5	1.3	0.6	1.2	1.5
23,000	1.3	1.3	1.1	1.0	1.1	1.2	1.2	1.3	0.4	0.7	1.6	1.6	1.3	0.6	1.2	1.5
24,000	1.4	1.3	1.2	1.1	1.1	1.2	1.3	1.3	0.4	0.7	1.7	1.7	1.3	0.6	1.2	1.5
25,000	1.5	1.4	1.3	1.1	1.2	1.3	1.3	1.3	0.4	0.7	1.7	1.7	1.3	0.6	1.2	1.5

Acre Feet of Raw Water Required for Development of Single Family Homes Based on Lot Size & Water Provider



Following is a table and chart of the acre feet of raw water required for each dwelling unit of multi-family residences based on lot size and water provider.

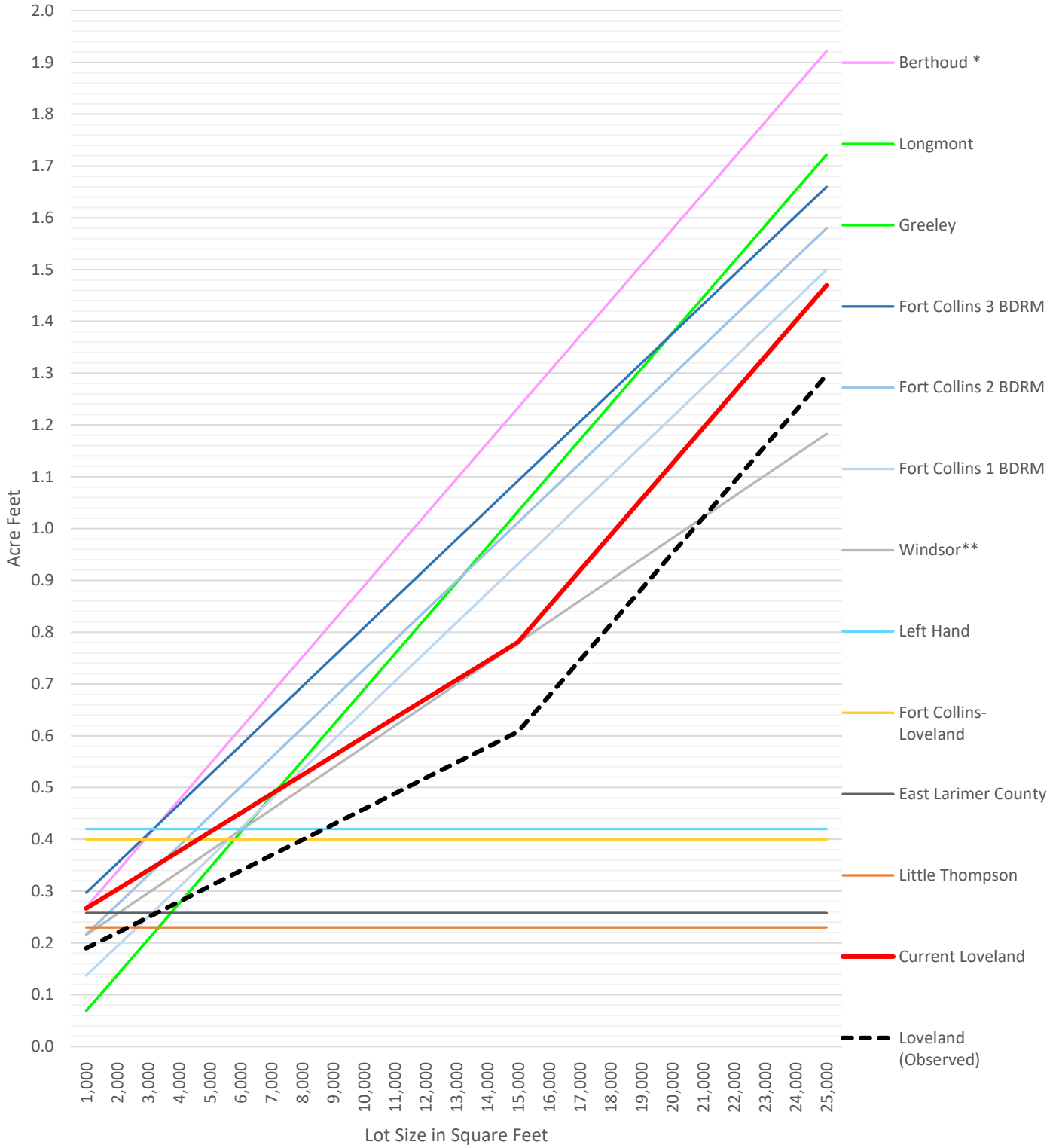
Acre Feet of Raw Water Required for Development of Multi-Family Homes based on Lot Size & Water Provider													
Lot SF	Current Loveland	Loveland (Observed)	Fort Collins 1 BDRM	Fort Collins 2 BDRM	Fort Collins 3 BDRM	East Larimer County	Little Thompson	Greeley	Longmont	Berthoud *	Windsor**	Fort Collins-Loveland	Left Hand
1,000	0.3	0.2	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.3	0.2	0.4	0.4
2,000	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.4	0.4
3,000	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.4	0.3	0.4	0.4
4,000	0.4	0.3	0.3	0.4	0.5	0.3	0.2	0.3	0.3	0.5	0.3	0.4	0.4
5,000	0.4	0.3	0.4	0.4	0.5	0.3	0.2	0.3	0.3	0.5	0.4	0.4	0.4
6,000	0.5	0.3	0.4	0.5	0.6	0.3	0.2	0.4	0.4	0.6	0.4	0.4	0.4
7,000	0.5	0.4	0.5	0.6	0.6	0.3	0.2	0.5	0.5	0.7	0.5	0.4	0.4
8,000	0.5	0.4	0.5	0.6	0.7	0.3	0.2	0.6	0.6	0.8	0.5	0.4	0.4
9,000	0.6	0.4	0.6	0.7	0.8	0.3	0.2	0.6	0.6	0.8	0.5	0.4	0.4
10,000	0.6	0.5	0.6	0.7	0.8	0.3	0.2	0.7	0.7	0.9	0.6	0.4	0.4
11,000	0.6	0.5	0.7	0.8	0.9	0.3	0.2	0.8	0.8	1.0	0.6	0.4	0.4
12,000	0.7	0.5	0.8	0.8	0.9	0.3	0.2	0.8	0.8	1.0	0.7	0.4	0.4
13,000	0.7	0.5	0.8	0.9	1.0	0.3	0.2	0.9	0.9	1.1	0.7	0.4	0.4
14,000	0.7	0.6	0.9	1.0	1.0	0.3	0.2	1.0	1.0	1.2	0.7	0.4	0.4
15,000	0.8	0.6	0.9	1.0	1.1	0.3	0.2	1.0	1.0	1.2	0.8	0.4	0.4
16,000	0.8	0.7	1.0	1.1	1.1	0.3	0.2	1.1	1.1	1.3	0.8	0.4	0.4
17,000	0.9	0.7	1.0	1.1	1.2	0.3	0.2	1.2	1.2	1.4	0.9	0.4	0.4
18,000	1.0	0.8	1.1	1.2	1.3	0.3	0.2	1.2	1.2	1.4	0.9	0.4	0.4
19,000	1.1	0.9	1.2	1.2	1.3	0.3	0.2	1.3	1.3	1.5	0.9	0.4	0.4
20,000	1.1	1.0	1.2	1.3	1.4	0.3	0.2	1.4	1.4	1.6	1.0	0.4	0.4
21,000	1.2	1.0	1.3	1.4	1.4	0.3	0.2	1.4	1.4	1.6	1.0	0.4	0.4
22,000	1.3	1.1	1.3	1.4	1.5	0.3	0.2	1.5	1.5	1.7	1.1	0.4	0.4
23,000	1.3	1.2	1.4	1.5	1.5	0.3	0.2	1.6	1.6	1.8	1.1	0.4	0.4
24,000	1.4	1.2	1.4	1.5	1.6	0.3	0.2	1.7	1.7	1.9	1.1	0.4	0.4
25,000	1.5	1.3	1.5	1.6	1.7	0.3	0.2	1.7	1.7	1.9	1.2	0.4	0.4

Notes:

*Assume 50% of land is irrigated turf

**Assume 50% of land is irrigated

Acre Feet of Raw Water Required for Each Multi-Family Dwelling Unit Based on Lot Size & Water Provider



* Assumed 50% of lot is irrigated turf

**Assumes 50% of land is irrigated

Summary

The study period included ten years of indoor and outdoor water use data that covered wet, dry and normal years for the majority of water taps studied. This study included records from 122 multi-family buildings providing water to 1,249 dwelling units, 117 single family attached residences, and 120 single family detached residences. All units selected were built after the 1992 Energy Policy Act requirements of low-flow plumbing fixture were mandated to reflect the most likely water usage and raw water requirements of future developments.

Based on the results of this study, there is a material difference in the indoor and outdoor water use between the single family detached residences verses the other types of housing included in this study as summarized in the table below.

	Multi-Family Homes	Single Family Attached Homes	Single Family Detached Homes
	Loveland Indoor Raw Water Requirements		
	AF/Unit	**AF/Unit**	**AF/Unit**
Current Indoor Requirement	0.23	0.23	0.23
Upper Limit of 99% Confidence Interval for Indoor Use	0.16	0.15	0.22
	Loveland Outdoor Raw Water Requirements		
	AF/Acre	**AF/Acre**	**AF/Acre**
Current Outdoor Requirement	1.6	1.6	1.6
Upper Limit of 99% Confidence Interval for Outdoor Use	Excluded from study	1.28	1.37

Recommendation

Staff recommends using the results of this study to modify the raw water requirements for future residential developments. Because the indoor use results for the single family attached and multi-family homes are close, and to simplify the calculation, staff recommends using the higher of the two values for both of those categories.

Staff recommends the following raw water requirements:

<table>
<tr><th colspan="3">RESIDENTIAL DWELLING TYPE</th><th>Indoor Water Rights</th><th colspan="2">Outdoor Water Rights*</th></tr>
<tr><th>Detached Units</th><th>Home Size</th><th>Water Tap Service</th><th>Acre feet (AF) required x No. of dwelling units</th><th>AF required x net lot acreage</th><th>AF required x acres in excess of 15,000 sf per lot</th></tr>
<tr><td>Single Family Detached</td><td>> 800 sf</td><td rowspan="2">Separate water tap to each dwelling unit</td><td>0.22 AF</td><td>1.4 AF</td><td>1.6 AF</td></tr>
<tr><td>Cottage Homes and Micro Homes</td><td>≤ 800 sf</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><th>Attached Units</th><th>Home Size</th><th>Water Tap Service</th><th>Indoor</th><th>Outdoor</th><th>Outdoor</th></tr>
<tr><td>Single Family Attached (and Cluster Duplexes)</td><td>N/A</td><td>Separate water tap to each dwelling unit</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td rowspan="3">Multi-Family</td><td rowspan="3">N/A</td><td>Water tap serves multiple dwelling units without a dedicated irrigation tap</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><th>Water Tap Service</th><th>Indoor</th><th colspan="2">Outdoor Water Rights per Acre of Irrigated Area</th></tr>
<tr><td>Each water tap serves multiple dwelling units and there is a dedicated irrigation tap</td><td>0.16 AF</td><td colspan="2">3.0 AF</td></tr>
<tr><td colspan="6">* Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.</td></tr>
</table>

Appendices

1. **Figure 1** – Map of multi-family complexes include in study
2. **Figure 2** – Map of single family attached subdivisions included in study
3. **Figure 3 –** Map of single family detached subdivisions included in study
4. **Indoor Study Summary -** Multi-family dwellings
5. **Indoor Study Summary -** Single family detached dwellings
6. **Indoor Study Summary -** Single family attached dwellings
7. **Outdoor Study Summary –** Single family detached dwellings
8. **Outdoor Study Summary -** Single family attached dwellings
9. **Water Loss Breakout** – Summary of water loss calculations
10. **Vacancy Rates** – Summary of quarterly apartment vacancy rates

Appendix 1

Peak View Apartments
The Buttes Apartments
Justice Center Apartments
Thompson Valley Apartments
Waterford Place Apartments
Lakeshore at Centerra
High Plains Village Condos
Eagle Ridge Apartments
Reserve at Centerra Apartments
The Condos at Tulip Creek
Stone Creek Townhomes

N WILSON AVE
GLEN ISLE DR
N DUFFIELD AVE
N GRANT AVE
E 42ND ST
N COUNTY ROAD 11C
N BOYD LAKE AVE
INTERSTATE 25 SB
INTERSTATE 25 NB
W 37TH ST
N TAFT AVE
SHERIDAN AVE
N GARFIELD AVE
E 37TH ST
N MONROE AVE
SEVEN LAKES DR
E 37TH ST
E 37TH ST
W 29TH ST
ARBOR DR
CUSTER DR
BUCHANAN AVE
E 29TH ST
SILVER LEAF DR
E COUNTY ROAD 24
W 22ND ST
E 23RD ST
N MADISON AVE
N BOISE AVE
W 18TH ST
E 18TH ST
E 16TH ST
E 15TH ST
E EISENHOWER BLVD
W EISENHOWER BLVD
NICKEL DR
E 13TH ST
W 10TH ST
W 10TH ST
N CLEVELAND AVE
N LINCOLN AVE
N WASHINGTON AVE
N MONROE AVE
N DENVER AVE
W 8TH ST
E 7TH ST
E COUNTY ROAD 20E
N NAMAQUA AVE
W 4TH ST
E 4TH ST
W 1ST ST
E 1ST ST
S TYLER AVE
S CLEVELAND AVE
S LINCOLN AVE
S MADISON AVE
S BOISE AVE
4TH ST SE
S WILSON AVE
CARLISLE DR
8TH ST SE
S COUNTY ROAD 9E
14TH ST SW
14TH ST SE
E HIGHWAY 402

N

1 in = 2,500 ft

Feet

0 1,250 2,500

City of Loveland

Department of Water & Power

Loveland, Colorado

FIGURE 1 - Indoor Water Use Study
Multi-Family Dwellings

Created By: muellc
Date Created: 9/14/2018

Appendix 2

Picabo Hills
Shamrock West
Vanguard - Famleco
Vangard-Famleco
Mariana Butte
Mariana Butte
Westwood
Schroeder Office Park
Thompson Valley
Millenium SW
The Townhomes at Stone Creek
Winona
Mirasol

N WILSON AVE
N GRANT AVE
N MONROE AVE
N COUNTY ROAD 11C
N BOYD LAKE AVE
E 42ND ST
E 37TH ST
W 37TH ST
N TAFT AVE
SHERIDAN AVE
N GARFIELD AVE
SEVEN LAKES DR
MORNING DR
W 29TH ST
ARBOR DR
CUSTER DR
BUCHANAN AVE
E 29TH ST
SILVER LEAF DR
E 23RD ST
N MADISON AVE
N BOISE AVE
W 22ND ST
W 18TH ST
E 18TH ST
E 16TH ST
E 15TH ST
E EISENHOWER BLVD
W EISENHOWER BLVD
NICKEL DR
E 13TH ST
E 11TH ST
N DENVER AVE
N NAMAQUA AVE
W 10TH ST
W 8TH ST
N CLEVELAND AVE
N LINCOLN AVE
N WASHINGTON AVE
E 7TH ST
E COUNTY ROAD 20E
FOOTHILLS DR
W 4TH ST
E 4TH ST
W 1ST ST
E 1ST ST
4TH ST SE
S WILSON AVE
CARLISLE DR
S CLEVELAND AVE
S LINCOLN AVE
8TH ST SE
S SAINT LOUIS AVE
S BOISE AVE
S COUNTY ROAD 9E
S TYLER AVE
S ROOSEVELT AVE
14TH ST SW
14TH ST SE
E HIGHWAY 402

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N

1 in = 2,500 ft

Feet

0 1,250 2,500

City of Loveland

Department of Water & Power

Loveland, Colorado

FIGURE 2 - Indoor Water Use Study
Single Family Attached Residence

Created By: muellc
Date Created: 9/14/2018

Appendix 3

Alford Lake
Alford Lake
Kendall Brook
Buck
Hunters Run
Seven Lakes North
Vanguard-Famleco
Rocky Mountain Village
Mariana Butte
Andersen Farms
Millenium SW
Andersen Farms
Winona
Garden Gate
Blackbird Knolls

W 50TH ST
N WILSON AVE
LUCERNE AVE
GLEN ISLE DR
N TAFT AVE
N GRANT AVE
N MONROE AVE
N COUNTY ROAD 11C
FAIRGROUNDS AVE
CENTERRA PKWY
INTERSTATE 25 SB
INTERSTATE 25 NB
E 42ND ST
W 37TH ST
E 37TH ST
N DUFFIELD AVE
SHERIDAN AVE
N GARFIELD AVE
BUCHANAN AVE
SILVER LEAF DR
MORNING DR
ARBOR DR
W 29TH ST
E 29TH ST
CUSTER DR
E 23RD ST
N MADISON AVE
N BOISE AVE
W 22ND ST
W 18TH ST
E 18TH ST
E 16TH ST
E 15TH ST
N BOYD LAKE AVE
MCWHINNEY BLVD
W EISENHOWER BLVD
E EISENHOWER BLVD
NICKEL DR
E 11TH ST
N NAMAQUA AVE
W 10TH ST
W 8TH ST
N CLEVELAND AVE
N WASHINGTON AVE
N DENVER AVE
E 7TH ST
E COUNTY ROAD 20E
W 4TH ST
E 4TH ST
W 1ST ST
E 1ST ST
S TYLER AVE
S WILSON AVE
4TH ST SE
S LINCOLN AVE
S MADISON AVE
S COUNTY ROAD 9E
CARLISLE DR
8TH ST SE
S ROOSEVELT AVE
S SAINT LOUIS AVE
S BOISE AVE
14TH ST SW
14TH ST SE
E HIGHWAY 402
ROAD 21
18TH ST SW
TYLER AVE
DIANA DR
ROAD 9
ROAD 7

N

1 in = 2,917 ft

Feet

0 1,400 2,800

City of Loveland

City of Loveland

Department of Water & Power

Loveland, Colorado

FIGURE 3 - Indoor Water Use Study
Single Family Detached Residence

Created By: muellc
Date Created: 9/14/2018

Appendix 4

City of Loveland • MULTI-FAMILY RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Water Meter Set Years	No. of Dwelling Units	Multi-Family Complex Name	No. of Water Meters	Billed Water Use (AF/unit)
Waterford Place 2nd Sub	2003	128	Waterford Place Apartments	7	0.141
Thompson Valley 2nd Sub	2001 - 2002	104	Thompson Valley Apartments	8	0.104
Windsong 7th Subdivision	2001 - 2002	222	Peak View Apartments	13	0.101
Rocky Mountain Village 1st Sub	2002	144	Reserve at Centerra Apartments	13	0.160
Cooper 1st Sub	1997	114	The Buttes Apartments	8	0.094
McWhinney 11th Sub	1999-2001	168	Eagle Ridge Apartments	14	0.108
Rocky Mountain Village 2nd Sub	2001-2005	116	High Plains Village Condos	24	0.124
Factory Place Addition	2002	7	Justice Center Apartments	2	0.155
Rocky Mountain Village 5th Sub	2002-2007	192	Lakeshore at Centerra - Condo Apartments	24	0.098
Millennium SW 5th Sub	2003-2006	18	The Condos at Tulip Creek	3	0.112
Millennium SW 2nd Sub	2003-2006	36	Stone Creek Townhomes	6	0.135

Note: Only winter quarter water consumption was used on taps that included outdoor irrigation. (Dec, Jan, & Feb)

Weighted Average of Annual Water Use per Multi-Family Unit in Study:	0.12	AF/unit
Upper Limit of the 99% Confidence Interval =	0.13	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir before its delivered
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Vacancy Rate[6] =	4.22%	Average of quarterly vacancy rates (3rd Qtr 2008 -1st Qtr 2018)
Average Annual Water Supply Needed for a Multi-Family Unit =	**0.16**	AF/unit

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.

(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.

(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.

(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption

(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

(6) Apartment Vacancy Rate was an average of Loveland's quarterly apartment vacancy rates from 3rd Quarter 2008 through 1st Quarter 2018 from the "Colorado Division of housing Multi-family Housing Vacancy and Rental" report listed in Loveland's Annual Data and Assumptions Reports.

STATISTICAL ANALYSIS	AF/Unit
Mean:	0.120
Standard Deviation:	0.033
99% Confidence Interval	0.008
Mean - Confidence Interval	0.112
Mean + Confidence Interval	0.128
Upper Limit of 99% Confidence Interval with Losses	**0.160**

Notes:

1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the months.
3. If the individual meter data showed significant increase in water use during the irrigation season of April to October, only the winter quarter water consumption was used to exclude outdoor irrigation.

Appendix 5

City of Loveland • SINGLE FAMILY ATTACHED RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Qty of Units Attached	Average Annual Indoor Water Use (AF/unit)
Picabo Hills 1st Sub	2005 - 2007	7	4 to 8	0.10
The Townhomes at Stone Creek Sub	2003 - 2005	9	2	0.07
Vanguard- Famleco 11th Sub	2002 - 2005	8	4 to 5	0.10
Shamrock West Sub	1999 - 2002	10	2 to 7	0.11
Winona 1st Sub	2002 - 2003	10	2	0.13
Schroeder Office Park 1st Sub	2003 - 2007	7	2	0.12
Westwood Sub	1998 - 1998	10	2	0.13
Vanguard-Famleco 12th Sub	2005 - 2007	7	2	0.13
Thompson Valley 2nd Sub	2000 - 2001	11	2	0.13
Mariana Butte 12th Sub	1999 - 2004	10	2	0.07
Mariana Butte Sub	1999 - 2003	10	2 to 3	0.11
Millennium SW 5th Sub	2005 - 2005	8	4	0.12
Mirasol 1st Sub	2007 - 2007	10	2	0.07

Note: Estimated annual indoor water usage based on winter use gallons (Dec, Jan, & Feb).

Average Annual Water Use per Single Family Attached Residence in Study =	0.11	AF/Unit
Upper Limit of the 99% Confidence Interval =	0.12	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Attached Residence =	**0.15**	**AF/Unit**

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.107	AF/Unit
Standard Deviation:	0.042	AF/Unit
99% Confidence Interval	0.012	AF/Unit
Mean - Confidence Interval	0.094	AF/Unit
Mean + Confidence Interval	0.119	AF/Unit
Upper Limit of 99% Confidence Interval with Losses	**0.150**	AF/Unit

Notes:

1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.
4. When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.
5. One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Appendix 6

City of Loveland • SINGLE FAMILY DETACHED RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Average Annual Indoor Water Use (AF/unit)
Hunters Run	2002 - 2006	10	0.15
Alford Lake 1st Sub	2005 - 2007	9	0.15
Alford Lake 4th Sub	2006 - 2010	7	0.22
Mariana Butte 13th Sub	2002 - 2008	6	0.14
Blackbird Knolls 2nd Sub	2003 - 2003	8	0.16
Winona Third Addition	2001 - 2003	3	0.22
Garden Gate 1st Sub	2005 - 2005	9	0.19
Seven Lakes North Addition	1994 - 1998	4	0.15
Anderson Farms 5th Sub	1999 - 1999	4	0.21
Vanguard-Famleco 12th Subdivision	2001 - 2005	12	0.15
Buck 2nd Subdivision	2002 - 2005	12	0.16
Anderson Farm 7th Subdivision	2001 - 2004	12	0.14
Rocky Mountain Village 2nd Subdivision	2001 - 2005	12	0.13
Millennium SW 2nd Subdivision	2003 - 2005	10	0.17
Kendall Brook 1st Subdivision	2004 - 2004	2	0.14

Note: Estimated annual indoor water usage base on winter use gallons (Dec, Jan, & Feb).

Average Water Use per Single Family Detached Residence in Study =	0.16	AF/Unit
Upper Limit of the 99% Confidence Interval =	0.17	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Detached Residence =	**0.22**	**AF/Unit**

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.16	AF/Unit
Standard Deviation	0.06	AF/Unit
99% Confidence Interval	0.01	AF/Unit
Mean - Confidence Interval	0.14	AF/Unit
Mean + Confidence Interval	0.17	AF/Unit
Upper Limit of 99% Confidence Interval with Losses	**0.22**	AF/Unit

Notes:

1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.
4. When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.
5. One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usag alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was average between the months to more account for the actual monthly usage.

Appendix 7

City of Loveland • SINGLE FAMILY DETACHED RESIDENCE • OUTDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Average Annual Outdoor Water Use (AF/Acre)
Hunters Run	2002 - 2006	10	0.73
Alford Lake 1st Sub	2005 - 2007	9	1.30
Alford Lake 4th Sub	2006 - 2010	7	0.94
Blackbird Knolls 2nd Sub	2003 - 2003	8	0.62
Winona Third Addition	2001 - 2003	3	0.56
Garden Gate 1st Sub	2005 - 2005	9	1.27
Seven Lakes North Addition	1994 - 1998	4	1.61
Anderson Farms 5th Sub	1999 - 1999	4	0.54
Vanguard-Famleco 12th Subdivision	2001 - 2005	12	0.89
Buck 2nd Subdivision	2002 - 2005	12	0.80
Anderson Farm 7th Subdivision	2001 - 2004	12	1.08
Rocky Mountain Village 2nd Subdivision	2001 - 2005	12	0.65
Millennium SW 2nd Subdivision	2003 - 2005	10	1.54
Kendall Brook 1st Subdivision	2004 - 2004	2	1.01
		Total	**Weighted Avg**
NOTES:		**114**	**0.98**

(1) Outdoor usage calculated as estimated annual indoor water usage based on average winter use gallons (Dec, Jan, & Feb), is deducted from total annual usage.

(2) The Mariana Butte 13th Subdivision was excluded due to no increase in water consumption during the irrigation season. We assume that the HOA irrigates the small portions of the yard within the property lines.

Average Water Use per Single Family Detached Residence in Study =	0.98	AF/Acre
Upper Limit of the 99% Confidence Interval =	1.10	AF/Acre
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Detached Residence =	**1.37**	**AF/Acre**

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.

(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.

(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.

(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption

(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.98	AF/Acre
Standard Deviation	0.52	AF/Acre
99% Confidence Interval	0.13	AF/Acre
Mean - Confidence Interval	0.85	AF/Acre
Mean + Confidence Interval	1.10	AF/Acre
Upper Limit of 99% Confidence Interval with Losses	**1.37**	AF/Acre

Appendix 7

NOTES:

(1) Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.

(2) Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.

(4) When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.

(5) One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Appendix 8

City of Loveland • SINGLE FAMILY ATTACHED RESIDENCE • OUTDOOR • Water Use (2008-2017)

Subdivision	Dates Built	Qty of Units Attached	No. of Dwelling Units	Average Annual Outdoor Water Use (AF/Acre)
Shamrock West Sub	1999 - 2002	2 to 7	10	0.57
Winona 1st Sub	2002 - 2003	2	10	0.64
Schroeder Office Park 1st Sub	2003 - 2007	2	7	0.88
Westwood Sub	1998 - 1998	2	10	0.85
Vanguard-Famleco 12th Sub	2005 - 2007	2	7	1.53
Thompson Valley 2nd Sub	2000 - 2001	2	11	0.84
			Total	**Weighted Avg**
NOTES:			**55**	**0.86**

(1) Outdoor usage calculated as estimated annual indoor water usage based on average winter use gallons (Dec, Jan, & Feb) deducted from average total annual usage.
(2) Homes with no increase in consumption during the irrigation season were excluded. We assume that the HOA irrigates the portions of the yard within the property lines or irrigation is turned off.
(3) Condos are excluded, the HOA maintains everything exterior to the building.

Average Annual Water Use per Single Family Attached Residence in Study =	0.86	AF/Acre
Upper Limit of the 99% Confidence Interval =	1.03	AF/Acre
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Attached Residence =	**1.28**	**AF/Acre**

NOTES:
(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.86	AF/Acre
Standard Deviation:	0.46	AF/Acre
99% Confidence Interval	0.17	AF/Acre
Mean - Confidence Interval	0.69	AF/Acre
Mean + Confidence Interval	1.03	AF/Acre
Upper Limit of 99% Confidence Interval with Losses	**1.28**	AF/Acre

Appendix 7

NOTES:

(1) Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.

(2) Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.

(4) When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.

(5) One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Water Loss Breakout

		2017 Calendar Year		2016 Calendar Year		2015 Calendar Year		Average
		Millions of Gallons (MG)	% of Raw Water	Millions of Gallons (MG)	% of Raw Water	Millions of Gallons (MG)	% of Raw Water	% of Raw Water
1. Raw Water Delivery Losses		**186.696**	**3.98%**	**189.082**	**3.84%**	**185.794**	**4.04%**	**3.95%**
2. Raw Water		**4,690.611**		**4,929.219**		**4,600.356**		
3. Evaporative Loss *(GRG & WTP Decant Ponds)*	-	**114.433**	**2.44%**	**114.433**	**2.32%**	**114.433**	**2.49%**	**2.42%**
4. Treatment Loss Water Loss through WTP (outfall)	-	**168.300**	**3.41%**	**206.290**	**4.19%**	**138.930**	**3.02%**	**3.54%**
5. Treated Water Produced	=	4,407.878		4,608.496		4,346.993		
6. Plus Water Imported (Bought from other water utilities)	+	26.097		35.564		4.350		
7. Less Water Exported (Sold to other water utilities)	-	22.461		21.888		87.113		
8. Less Water Used by End Consumers	-	3,744.183		3,958.631		3,623.282		
9. Conveyance Loss Water Distribution System Losses	=	**667.331**	**13.54%**	**663.541**	**13.46%**	**640.948**	**13.93%**	**13.64%**
10. Fire Training/Fighting		0.847		0.858		0.625		
11. Water Used by the Utilities (testing, cleaning, and maintaining the system)	+	62.022		40.914		34.329		
12. Community Benefit Water usage covered by all water customers that benefits the community as a whole	=	**62.869**	**1.28%**	**41.772**	**0.85%**	**34.954**	**0.76%**	**0.96%**
Total of Losses		**1,012.933**	**24.65%**	**1,026.036**	**24.65%**	**929.265**	**24.24%**	**24.51%**

Source Notes

1. Losses when less raw water received than ordered or available in water rights
2. Evaporative Loss(2) + Treatment Loss(3) +Treated Water Produced(4)
3. Based on yearly evaporation of exposed surface area, less evaporation of average yearly precipitation
4. WIMS & Water Loss Audit Detail - BTR Outfall (Ponds)
5. WIMS Daily Flow Report: Annual Summary Table in Millions of Gallons
6. December Revenue Analysis: Total Wholesale Water Purchased
7. December Revenue Analysis: Total Wholesale Water Sold
8. M36 AWWA Water Loss Audit Details: Authorized Consumption
   Authorized = billed metered + billed unmetered (est. use) + unbilled metered + unbilled unmetered (est. use)
9. Treated Water Produced (4) + Water Imported (5) - Water Exorted (6) - Water Used by End Consumbers (7)
10. WIMS Daily Flow Report: Annual Summary Table in Millions of Gallons
11. M36 AWWA Water Loss Audit Details: Water Used by the utility to test and maintain the water distribution system
12. M36 AWWA Water Loss Audit Details: Water Used by for fire fighting and maintaining water system.

Appendix 9

Appendix 10

Loveland Apartment Vacancy Rates

	Qtr 1	Qtr 2	Qtr 3	Qtr 4
2018	3.4%			
2017	6.7%	4.1%	4.5%	3.8%
2016	3.7%	3.7%	8.4%	8.7%
2015	2.7%	3.9%	3.8%	5.4%
2014	2.3%	2.6%	3.1%	2.0%
2013	2.8%	3.2%	2.4%	2.7%
2012	4.5%	3.5%	2.1%	1.9%
2011	4.1%	5.2%	3.4%	5.3%
2010	3.8%	4.1%	5.5%	3.6%
2009	6.1%	7.0%	4.3%	6.6%
2008			3.5%	6.1%
				4.22%

Average Quarterly Vacancy Rate (2008 3rd Qtr - 1st Qtr 2018)

Sources

City of Loveland Annual Data and Assumptions Reports
Colorado Division of Housing Multi-family Housing Vacancy and Rental

Report Date	Sources/Links - *Color Coded to Match the Data in the Table Above*
8/13/2018	Email from David Eisenbraun, in City of Loveland Planning Dept
7/31/2018	Email from David Eisenbraun, in City of Loveland Planning Dept
June 2017	http://www.cityofloveland.org/home/showdocument?id=36955
June 2016	http://www.ci.loveland.co.us/home/showdocument?id=30224
10/18/2016	Email from Karl Barton, in City of Loveland Planning Dept
August 2014	http://www.cityofloveland.org/Home/ShowDocument?id=21438
6/24/2013	http://www.loveland.org/upload/2013_Annual_Data_and_Assumptions_Report.pdf
2/22/2012	http://www.ci.loveland.co.us/Home/ShowDocument?id=10015
1/1/2011	http://www.cityofloveland.org/Home/ShowDocument?id=7298
7/1/2010	http://s3.amazonaws.com/zanran_storage/www.ci.loveland.co.us/ContentPages/121679903.pdf

Loveland
Water and Power

Updated Water Rights for Residential Developments

Nathan Alburn, Water Resources Engineer

July 8, 2019

2008-2017 Water Use Study

- Structures built after low flow fixtures mandated
- Analyzed 2008 to 2017 water usage on:

Quantity	Dwelling Type	Number of Subdivisions
120 water meters	Single Family Detached	15
117 water meters	Single Family Attached	13
122 water meters (1,249 dwelling units)	Multi-Family	11

- Calculated average indoor and outdoor water usage by dwelling type
- Based on the Study, determined potential water rights required
  - Observed water usage
  - Calculated system loss factors
  - Accounted for vacancies
  - Applied the 99% confidence interval to sample data

Water Use Study Findings

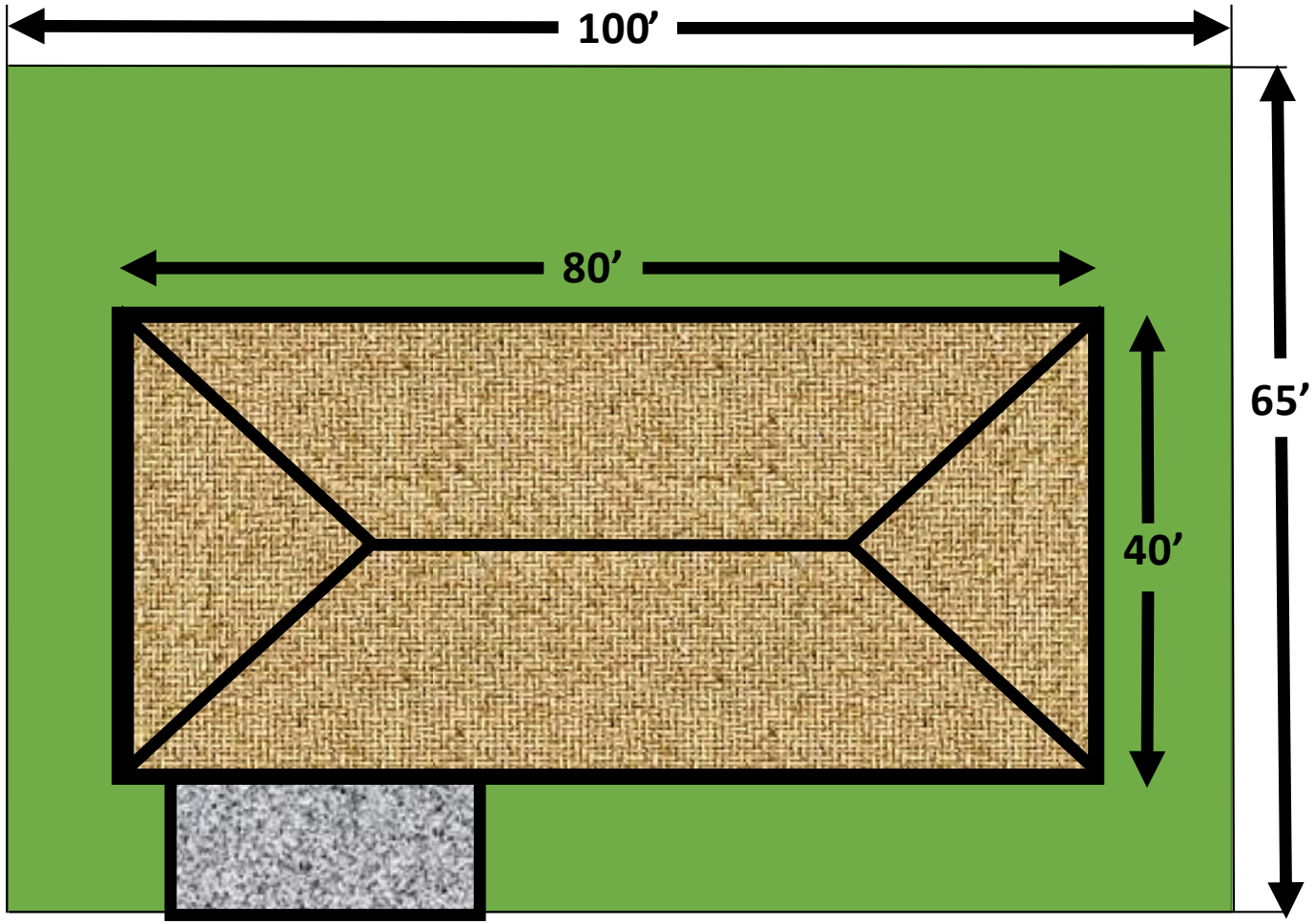
- Indoor water usage per dwelling has decreased
- Outdoor water usage per lot has decreased
- Single family detached units on average use substantially more water for both indoor and outdoor use than other types of dwellings
- Staff recommends updating the residential water rights requirement to be more in line with the observed water usage trends

Current Equation: Section 19.04.020.A.1.: Total water rights due (in acre-feet) = (1.6 x net lot acreage) + (1.4 x acreage of that portion of each residential lot which is greater than 15,000 square feet) + (0.23 x number of dwelling units)

DETACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights* *Current in Red*	
Dwelling Type	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Detached	> 800 sf	Separate water tap to each dwelling unit	**0.22 AF** *0.23 AF* *(~4.5%)*	**1.4 AF** *1.6 AF* *(~12.5%)*	**1.6 AF** *1.4 AF*
(New Category) Cottage Homes and Micro Homes	≤ 800 sf		**0.16 AF**	**1.3 AF**	**1.7 AF**

** Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.*

Single Family Detached Dwelling



80 ft x 40 ft = 3,200 sf home

100 ft x 65 ft = 6,500 sf lot

6,500 sf lot ÷ 43,560 sf per acre = 0.15 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.24	+ 1.6 AF x 0.15 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.47	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.22	0.22 AF x 1 unit(s)
0.21	+ 1.4 AF x 0.15 net lot acres
0.00	+ 1.6 AF x 0 acres over 15,000 sf
0.43	**= AF of Water Rights Due**

Classification Parameters

Separate water tap to each detached dwelling unit

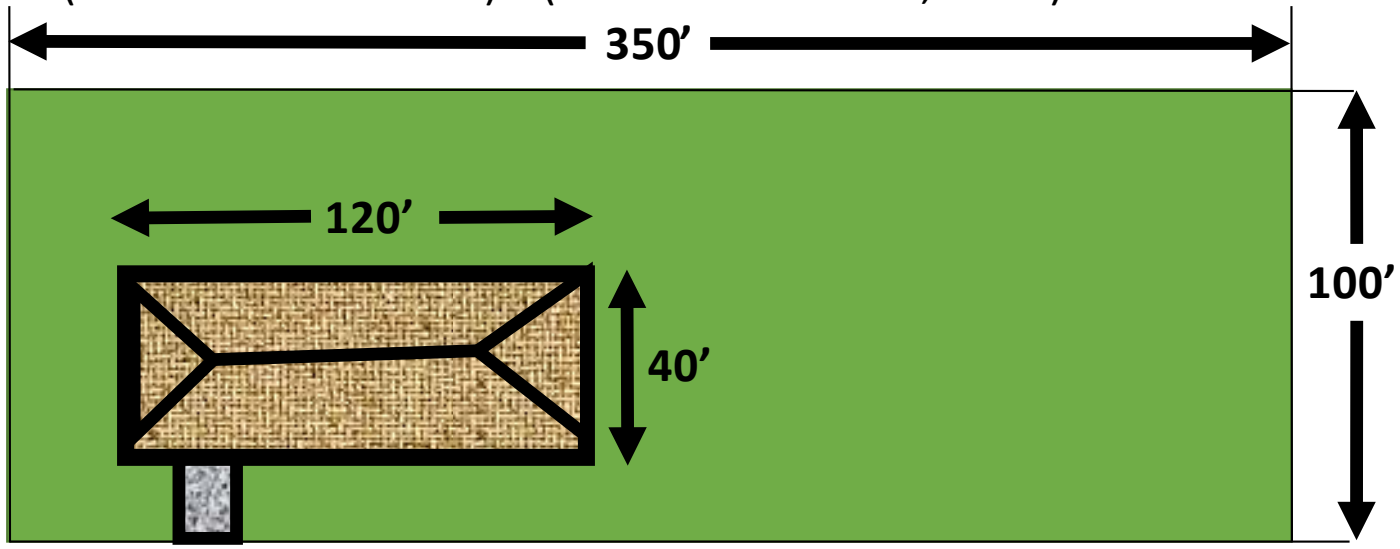
Home Size >800 sf

$1,489 Savings (Reduction of 0.04 AF x Current CIL $37,220)

Single Family Detached Dwelling (Example for a lot > 15,000 sf)

Collect water rights so that any portion of a lot larger than 15,000 sf could be fully irrigated with **3.0 AF** of water per acre.

(1.6 AF x net lot acres) + (1.4 AF x acres > 15,000 sf) = **3.0 AF**



Classification Parameters

Separate water tap to each detached dwelling unit

Home Size >800 sf

Lot Size >15,000 sf

$2,605 Savings (Reduction of 0.07 AF x Current CIL $37,220)

120 ft x 40 ft = 4,800 sf home

350 ft x 100 ft = 35,000 sf lot

35,000 sf lot ÷ 43,560 sf per acre = 0.80 acre lot

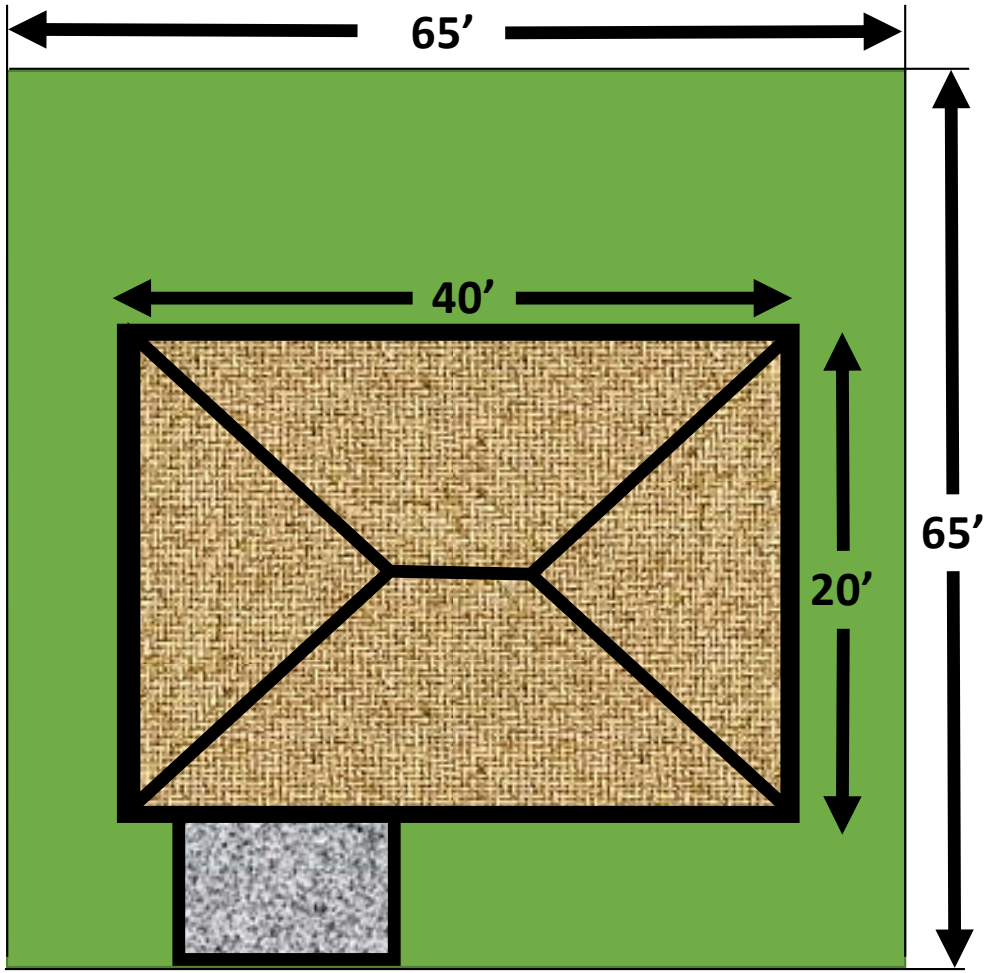
35,000 sf lot – 15,000 sf = 20,000 sf

20,000 sf ÷ 43,560 sf per acre = 0.46 acres

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
1.28	+ 1.6 AF x 0.80 net lot acres
0.64	+ 1.4 AF x 0.46 acres over 15,000 sf
2.15	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.22	0.22 AF x 1 unit(s)
1.12	+ 1.4 AF x 0.80 net lot acres
0.74	+ 1.6 AF x 0.46 acres over 15,000 sf
2.08	**= AF of Water Rights Due**

Cottage Home



Classification Parameters

Separate water tap to each detached dwelling unit

Home Size >500 sf and ≤ 800 sf

$3,722 Savings (Reduction of 0.10 AF x Current CIL $37,220)

40 ft x 20 ft = 800 sf home

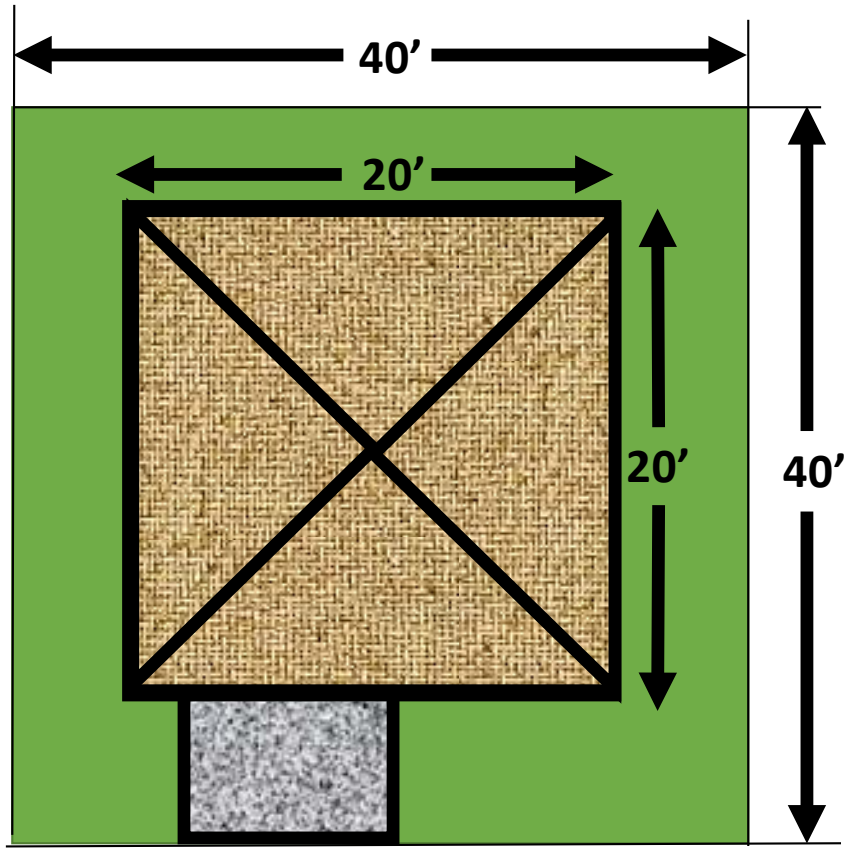
65 ft x 65 ft = 4,225 sf lot

4,225 sf lot ÷ 43,560 sf per acre = 0.10 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.16	+ 1.6 AF x 0.10 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.39	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.16	0.16 AF x 1 unit(s)
0.13	+ 1.3 AF x 0.10 net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
0.29	**= AF of Water Rights Due**

Micro Home



Classification Parameters

Separate water tap to each detached dwelling unit

Home Size ≤ 500 sf

$2,978 Savings (Reduction of 0.08 AF x Current CIL $37,220)

20 ft x20 ft = 400 sf home

40 ft x 40 ft = 1,600 sf lot

1,600 sf lot ÷ 43,560 sf per acre = 0.04 acre lot

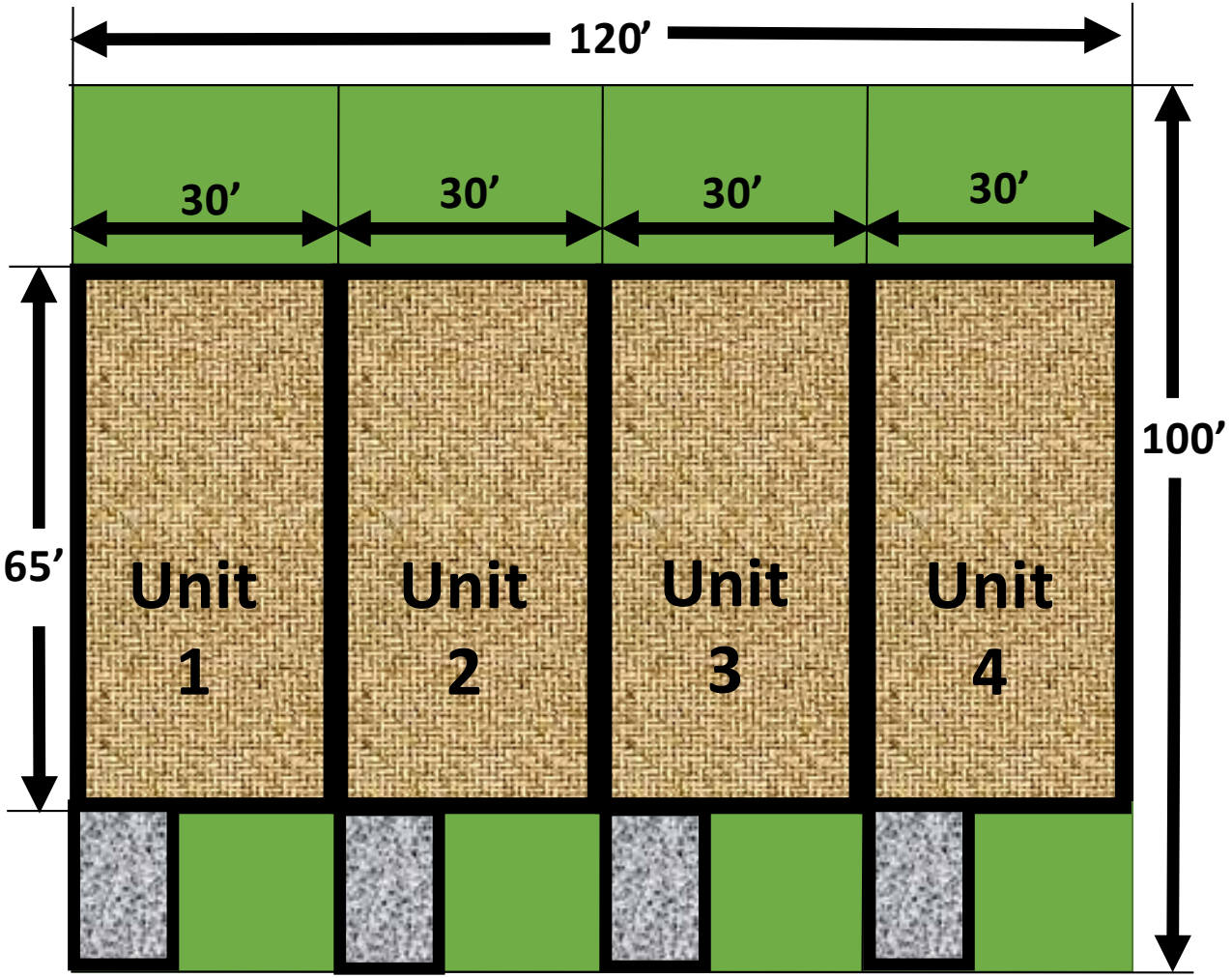
OLD EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.06	+ 1.6 AF x 0.04 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.29	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.16	0.16 AF x 1 unit(s)
0.05	+ 1.3 AF x 0.04 net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
0.21	**= AF of Water Rights Due**

ATTACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights* *Current in Red*	
Dwelling Type	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Attached (and Cluster Duplexes)	N/A	Separate water tap to each dwelling unit	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
Multi-Family	N/A	Water tap serves multiple dwelling units without a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
		Water Tap Service	**Indoor Water Rights**	**Outdoor Water Rights per Acre of Permeable Area**	
		Each water tap serves multiple dwelling units and there is a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**3.0 AF** *3.0 AF*	

** Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.*

Single Family Attached



Classification Parameters

Separate water tap to each attached dwelling unit

Home Size > 600 sf

$13,399 Savings (Reduction of 0.36 AF x Current CIL $37,220)

30 ft x 65 ft = 1,950 sf home

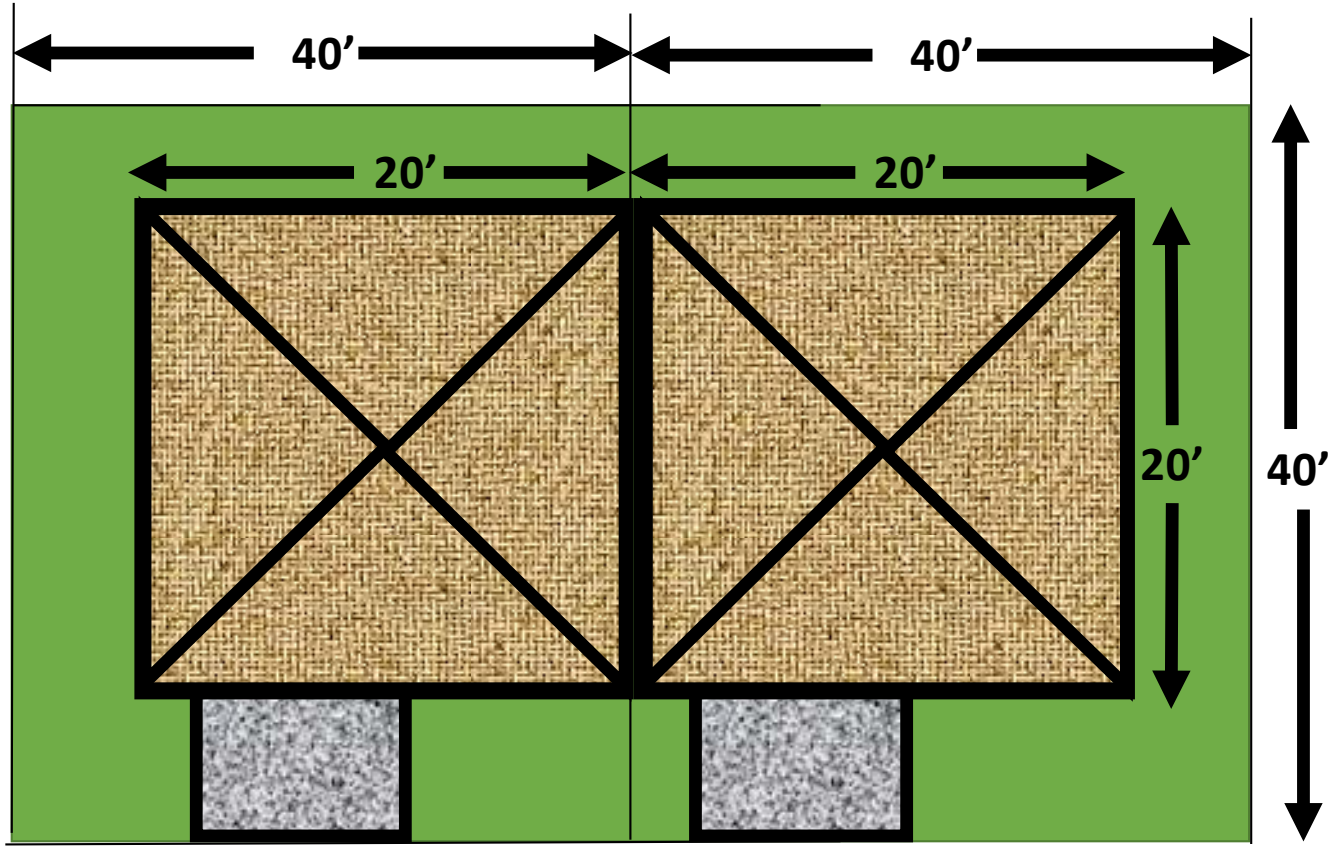
30 ft x 100 ft = 3,000 sf lot

3,000 sf lot ÷ 43,560 sf per acre = 0.07 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.92	0.23 AF x 4 unit(s)
0.44	+ 1.6 AF x (0.07 x 4) net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
1.36	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.64	0.16 AF x 4 unit(s)
0.36	+ 1.3 AF x (0.07 x 4) net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
1.00	**= AF of Water Rights Due**

Cluster Duplex



Classification Parameters

Separate water tap to each attached duplex dwelling unit

Home Size ≤ 600 sf

$5,955 Savings (Reduction of 0.16 AF x Current CIL $37,220)

20 ft x 20 ft = 400 sf home per unit

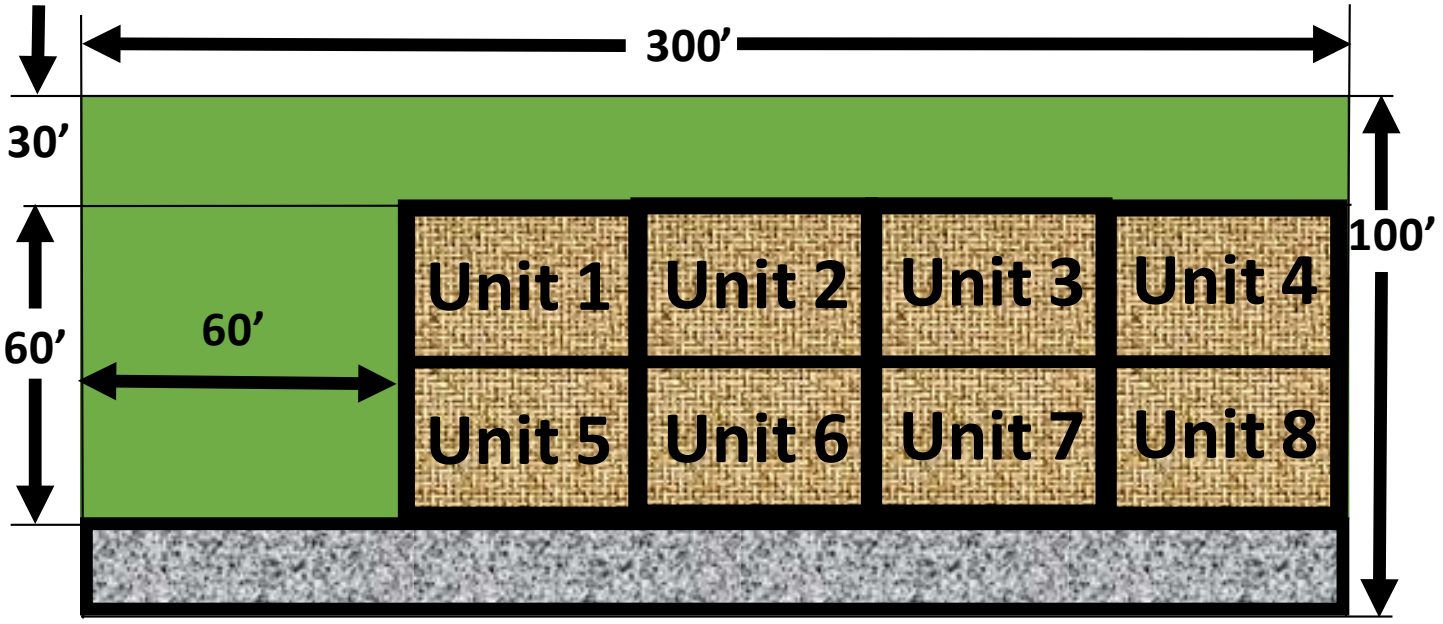
40 ft x 40 ft = 1,600 sf lot per unit

1,600 sf lot ÷ 43,560 sf per acre = 0.04 acre lot per unit

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.46	0.23 AF x 2 unit(s)
0.12	+ 1.6 AF x (0.04 x 2) net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf per lot
0.58	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.32	0.16 AF x 2 unit(s)
0.10	+ 1.3 AF x (0.04 x 2) net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf per lot
0.42	**= AF of Water Rights Due**

Multi-Family
(Without Dedicated Irrigation Meter)



Classification Parameters

Water tap serves multiple dwelling units

No separate dedicated irrigation tap for outdoor irrigation

$24,937 Savings (Reduction of 0.67 AF x Current CIL $37,220)

300 ft x 100 ft = 30,000 sf lot

30,000 sf lot ÷ 43,560 sf per acre = 0.69 acre lot

30,000 sf lot – 15,000 sf = 15,000 sf

15,000 sf ÷ 43,560 sf per acre = 0.34 acres

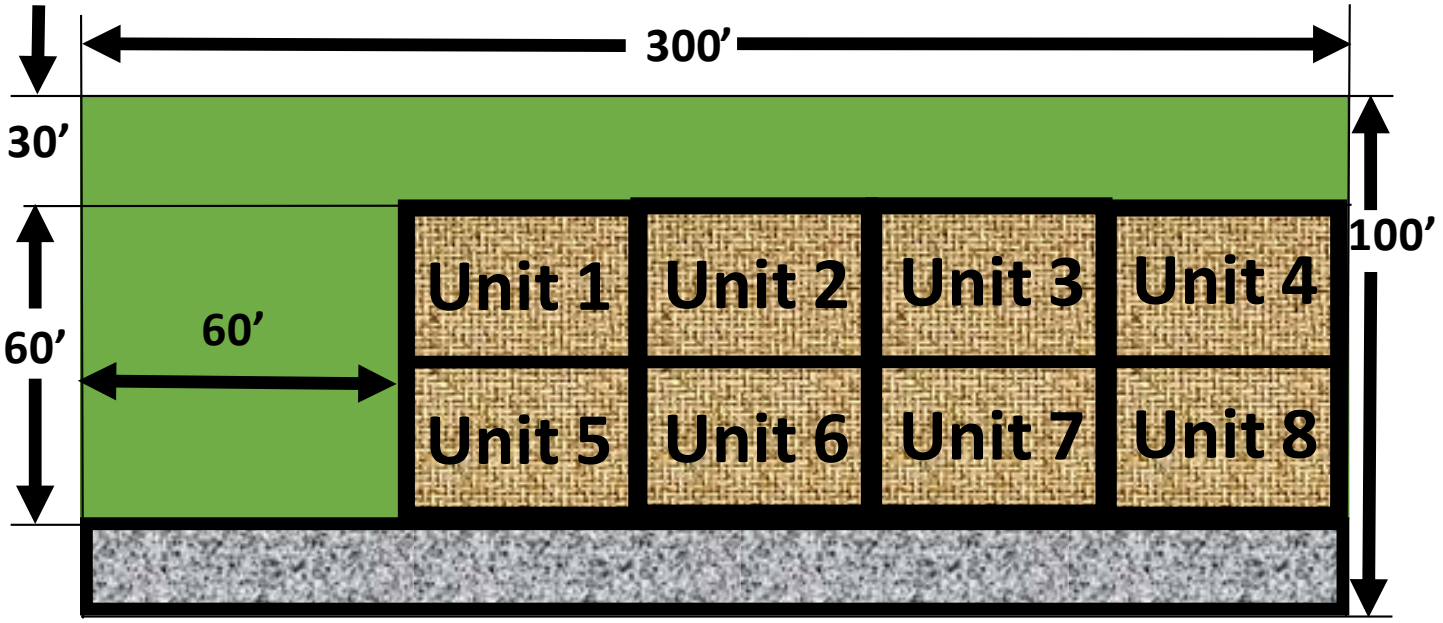
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.84	0.23 AF x 8 unit(s)
1.10	+ 1.6 AF x 0.69 net lot acres
0.48	+ 1.4 AF x 0.34 acres over 15,000 sf
3.43	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.28	0.16 AF x 8 unit(s)
0.90	+ 1.3 AF x 0.32 net lot acres
0.59	+ 1.7 AF x 0.34 acres over 15,000 sf
2.76	**= AF of Water Rights Due**

Multi-Family

(With Separate Dedicated Irrigation Meter)

(300 ft x 30 ft) + (60 ft x 60 ft) = 12,600 sf irrigated
12,600 sf ÷ 43,560 sf per acre = 0.29 acres irrigated



Classification Parameters

Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

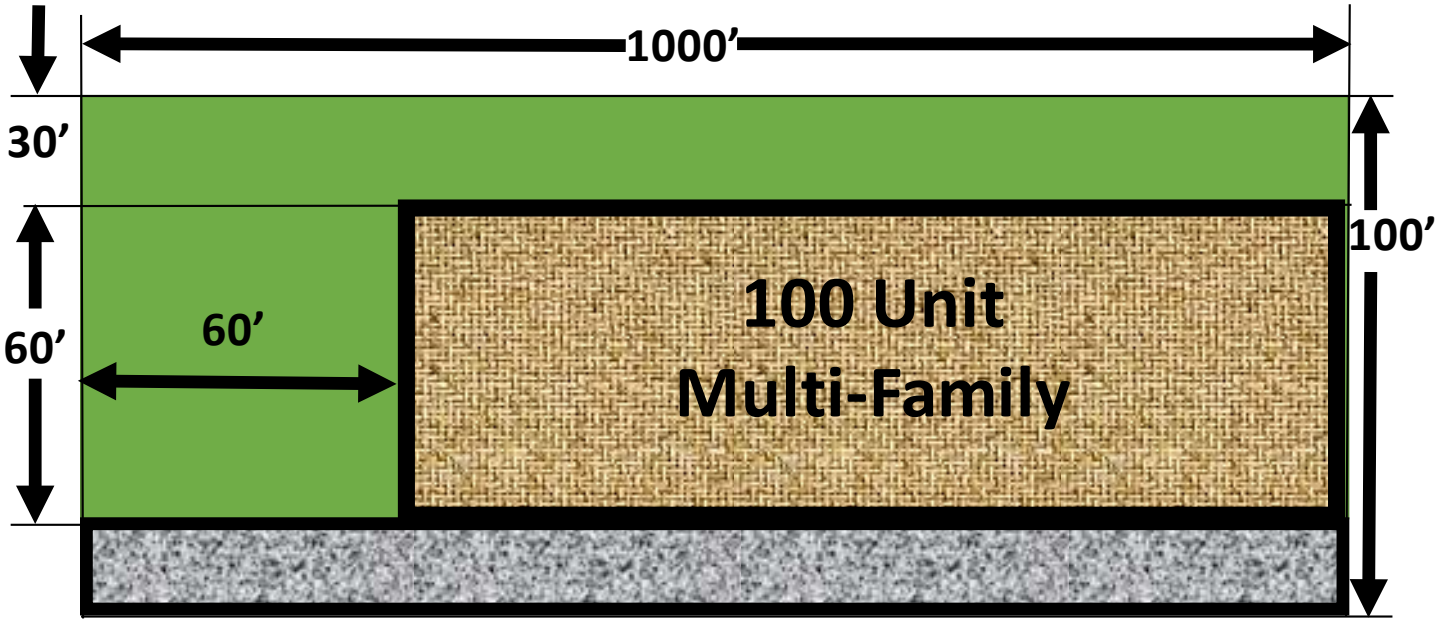
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.84	0.23 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.71	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.28	0.16 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.15	**= AF of Water Rights Due**

$20,843 Savings (Reduction of 0.56 AF x Current CIL $37,220)

Large Multi-Family
(With Separate Dedicated Irrigation Meter)

(1,000 ft x 30 ft) + (60 ft x 60 ft) = 33,600 sf irrigated
33,600 sf ÷ 43,560 sf per acre = 0.77 acres irrigated



Classification Parameters

Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
23.0	0.23 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
25.31	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
16.0	0.16 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
18.31	**= AF of Water Rights Due**

$260,540 Savings (Reduction of 7 AF x Current CIL $37,220)

Tentative Roll Out Schedule

- June 11, 2019 – Building Outreach Meeting
  - Positive reception
- June 26, 2019 – Construction Advisory Board
  - Unanimous vote to recommend change to City Council
- July 8, 2019 – Planning Commission
- July 17, 2019 – Loveland Utilities Commission
- August 6, 2019 – City Council 1st reading
- August 20, 2019 – City Council 2nd reading

Loveland
Water and Power

QUESTIONS?

Loveland
Water and Power

Updated Water Rights for Residential Developments

Nathan Alburn, Water Resources Engineer

July 8, 2019

2008-2017 Water Use Study

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Loveland
Water and Power

Water Use Study Findings

- Indoor water usage per dwelling has decreased
- Outdoor water usage per lot has decreased
- Single family detached units on average use substantially more water for both indoor and outdoor use than other types of dwellings
- Staff recommends updating the residential water rights requirement to be more in line with the observed water usage trends

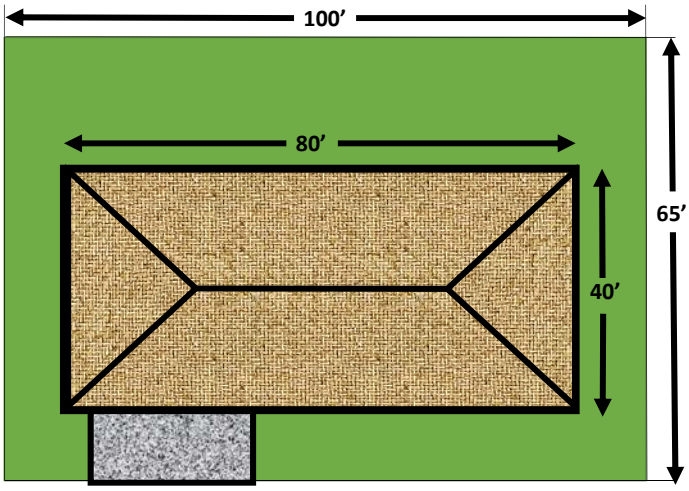
Current Equation: Section 19.04.020.A.1.: Total water rights due (in acre-feet) = (1.6 x net lot acreage) + (1.4 x acreage of that portion of each residential lot which is greater than 15,000 square feet) + (0.23 x number of dwelling units)

Loveland
Water and Power

DETACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights* *Current in Red*	
Dwelling Type	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Detached	> 800 sf	Separate water tap to each dwelling unit	**0.22 AF** *0.23 AF* *(~4.5%)*	**1.4 AF** *1.6 AF* *(~12.5%)*	**1.6 AF** *1.4 AF*
(New Category) Cottage Homes and Micro Homes	≤ 800 sf		**0.16 AF**	**1.3 AF**	**1.7 AF**

** Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.*

Single Family Detached Dwelling



Classification Parameters
Separate water tap to each detached dwelling unit
Home Size >800 sf

$1,489 Savings (Reduction of 0.04 AF x Current CIL $37,220)

80 ft x 40 ft = 3,200 sf home
100 ft x 65 ft = 6,500 sf lot
6,500 sf lot ÷ 43,560 sf per acre = 0.15 acre lot

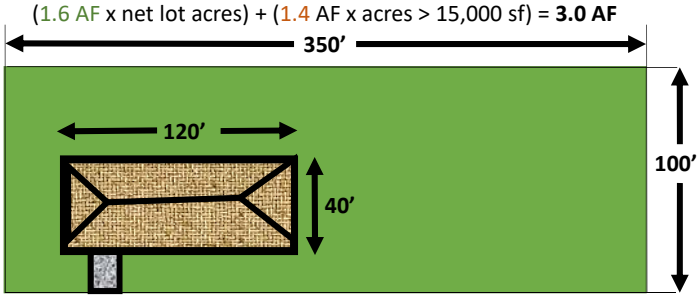
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.24	+ 1.6 AF x 0.15 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.47	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.22	0.22 AF x 1 unit(s)
0.21	+ 1.4 AF x 0.15 net lot acres
0.00	+ 1.6 AF x 0 acres over 15,000 sf
0.43	**= AF of Water Rights Due**

Single Family Detached Dwelling (Example for a lot > 15,000 sf)

Collect water rights so that any portion of a lot larger than 15,000 sf could be fully irrigated with **3.0 AF** of water per acre.

(1.6 AF x net lot acres) + (1.4 AF x acres > 15,000 sf) = **3.0 AF**



Classification Parameters
Separate water tap to each detached dwelling unit
Home Size >800 sf
Lot Size >15,000 sf

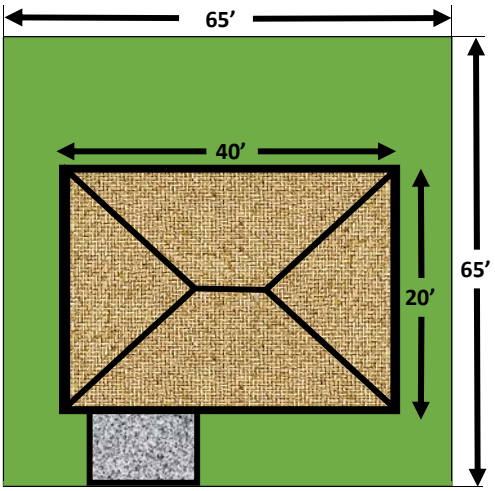
$2,605 Savings (Reduction of 0.07 AF x Current CIL $37,220)

120 ft x 40 ft = 4,800 sf home
350 ft x 100 ft = 35,000 sf lot
35,000 sf lot ÷ 43,560 sf per acre = 0.80 acre lot
35,000 sf lot – 15,000 sf = 20,000 sf
20,000 sf ÷ 43,560 sf per acre = 0.46 acres

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
1.28	+ 1.6 AF x 0.80 net lot acres
0.64	+ 1.4 AF x 0.46 acres over 15,000 sf
2.15	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.22	0.22 AF x 1 unit(s)
1.12	+ 1.4 AF x 0.80 net lot acres
0.74	+ 1.6 AF x 0.46 acres over 15,000 sf
2.08	**= AF of Water Rights Due**

Cottage Home



Classification Parameters
Separate water tap to each detached dwelling unit
Home Size >500 sf and ≤ 800 sf

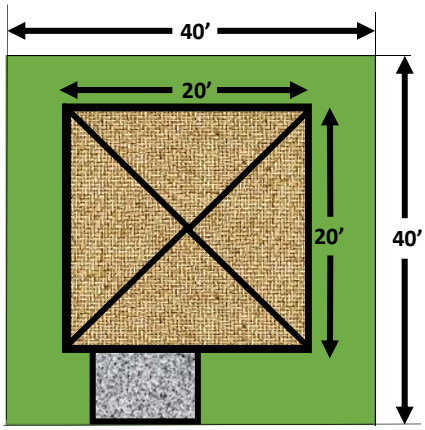
$3,722 Savings (Reduction of 0.10 AF x Current CIL $37,220)

40 ft x 20 ft = 800 sf home
65 ft x 65 ft = 4,225 sf lot
4,225 sf lot ÷ 43,560 sf per acre = 0.10 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.16	+ 1.6 AF x 0.10 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.39	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.16	0.16 AF x 1 unit(s)
0.13	+ 1.3 AF x 0.10 net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
0.29	**= AF of Water Rights Due**

Micro Home



Classification Parameters
Separate water tap to each detached dwelling unit
Home Size ≤ 500 sf

$2,978 Savings (Reduction of 0.08 AF x Current CIL $37,220)

20 ft x20 ft = 400 sf home
40 ft x 40 ft = 1,600 sf lot
1,600 sf lot ÷ 43,560 sf per acre = 0.04 acre lot

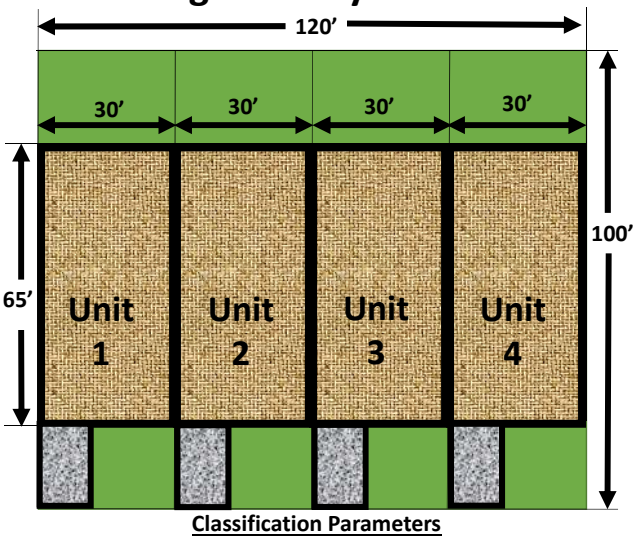
OLD EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.06	+ 1.6 AF x 0.04 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.29	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.16	0.16 AF x 1 unit(s)
0.05	+ 1.3 AF x 0.04 net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
0.21	**= AF of Water Rights Due**

ATTACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights* *Current in Red*	
Dwelling Type	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Attached (and Cluster Duplexes)	N/A	Separate water tap to each dwelling unit	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
Multi-Family	N/A	Water tap serves multiple dwelling units without a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
		Water Tap Service	**Indoor Water Rights**	**Outdoor Water Rights per Acre of Permeable Area**	
		Each water tap serves multiple dwelling units and there is a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**3.0 AF** *3.0 AF*	

** Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.*

Single Family Attached



Classification Parameters

Separate water tap to each attached dwelling unit

Home Size > 600 sf

$13,399 Savings (Reduction of 0.36 AF x Current CIL $37,220)

30 ft x 65 ft = 1,950 sf home

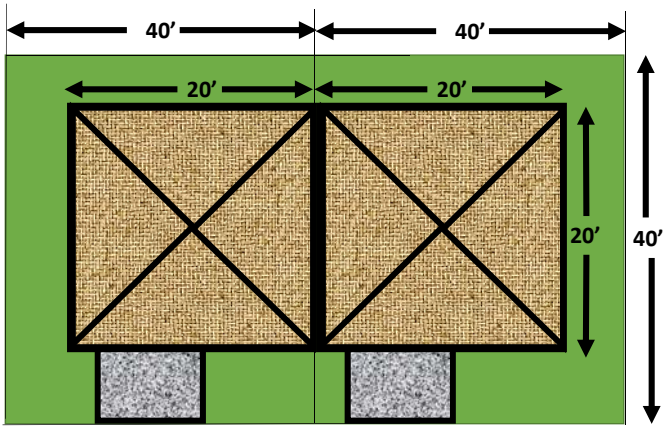
30 ft x 100 ft = 3,000 sf lot

3,000 sf lot ÷ 43,560 sf per acre = 0.07 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.92	0.23 AF x 4 unit(s)
0.44	+ 1.6 AF x (0.07 x 4) net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
1.36	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.64	0.16 AF x 4 unit(s)
0.36	+ 1.3 AF x (0.07 x 4) net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
1.00	**= AF of Water Rights Due**

Cluster Duplex



Classification Parameters
Separate water tap to each attached duplex dwelling unit
Home Size ≤ 600 sf

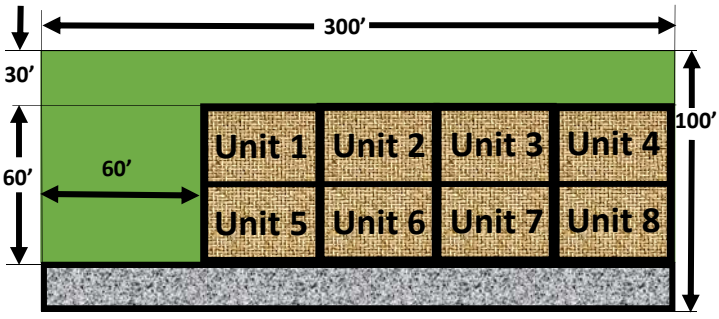
20 ft x 20 ft = 400 sf home per unit
40 ft x 40 ft = 1,600 sf lot per unit
1,600 sf lot ÷ 43,560 sf per acre = 0.04 acre lot per unit

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.46	0.23 AF x 2 unit(s)
0.12	+ 1.6 AF x (0.04 x 2) net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf per lot
0.58	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.32	0.16 AF x 2 unit(s)
0.10	+ 1.3 AF x (0.04 x 2) net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf per lot
0.42	**= AF of Water Rights Due**

$5,955 Savings (Reduction of 0.16 AF x Current CIL $37,220)

Multi-Family
(Without Dedicated Irrigation Meter)



Classification Parameters
Water tap serves multiple dwelling units
No separate dedicated irrigation tap for outdoor irrigation

300 ft x 100 ft = 30,000 sf lot
30,000 sf lot ÷ 43,560 sf per acre = 0.69 acre lot
30,000 sf lot – 15,000 sf = 15,000 sf
15,000 sf ÷ 43,560 sf per acre = 0.34 acres

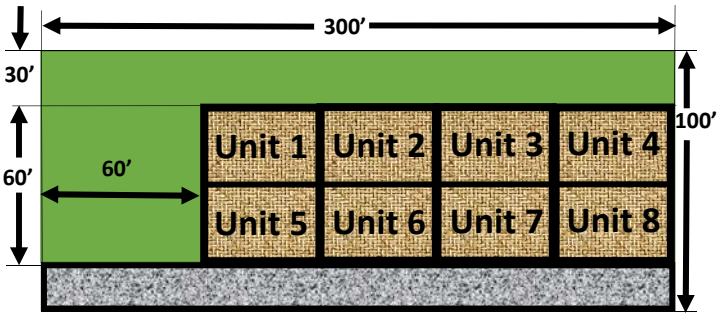
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.84	0.23 AF x 8 unit(s)
1.10	+ 1.6 AF x 0.69 net lot acres
0.48	+ 1.4 AF x 0.34 acres over 15,000 sf
3.43	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.28	0.16 AF x 8 unit(s)
0.90	+ 1.3 AF x 0.32 net lot acres
0.59	+ 1.7 AF x 0.34 acres over 15,000 sf
2.76	**= AF of Water Rights Due**

$24,937 Savings (Reduction of 0.67 AF x Current CIL $37,220)

Multi-Family

(With Separate Dedicated Irrigation Meter)



Classification Parameters
Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

$20,843 Savings (Reduction of 0.56 AF x Current CIL $37,220)

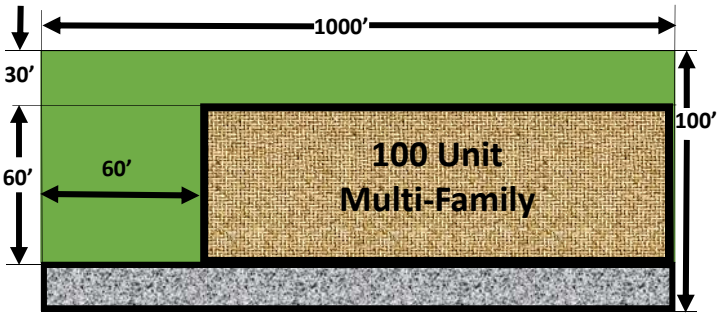
(300 ft x 30 ft) + (60 ft x 60 ft) = 12,600 sf irrigated
12,600 sf ÷ 43,560 sf per acre = 0.29 acres irrigated

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.84	0.23 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.71	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.28	0.16 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.15	**= AF of Water Rights Due**

Large Multi-Family

(With Separate Dedicated Irrigation Meter)



Classification Parameters
Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

$260,540 Savings (Reduction of 7 AF x Current CIL $37,220)

(1,000 ft x 30 ft) + (60 ft x 60 ft) = 33,600 sf irrigated
33,600 sf ÷ 43,560 sf per acre = 0.77 acres irrigated

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
23.0	0.23 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
25.31	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
16.0	0.16 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
18.31	**= AF of Water Rights Due**

Tentative Roll Out Schedule

- June 11, 2019 – Building Outreach Meeting
  - Positive reception
- June 26, 2019 – Construction Advisory Board
  - Unanimous vote to recommend change to City Council
- July 8, 2019 – Planning Commission
- July 17, 2019 – Loveland Utilities Commission
- August 6, 2019 – City Council 1st reading
- August 20, 2019 – City Council 2nd reading

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QUESTIONS?

Summary of Indoor vs. Outdoor Water Use Study Summary (related to presentation: Updated Water Rights for Residential Developments)

In April of 2019, Water Division Staff completed a Water Used Study titled: "Summary of Indoor vs. Outdoor Water Use Study Summary". The main purpose of the study was to analyze the current water use of residential developments. The two key goals of the study were to analyze residential structures built after low flow fixtures were mandated in 1994 and 1997, and to analyze the current trends of water users within the City of Loveland. Data from 2008 to 2017 was analyzed for these goals. Both the indoor and outdoor water usage was calculated for three main types of dwelling units: Single Family Detached, Single Family Attached, and Multi-Family. Based on the study, the Staff determined the potential water rights required for each of the types of dwelling units.

The main findings of the study were the following: Indoor water usage per dwelling unit has decreased for all analyzed types; outdoor water usage per lot has decreased for all types of analyzed housing developments; single family detached units on average use substantially more water for both indoor and outdoor use than other types of dwellings within the analyzed data set. Finally, Staff recommends updating the residential water rights requirement to be more in line with the observed water usage trends.

CURRENT PLANNING DIVISION
410 E. 5th Street | Loveland, CO 80537 | 970-962-2523
eplan-planning@cityofloveland.org | cityofloveland.org/DC

Planning Commission Staff Report

July 8, 2019

Taft Rezoning		
Agenda #: 1	**PZ #19-00102**	**Rezoning**
Location	Located along the west side of N. Taft Avenue, north of West 12th Street and south of W. Eisenhower Boulevard.	

Development Review Team Recommended Motion(s)

Recommended Motion(s): *Move to make the findings set forth in the Planning Commission staff report dated July 8, 2019 and, based on those findings recommend that the City Council approve the following:*

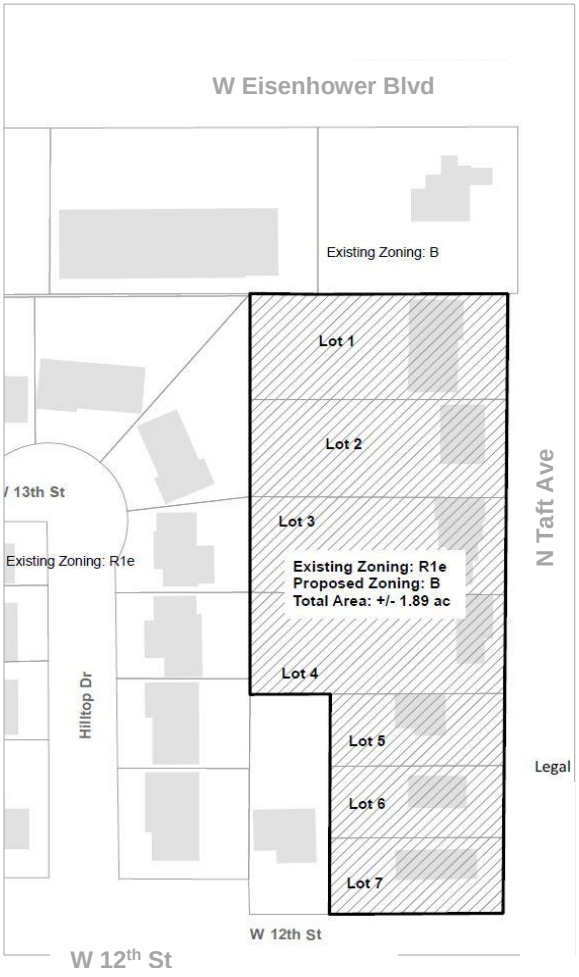
1. *Lots 1-4, East Sprenger Addition rezone*
2. *Lost 1-3, Block 1, Moline Subdivision rezone*

Options	Consequence
Approve the Motion	The seven (7) lots are rezoned to B-Developing Business.
Deny the Motion or take no action	The seven (7) lots will remain under the current R1e-Established Low Density Residential zoning. The Taft widening project will make these lots unusable for single-family use.

Project Summary

This public hearing is to consider a rezoning of the following parcels:

1. *Lot 1, East Sprenger Addition (Rezoning from R1e- to B)*
2. *Lot 2, East Sprenger Addition (Rezoning from R1e to B)*
3. *Lot 3, East Sprenger Addition (Rezoning from R1e to B)*
4. *Lot 4, East Sprenger Addition (Rezoning from R1e to B)*
5. *Lot 1, Block 1, Moline Subdivision (Rezoning from R1e to B)*
6. *Lot 2, Block 1, Moline Subdivision (Rezoning from R1e to B)*
7. *Lot 3, Block 1, Moline Subdivision (Rezoning from R1e to B)*



The City is initiating the rezoning of seven (7) R1e-Established Low Density Residential lots to B-Developing Business. The proposed B zoning district represents a more appropriate designation under current and future conditions. The B zoning designation is also compatible with surrounding uses and development patterns.

The seven (7) properties are City-owned parcels that will be directly affected by the widening of N. Taft Avenue as this is planned to expand up to 40 feet onto these existing lots. The widening project is estimated to begin in 2022 and has been a City-planned project for over 20 years.

The seven (7) existing lots have a total land area of approximately 1.89 acres. The most northern lot is adjacent to an existing commercial center which faces the US 34 corridor and is zoned B-Developing Business. No new development is proposed with this rezoning request.

Staff believes there are no key issues associated with the rezoning request and is recommending approval based on the findings listed in the staff report beginning on page 6. The City's Comprehensive Land Use Map designates this area as LDR-Low Density Residential. The request for rezoning to B-Developing Business represents the change in character within the area related to the widening of a major arterial road. The vehicular access to each of these seven (7) lots along N. Taft Avenue is no longer safe and therefore is not a viable option. In addition, the requested rezoning is consistent with the philosophies, goals and policies of the City's Comprehensive Plan in terms of its proximity to the US 34 commercial corridor and the vision of commercial nodes at major intersections.

A neighborhood meeting was held at 5:00 pm on June 27, 2019 at the Development Center. There were approximately 8 neighbors present. A variety of questions were raised generally seeking information related to the Taft widening project timeline, future access and future uses on the site. Staff from the Current Planning office and Public Works Engineering attended the meeting. All questions and concerns were adequately addressed. Additional information was provided to neighbors in regards to the Taft widening construction schedule and the demolition timeline for the remainder of the homes on these lots. All neighbors in attendance at the neighborhood meeting were informed of the upcoming public hearings and invited to attend.

At the time this staff report was created staff received two (2) informational inquiries related to the construction timeline, turning lanes and demolition timeline.

Attachments

1. Vicinity map
2. Zoning map
3. Taft widening map

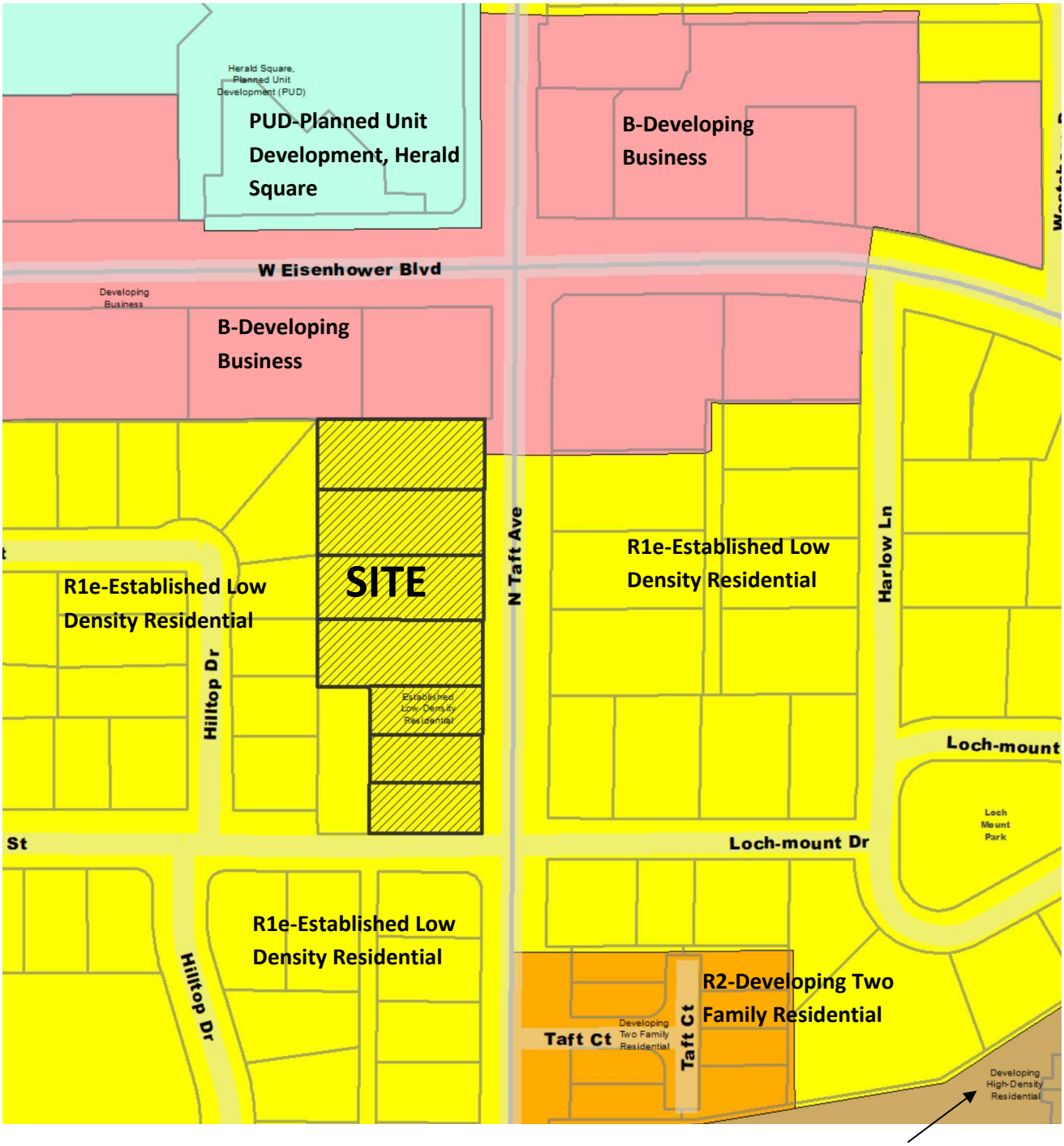
Applicant Information	Development Review Team Contacts
Applicant: Shawn Fetzer City of Loveland Public Works Department	**Planner:** Emily Tarantini
	Traffic Engineer: Randy Maizland
	LFRA: Ingrid McMillan-Ernst
Property Owner: City of Loveland	**Stormwater:** Suzette Schaff
	Power: Mark Warner
	Water/Wastewater: Melissa Morin

Site Data

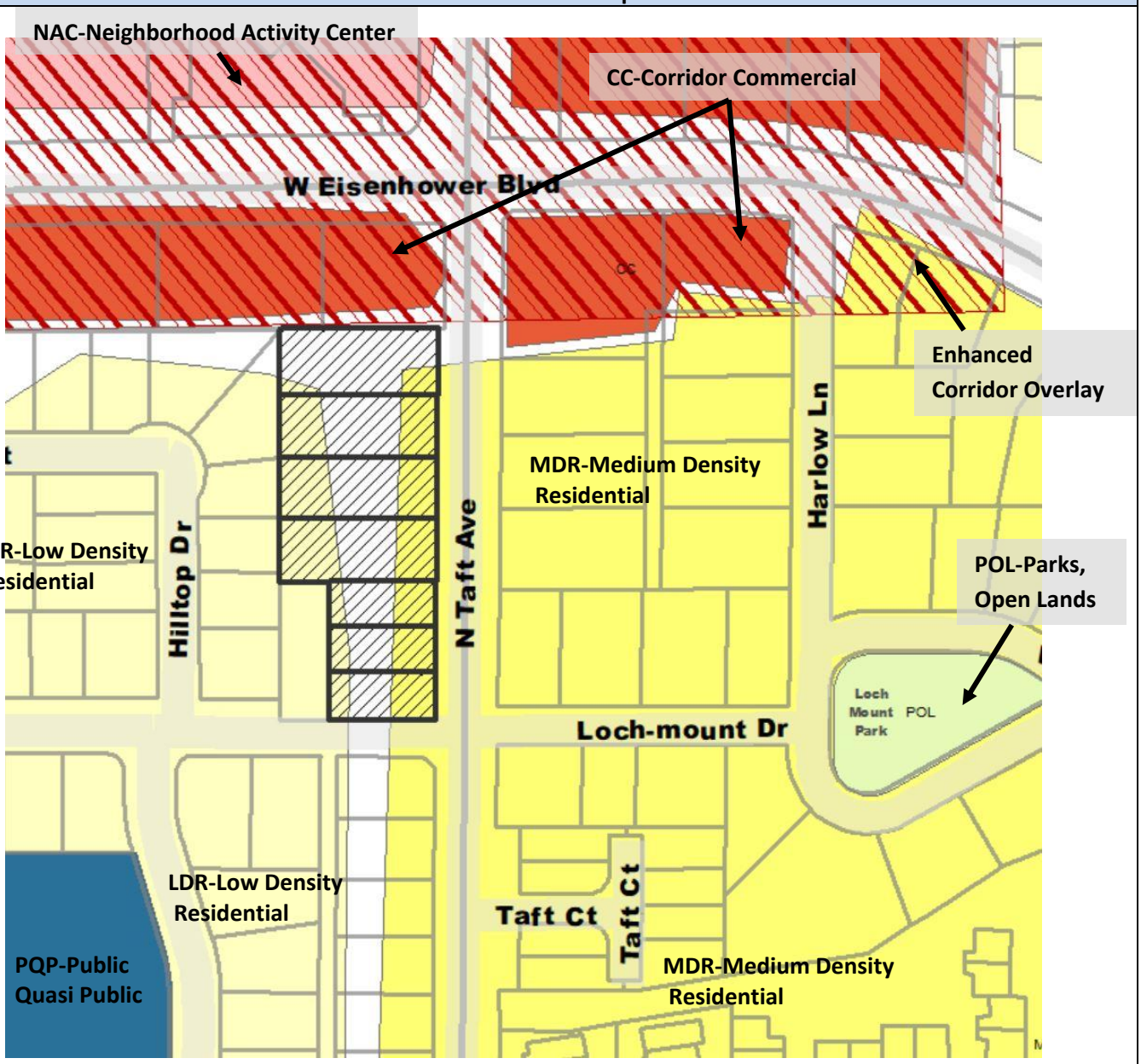
Location/Address	Located along the west side of N. Taft Avenue, north of West 12th Street and south of W. Eisenhower Boulevard. (1305, 1309, 1313, 1315, 1317, 1319, & 1325 North Taft Avenue)
Land Area	+/- 1.89 Acres
Existing Buildings	Single family homes (Some demolished)
Topography	Mild slope from north to south
Access	Single access existing from N. Taft Avenue
Water Provider	City of Loveland
Wastewater Provider	City of Loveland
Electric Provider	City of Loveland
Floodplain	Not applicable

Subject Property and Adjacent Property Designations			
	Existing Zoning	**Comprehensive Plan**	**Existing Land Use(s)**
Subject Property	R1e-Low Density Residential	LDR-Low Density Residential	Single family homes (Some demolished)
Adjacent North	B-Developing Business	CC-Corridor Commercial	Retail center
Adjacent South	R1e-Low Density Residential	LDR-Low Density Residential	Single family homes
Adjacent East	N. Taft ROW-Major Arterial	N. Taft ROW-Major Arterial	N. Taft ROW-Major Arterial
Adjacent West	R1e-Low Density Residential	LDR-Low Density Residential	Single family homes
Aerial Photo			

Zoning Map


Herald Square, Planned Unit Development (PUD)
PUD-Planned Unit Development, Herald Square
B-Developing Business
W Eisenhower Blvd
Developing Business
B-Developing Business
SITE
N Taft Ave
R1e-Established Low Density Residential
Harlow Ln
R1e-Established Low Density Residential
Hilltop Dr
Established Low-Density Residential
Loch-mount
Loch Mount Park
St
Loch-mount Dr
R1e-Established Low Density Residential
Hilltop Dr
R2-Developing Two Family Residential
Taft Ct
Developing Two Family Residential
Taft Ct
Developing High-Density Residential
R3-Developing High Density Residential

Future Land Use Map



Background

PZ#	Date	Request	Action
19-00102	July 8, 2019	Rezoning	Approval

- The Taft widening project has been planned for 20 years as a means of reducing congestion at this intersection and improving traffic safety. Funds are now available to initiate construction in 2022.
- The current residents are on a month-to-month lease with a 6-12 month notice to vacate.
- The Taft widening project is estimated to break ground in 2022.

Neighborhood Outreach	
Notification	Written notices were mailed to all property owners within 250 feet of the property on June 13, 2019. Notification signs were posted in prominent locations on the perimeter of the site on June 13, 2019. In addition, a notice was published in the Reporter Herald on June 22, 2019.
Neighborhood Response	The neighborhood meeting was held at 5:00 pm on June 27, 2019 at the Development Center, there were approximately 8 neighbors present. A variety of questions were raised generally concerning the following topics: • **When will the Taft widening construction begin** – *Staff response: It is estimated that the remainder of the homes will be fully demolished by 2021, allowing for road construction to begin in 2022.* • **What potential uses will be allowed on these lots within the B zoning? -** *Staff response: A variety of commercial, retail and mixed residential uses are permitted within the B zoning district, any proposal for development will be subject to the City review process and development standards.* • **Are there plans for adding a street light at 12th St?** –*Staff response: No, not at this time.* • **Is there a possibility of constructing a wall between the homes on Hilltop Drive and any new future development?** – *Staff response: Yes, the Unified Development Code requires a zone boundary bufferyard to be installed when two different zoning districts are adjacent to one another. The buffering between these zoning districts can be in the form of landscaping or a landscape wall.* • **Will there be an increase in traffic along 12th St and N. Taft Ave?** – *Staff response: Not necessarily, with a singular access onto N. Taft Avenue and the elimination of seven (7) separate accesses we may see a more continuous flow on N. Taft Avenue.* • **How will future access take place on the site?** – *Staff response: Access will most likely be from W. 12th Street. Public Works will only allow one access point to Taft on this block.* The property owners of a home on the east side of N. Taft Avenue, directly across from the seven (7) lots, expressed opposition to the proposed rezoning. They were concerned about the future uses that could occur on these lots, the light pollution of commercial signage and other visual disturbances this would create for them. They suggested a City park within this area or the continuing use of these lots as single-family homes. Staff from the Current Planning offices and the Public Works Department explained to these residents that a City park would not be feasible given parking and access constraints on these lots. Staff further explained that seven (7) separate accesses onto these lots as residential homes would not be considered a safe idea as vehicles backing out onto a major arterial can be dangerous. There were other City-related questions raised by the neighborhood that did not directly relate to the proposed rezoning. The neighbors in attendance were invited to attend the scheduled public hearings.

Planning Commission Findings for Approval

APPLICATION FOR REZONING

Pursuant to Section 18.17.09 of the City of Loveland Unified Development Code, the Planning Commission shall consider and make findings regarding the following criteria for zoning amendments. All of the findings and one of the alternative findings must be met in order to approve a zoning amendment.

B. 1. It is the policy of the City not to rezone property in a manner that would create or facilitate the creation of development rights or entitlements that would either:

a. Reduce the level of protection for significant natural resources that exist on the subject property; or

b. Expose additional people or personal property to unmitigated natural hazards that are present on the subject property (*e.g.*, fire, flood, or geological hazards).

Finding met: Yes

Analysis: Staff believes that the findings can be met. The seven (7) lots were purchased by the City in 2005, with the purchase, a Phase I Environmental Site Assessment Report was provided with each lot stating that there were no observed significant natural resources and no natural hazards present on the lots.

Asbestos and lead-containing materials were identified and will be remediated with demolition.

B. 2. (If the applicant has not demonstrated that the above policy has been met): This policy may be waived upon a finding by the Planning Commission that:

A. Alternative means have been implemented to achieve a comparable or better level of resource protection (*e.g.*, conservation easements, development agreements, or other comparable mechanisms for resource protection); or

B. The policy is outweighed by a substantial community interest that is served by approval of the rezoning (*see* Subsection C.1., below).

Finding met: Yes

Analysis: Staff believes that B.1.a and B.1.b have been met.

C.1. The proposed zone, as applied to the subject property, is consistent with its land use designation in the Comprehensive Plan or an amendment to the Comprehensive Plan is approved in accordance with Section 4 of the Comprehensive Plan prior to the approval of the rezoning application.

Finding met: Yes

Analysis: Staff believes this finding can be met. The proposed B zoning is consistent with the philosophies, goals and policies of the City's Comprehensive Plan given its proximity to the US 34 corridor. The current land use designation of LDR-Low Density Residential is under consideration to be amended to reflect the vision of this commercial intersection as the Comprehensive Plan broadly outlines a need for commercial redevelopment at this location. The proposed widening of N. Taft Avenue will bring a level of beautification and functionality to this arterial with the inclusion of a detached pedestrian sidewalk and a bike lane along the western side of the right-of-way. To further elaborate, the Create Loveland Comprehensive Plan includes plan elements to "Cultivate Vibrant Economic Centers" and "Revitalize our Corridors and Gateways". The Comprehensive Plan additionally sets policies that include:

- *Revitalize Our Corridors and Gateways*
  - Policy 1 – Foster reinvestment in existing corridors and concentrate commercial activity at prominent intersections and within centers.

- Strategy 1.1 – Concentrate demand for commercial activity at appropriate nodes …located at major intersections or have particularly strong bike and pedestrian connections to existing neighborhoods.

- *Cultivate Vibrant Economic Centers*
  - Policy 4 – Support the existing and local business community.
  - Strategy 4.4 – Continue to be flexible with land use policy and development review to allow current businesses to expand or change according to market forces.
- *Create a Connected and Accessible Community*
  - Policy 4 – Establish and maintain convenient connections between neighborhoods and to local destinations.

C. 2. Rezoning to the proposed zone will provide a benefit to the community or immediate area that cannot be provided under the existing zone, and the balance between the anticipated benefit, if any, and the anticipated burden on the community or immediate area, if any, is either neutral or favors the rezoning.

Finding met: Yes

Analysis: The proposed rezoning of these lots to the B zoning district will allow for the highest and best use on these lots given their proximity to an existing commercial intersection and the expansion of the N. Taft Avenue right-of-way onto these lots. The City-planned Taft widening only allows one access point from N. Taft Avenue for safety purposes, making the single-family home lots unusable as currently designated. At the time of future development, buffering between the existing single-family homes on Hilltop Drive will be required. This anticipated improvement was considered positive by the neighborhood as it was seen as a potential noise barrier between the Hilltop Drive homes and the major arterial.

C. 3. The proposed zone would not cause an I zone to share a boundary with an ER, R1e, R1, R2, R3e, or R3 zone, unless there is sufficient land area on the subject property to provide a buffer, as set out in Division 18.08.03, Standards for Bufferyards, and a development agreement is approved to mitigate use incompatibilities with fencing, walls, landscaping, noise and lighting restrictions, or other appropriate techniques.

Finding met : Yes

Analysis: Staff believes this finding can be met as the proposed rezone to B-Developing Business will not create an I-Developing Industrial zoning district.

C. 4. Adequate community facilities are available to serve development in the proposed zone in accordance with Section 18.15.02.05, Determination Regarding Adequacy; or the proposed zone would limit demands upon community facilities more than the existing zone; or reasonable assurances are provided that adequate community facilities will be made available to serve new development by the time the new development places demands on the facilities.

Finding met: Yes

- *Analysis: **Fire:** Staff believes this findings can be met, based on the following:*

The future development site will comply with the requirements in the ACF Ordinance for response distance requirements from the first due Engine Company.

The proposed rezoning from R1e to B will not negatively impact fire protection for the subject development or surrounding properties.

- *Analysis: **Water/Wastewater:** Staff believes this findings can be met, based on the following:*

The subject rezoning is situated within the City's current service area for both water and wastewater. The residential houses on these lots have City of Loveland water and wastewater services. The Department finds that the Development will be compliant to ACF for the following reasons:

The rezoning is consistent with the Department's Water and Wastewater master plan by being consistent with the 2005 Comprehensive Master Plan and that Public facilities are available to serve the future development of these lots.

- *Analysis: **Stormwater:** Staff believes this findings can be met, based on the following:*

The proposed future development will meet all applicable requirements contained in the City of Loveland Master Drainage Plan, including the City of Loveland Storm Drainage Criteria when final designed; and

The proposed future development will provide for adequate major drainage facilities to convey stormwater flows from a one hundred year storm event which will minimize property damage when final designed and, the proposed future development will meet all applicable drainage requirements of the City when final designed.

- *Analysis: **Power:** Staff believes this findings can be met, based on the following:*

The existing uses as well as any future development requirements are current with the Power Division's existing infrastructure and system master plan.

D. Additional Findings. The Planning Commission may recommend approval of an application for rezoning upon a determination that at least one of the following three criteria has been met. This finding is in addition to the findings regarding the criteria of subsections B. and C., above:

1. Alternative #1: Plan Implementation. **The proposed zone is more appropriate than the existing zone to implement an adopted or approved current City plan that was developed with public input (*e.g.*, the Comprehensive Plan, the Highway 287 Strategic Plan, etc.).**

Finding met: Yes

Analysis: Staff believes this finding can be met. The proposed B zoning is more appropriate than the current R1e zoning as the Taft widening is further implementing the City's Comprehensive Plan and vision for a commercial node at this intersection and its proximity to the US 34 commercial corridor.

2. Alternative #2: Change in Character of the Area. **The Planning Commission finds that the proposed zone is more appropriate than the existing zone because:**

a. There has been a change in character or capacity of public infrastructure in the area (*e.g.*, installation of public facilities, other zone changes, new growth trends, deterioration, development transitions, etc.); and

b. The proposed zone allows for the reasonable development or redevelopment of the subject property in a manner that will be compatible with its existing or planned context.

Finding met: Yes

Analysis: Staff believes this finding can be met. The subject properties will be highly affected by the widening of the N. Taft right-of way, expanding more than 30 feet in some cases onto the existing residential lots. The widening of this major arterial will create a change in character within this block. The western section of the US 34 corridor is setup to financially encourage redevelopment of commercial sites, a similar vision that is echoed within the City's Comprehensive Plan. The lots to be rezoned are adjacent to an existing commercial/retail site located off of the US 34 corridor, the

proposed rezoning can serve as an opportunity to redevelop these lots to their best use as single-family homes are no longer a viable option.

3. Alternative #3: Need for Zone in Land Inventory. **The Planning Commission finds that the proposed zone is more appropriate than the existing zone because:**

a. There is greater need in the City for land in the proposed zone than the existing zone based on a market study provided by the applicant; and

b. The proposed zone will promote a balance of land uses in the City that will improve economic opportunity or community mobility in alignment with the Comprehensive Plan.

Finding met: Not applicable as alternatives #1 and #2 have been met.

Staff Recommendations
Staff has no recommendations for the rezoning application.

Attachment 1

Vicinity Map

Attachment 2

Legal Description:

Lot 1. Lot 1, East Sprenger Addition
Lot 2. Lot 2, East Sprenger Addition
Lot 3. Lot 3, East Sprenger Addition
Lot 4. Lot 4, East Sprenger Addition
Lot 5. Lot 1, Block 1, Moline Subdivision
Lot 6. Lot 2, Block 1, Moline Subdivision
Lot 7. Lot 3, Block 1, Moline Subdivision

containing 1.89 acres more or less.

Attachment 3

LEGEND

- PROPOSED ROW
- 5030 PROPOSED MAJOR CONTOUR
- 5028 PROPOSED MINOR CONTOUR
- 5030 EXISTING MAJOR CONTOUR
- 5028 EXISTING MINOR CONTOUR
- CUT LIMITS, TOP OF SLOPE
- FILL LIMITS, TOE OF SLOPE
- CONSTRUCTION EASEMENT
- PROPOSED INLET

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