



EXTERNAL MEMORANDUM

To: El Paso County
200 South Cascade Avenue, Suite 150
Colorado Springs, CO 80903-2208

cc: Project— External Memorandum

From: John P. McGinn, P.E.
Principal Engineer
RESPEC
5540 Tech Center Drive, Suite 100
Colorado Springs, CO 80919

Date: November 15, 2023

Subject: *Response to Water Report Comments--Sterling Ranch East Filing 5*



STATE ENGINEER'S COMMENTS

The State had 5 questions regarding the report. All questions from the state were answered by noting the location in the report where their questions were answered. Therefore there are no modifications or additions to the report relative to State questions. Our response was sent to the State on September 25, 2023 addressing all of their questions. All of their questions were answered by referring back to documents that were contained within the original report and therefore, we have no modifications or additions.

See Attachment 1

On September 26, 2023, we received a positive response from Wenli Dickinson of the State Engineer's Office.

See Attachment 2

EPC COMMENTS

There is a note regarding RS-5000 zoning as to minimum lot size and the water allocation used.

Table 1 in the Water Report is the Water Authority's adopted water requirement table for whatever lot sizes are within a subdivision. The table represents a sliding scale which

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represents the total water required to serve an individual lot. If a lot size is 5000 SF it falls into the 3500 to 7000 SF category. So whatever lot size is within a given zone the scale will be applied. This represents both indoor and outdoor use within a given lot or SFE.



Presumptive Use question;

First---The water requirement is not expected actual use but how much water right is set aside to assure that the water need is met for 300 years. The initial water requirement of 0.353 AF/SFE was adopted by Sterling in 2016 and includes both indoor and outdoor use. It was based on long standing historical water requirements used by several Falcon area districts for decades. This factor has been accepted by both the State and the County for 7years in the case of the Authority and for almost two decades in the case of Woodmen Hills.

In 2022, as high density lots were becoming more common, the Authority recognized that with the trend towards the high-density units, an adjustment would be necessary to accommodate the high density trend. The sliding scale was developed based historical data from neighboring areas where a decade of high-density lot water use data was available. A summary of the historical adjustment was presented to the County in December of 2022. Water requirements have subsequently all been accepted since that time according to the Authority's adopted standards by both State and EPC. Attached is that memo

See Attachment 3

Attachment 1

John McGinn

From: John McGinn
Sent: Monday, September 25, 2023 12:07 PM
To: 'ioana.comanicu@state.co.us'; 'wenli.dickinson@state.co.us'
Cc: Loren Moreland; Loren Moreland; Andrea Barlow (abarlow@nescolorado.com); Blaine Perkins; Marc Whorton (mwhorton@classicconsulting.net); Kari Parsons; Doug Stimple (DouglasS@classichomes.com)
Subject: Subdivision Referral No 30925 Sterling Ranch East Filing No 5
Attachments: Special_Warranty_Deed_McCune.pdf; Appendix A.pdf; Table 3.pdf; Assignment from SR Sewer_ LLC to FAWWA_ 2022-02-01(6859162.1).pdf; Appendix F August 11 2023.pdf; Table 3 Expanded Sep 15.pdf

Ioana/Wenli:

We reviewed your letter of September 1, 2023 in which you requested 5 clarifications on the above water report. Appendix C has all of the supporting documents for the stated questions, but Appendix C is over 300 pages of nearly twenty documents, so finding certain specifics might be difficult.

1. Discrepancy regarding Supply: We agree that the NNT Dawson water is not included in our system inventory total---The NNT Dawson water referenced is held back for private wells ---at the bottom of Table 3 in the cross-hatching, the 9.32 AF and 5.23 AF are noted as being allocated for the private wells. While we track and acknowledge the NNT Dawson, we do not count that water in our overall system inventory as that water is dedicated for those private wells and will not be available for the central system. I have reattached **Table 3** for reference. Not only do we track the FAWWA inventory by area, we also track by decree, as a double check on our inventory. I am attaching our internal **Table 3 (Expanded)** for your use in double checking against your calculation----my double check also internally tracks the ownership documents. Our typical Appendix C for FAWWA Water Reports has all these ownership documents in full, but we like to have a one sheet check. Since our expanded Table 3 is somewhat redundant, we don't generally present it in water reports. Hopefully it makes your check easier.
2. The commitment summary is **Appendix F** in the report. Appendix F is also a tracking document for us to total all active commitments. The Appendices to the report are really extensive (and I think F is clear at the back) so I have re-attached it here, for easier review.
3. The Sterling Ranch Metropolitan District is wholly contained within FAWWA and is the largest part of FAWWA. Sterling Ranch East Filing 5 is within Sterling Ranch Metropolitan District. I attached an overall map which is **Appendix A**. Appendix A shows the various districts and areas within the FAWWA service area.
4. The FAWWA Assignment, which transferred the initial water ownership to FAWWA, includes numerous water rights which include 17CW3002 and 18 CW 3002. Rights to 16 CW3095 were not transferred to FAWWA since they are solely allocated to 10 private wells. We only acknowledge 16 CW 3095 as the 10 private well are within the FAWWA service area. The **FAWWA Assignment** document is buried deep in Appendix C of the Report, so I am re-attaching it separately for reference.
5. I have re-attached **The Special Warranty Deed from McCune** to FAWWA which is in Appendix C. This transfers of ownership of 1689-BD,1690-BD, and 1691-BD to FAWWA. The determinations state that the water can be used within Sterling Ranch Metropolitan District. Refer to Appendix A map re-provided here that shows the

various areas within FAWWA service area. As can be seen, Sterling Ranch East Filing 5 is within Sterling ranch which is the largest part of FAWWA service area.

I believe that this should cover the above questions. Please feel free to contact me directly, if you have further questions.

John

John McGinn, PE
National Practice Leader Water and Wastewater

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john.mcginn@respec.com

Attachment 2

John McGinn

From: Dickinson - DNR, Wenli <wenli.dickinson@state.co.us>
Sent: Tuesday, September 26, 2023 10:54 AM
To: John McGinn
Cc: ioana.comaniciu@state.co.us; Loren Moreland; Loren Moreland; Andrea Barlow (abarlow@nescolorado.com); Blaine Perkins; Marc Whorton (mwhorton@classicconsulting.net); Kari Parsons; Doug Stimple (DouglasS@classichomes.com)
Subject: Re: Subdivision Referral No 30925 Sterling Ranch East Filing No 5

This Message Is From an External Sender

Report Suspicious

This message came from outside your organization.

Hi John,

Thank you for your email. It looks like you addressed a lot of our questions. We will respond with an updated letter regarding the Sterling Ranch East Filing No. 5 once we receive the referral from El Paso.

Regards,

Wenli Dickinson, P.E.
Water Resource Engineer



P 303.866.3581 x8206
1313 Sherman St, Suite 821, Denver, CO 80203
wenli.dickinson@state.co.us | dwr.colorado.gov

On Mon, Sep 25, 2023 at 12:08 PM John McGinn <John.McGinn@respec.com> wrote:

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We reviewed your letter of September 1, 2023 in which you requested 5 clarifications on the above water report. Appendix C has all of the supporting documents for the stated questions, but Appendix C is over 300 pages of nearly twenty documents, so finding certain specifics might be difficult.

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John

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Attachment 3



EXTERNAL MEMORANDUM

To: Lori Seago
El Paso County
200 South Cascade Avenue, Suite 150
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cc: Project— External Memorandum

From: John P. McGinn, P.E.
Principal Engineer
RESPEC
5540 Tech Center Drive, Suite 100
Colorado Springs, CO 80919

Date: December 16, 2022

Subject: FAWWA/Sterling Water Resource Projections and Reports

This memo is intended to address two comprehensive elements of the FAWWA/Sterling Water Resource Projections and Reports.

The first item is that the County has a presumptive use for indoor water of 0.26 acre-feet/year per single family dwelling and that we have suggested that indoor use for single family dwelling is 0.18 acre-feet/year-SFE. We find and present conclusive actual data taken from historic analysis that the 0.18 acre-feet/year-SFE is a historically supported factor for indoor use. However, we would note that all of our water use projections are based on historical overall use and the balance of indoor to outdoor use is irrelevant in our overall water resource planning.

The second element being discussed in this memo is that, in response to actions in the last few years, both in the development community and planning community to provide more high density lots. This pressure to produce more high density lots is partially intended to curb urban sprawl, reduce development footprint, provide low maintenance housing, but also conserve natural resources. Failure to adopt revised natural resource impacts for such products would be a partial failure of the high-density efforts. This document also addresses the reduced water impacts of such conservation efforts.

BACKGROUND ON INDOOR WATER USE

Water/wastewater utilities track water use for customers and establish planning parameters based on various historical measurements. Separate meters are very seldom placed on homes that separately measure indoor and exterior use. If/when a value might be required for indoor use, it is accepted by almost all water utilities that the value for "winter water" is the best historical measurement. The defined period for "winter water" changes slightly from one



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entity to another, but by far the most commonly accepted measurement period is December, January, and February. The largest utility in El Paso County, Colorado Springs Utilities uses the above method and assumes that metered "winter water" is a reasonable measure of generated wastewater. Indoor use is also equated to the same factors although there is no independent measurement of indoor use.

As we discuss indoor use in this memo, reference of indoor use will most commonly be made to "winter water" or wastewater as these are measured quantities used by water/wastewater planning professionals.

OTHER FACTORS CURRENTLY AFFECTING WATER-WASTEWATER USER TRENDS

Historically, water and wastewater use profiles along the Front Range have dropped dramatically in the last 20 years. Depending on the utility, typical overall drop in water/wastewater user profiles have dropped from 20 to 30% on the water side due to conservation awareness, but also heavily due to the conversion to "inverted block rates" which reward conservation substantially. This trend is still moving downward and is expected to continue downward due to water conservation pressure along the Front Range.

More recently in the last 2 to 3 years, there has been a development trend that has dramatically downsized single-family lots. Recent products are being planned and developed on lots even less than 2000 square feet. Such small lots generally have very, very little or no active landscaping which dramatically reduces water consumption. The smaller lots also tend to have slightly fewer residents which further reduces both water and wastewater use.

EVALUATION OF PLANNING FACTOR

The overall planning factor for Annual Water needs in the Falcon area has been studied for over 20 years by Woodmen Hills and other entities. While there is variation among the various districts, Woodmen adopted an overall planning factor of 0.353 AF per SFE, which is about 20% higher than the actual annual average water use. In three Falcon District's the average lot sizes currently range from 9,076 to 10,152 square feet average.

District's also have access to measuring what we call "winter water", which is the measured flows of December, January, and February. This value is used as a check against wastewater flows, to identify I and I or possible leakage. Actual indoor use is not much of a consideration for water/wastewater professionals except for the above factors, but if/when a value for indoor use might be desired, "winter water" is accepted as a slightly conservative measurement of such a factor.

On the attached graph there are three data points to the right on the red line that represent current three year running average for overall water use for these Districts that are based on 10 to 20 year historical basis. Two of these District's have inverted block rate billing and the third has a moderate water billing rate. The blue line represents the overall "winter water" average for three same utilities. The use points are plotted against lot size. Until recently, these larger lot sizes (9,000 to 10,000 SF) have been the typical nature of development in the Falcon area. Most of the current historical data is associated with these types of lot sizes.

However, in the last few years there has been a shift in development which appears to be supported by Land Use Planning agencies, it appears that the market for homes with less



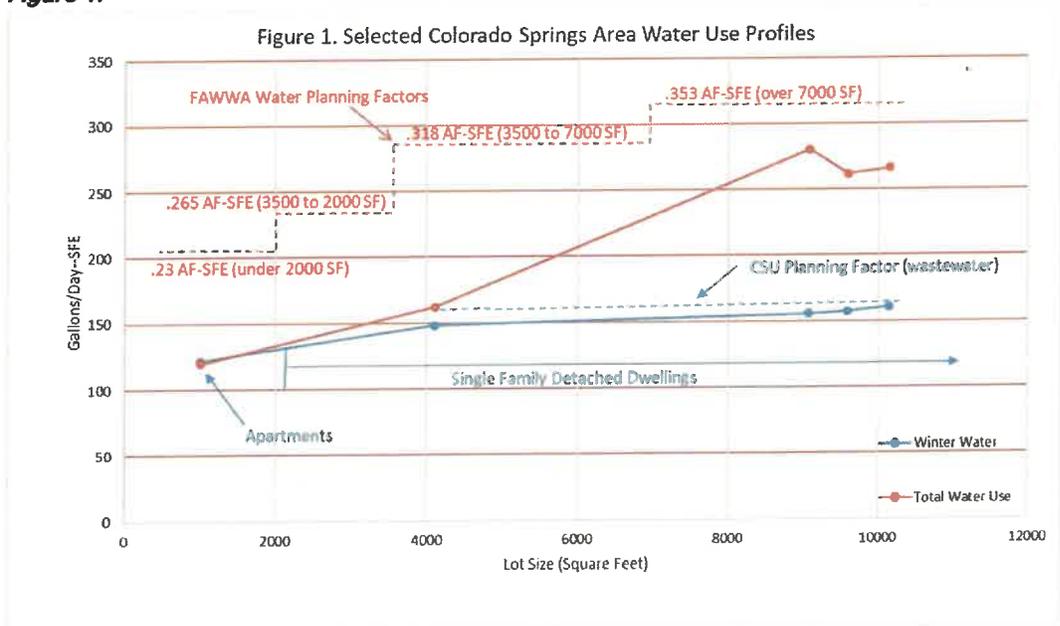
maintenance, as well as desire for urbanization to reduce urban sprawl is driving this trend as well as the desire to reduce utilization of resources which includes water. There are not a lot of developments with much user history for these small lot sizes, but there are a few examples where we have performed small lot and apartment water studies to project the potential impacts. (The apartment study was not from the Falcon area). The results of those studies are also summarized on the attached Figure 1 graph.

The Figure 1. shows a few additional data points for both overall water use and winter water use for these studies.

INDOOR WATER NEEDS ANALYSIS

The three year running average for "winter water" use in these three District's ranged from 155.6 to 160.7 gallons/day-SFE. The three year running average for the small lot size development (average lot size 4109 SF with 11 years of history) is 148.3 gallons/day-SFE and apartment winter water use was 121.7 gallons/day-unit. The smaller lot size "winter water" was only slightly lower than the historical average for the traditional lot sizes but overall use was dramatically lower, primarily due to reduced landscaping. In the small lot study the largest active landscaping (determined by aerial map measurements) was only 201 SF and the average landscaping was 89 SF per lot many lots had no active landscaping.

Figure 1.



If one accepts "winter water" as a conservative measurement of indoor use, the current average 157.9 gallons/day-SFE. In terms of annual acre-feet this is 0.177 Acre-feet/year-SFE. As lot sizes shrink dramatically, this trend along with increased conservation will likely continue a downward trajectory.

The value for indoor use might also be verified by wastewater planning factors.



Falcon area communities track wastewater flows closely as wastewater flows from several District's are combined accurately measured at the Falcon Lift station and allocated to different wastewater treatment plants. The current actual measurement flow characteristic is 141 gallons/day-SFE. If actual wastewater flows are projected as the actual Indoor use that value in acre-feet terms is 0.16 acre-feet/year-SFE.

Another interesting check is Colorado Springs Utilities Planning factor for wastewater loading. It should be remembered that Planning Factors are generally higher than actual numbers since engineer's project on stable planning criteria that they tend to anticipate some safety factors. From "CSU 2019 WW Line Extension and Service Standards" on pdf page 61, the CSU wastewater planning factor is 162.5 gallons /Day-SFE which equates to 0.182 acre-feet/year-SFE.

SUMMARY INDOOR WATER USE

In the absence of indoor use measurements, water professionals would rely on related measurements to provide estimates of indoor use if/when needed.

Table 1. Summary of Historical Data Related to Indoor Use

Measured "Winter Water" Three Area Districts	157.9 gallons/day-SFE	0.177 acre- feet/Day-SFE
Actual Measured Flow combined Falcon Districts at Falcon LS	141 gallons/day- SFE	0.16 acre- feet/Day-SFE
CSU Utilities Wastewater Planning Factor *	162.5 gallons/day-SFE	0.182 acre- feet/Day-SFE

- Planning factors have an inherent safety factor and therefore represent a slight over-statement of actual measured use/loading.

Conclusion: The three utility data points below indicate that an Indoor Use factor of 0.18 acre-feet/year-SFE is well supported by actual data in the Falcon area.

REDUCE RESOURCE PANNING FOR HIGH DENSITY LOTS

As discussed earlier, this memo also addresses a response to the locations where higher density housing is being proposed and provided. Until recently, the Falcon area has been developed on typical urban size lots that range from about 7,500 SF through ½ acre lot size. The overall average lot size within three major eastern Districts range from about 9,000 to roughly 10,000. Historical water use in these communities has been tracked for up to two decades. The most relevant data is considered to be what we term three year running averages. The reason is that a three year period slightly modulates for weather patterns from year to year, but by limiting the tracking to the most recent three years, it also provides for consideration of changing use trends.

Over the last 20 years along the Front Range there has been a universal downturn in water user characteristics that has produced 20 to 30 % reductions in overall water use. The primary reasons are increased conservation awareness; lower flow water fixtures, newer-tighter water supply



systems, and probably the biggest impactor the "Inverted Block Rate". Most of the El Paso County Water providers have adopted an Inverted Block Rate and it is fully utilized in the Falcon area.

Water use seems to vary little for most lots greater than about 8,000 to 9,000 SF, probably due to the reasonableness of managing active landscaping. Up until recently, a comprehensive water use factor has generally been accepted in the Falcon since few residential developments have had many lots in the 6,000 to 7,000 SF range. There was one exception in the Falcon area that has smaller lots, that development has now been fully developed and has about 10 years of water use data.

However, recently, several developments in the Falcon area have been proposed that have lots in the 2,000 to 4,000 SF range. Such lots would allow for very little if any active landscaping which would potentially reduce overall water use dramatically. Part of the intended purpose is to reduce impact on natural resources so it would be a failure for water providers to not plan for such changes in trends.

ANALYSIS OF HIGH DENSITY LOT WATER IMPACTS

There are studies in other areas that provide some initial data on this subject. But localized data is sparse except for the older community in Falcon where regional historical data is available. A recent small scale study using three year running averages for this community in one of the Falcon Districts gives us a very good view of what the reductions look like. That community has an average lot size of 4,109 SF and its average active landscaping size is 89 SF (as measured by aerial evaluations). Many of the lots had no active landscaping. The largest active landscaping area surprisingly was only 229 SF.

Both winter water and overall water use are plotted on Figure 1. The winter water differential between the small lots and the typical lot sizes is moderate, but the overall water differential is substantial for the clear reason of limited lawn irrigation. We also had access to a recent apartment study which was taken from an eastern El Paso County District but not in the Falcon area, those results are also plotted on Figure 1.

The Falcon Area Water and Wastewater Authority is one of the first water providers to adopt a high-density water reduction policy which addresses water conservation goals of reduced impacts of high density lots. The reduction factors are noted by the dashed red line on Figure 1 and due to the early stages of the high-density development the initial reduction factors are very conservative (as much as a 80% safety factor). The reduced values are clearly based on a very conservative approach and are likely to be further reduced in the future as more history starts producing results. Other studies and projections along the Front Range have similar results, but may be based on different rate types, and conditions.

The first-tier reduction of the water planning factor is 10 percent and is effective from 7000 SF down to 3500 SF in lot size. This still results in a water planning factor that is greater than the average annual water factor for typically full-sized lots and would appear to potentially have as much as a 75% safety factor. The second and third tiers are for extremely small lots sizes expected to little or no landscaping and being more in line with the existing study area. Again, even with these initial reductions, we expect safety factors of 40 to 70%.

Our conclusion is that the overall annual water resource allocations adopted by FAWWA for high density lots starting with less than 7,000 SF is well supported, thought out, and frankly rather conservative. The policy was recommended by us as a response to the high level of interest in such lots and the desire to effectively manage water resources.