MURFEE ENGINEERING COMPANY, INC.

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M E M O R A N D U M

DATE: June 20, 2023

TO: **BOARD OF DIRECTORS – REUNION RANCH WCID**

FROM: Mark Kestner, P.E.

RE: Engineer's Report

CC: Bill Flickinger – Willatt & Flickinger

MEC File No.: 12002.122-0

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a. Wastewater Treatment Plant

i. Wastewater Flows and Trends

Attached is an updated figure tracking wastewater flows to the existing WWTP vs. projections and permit milestones. This figure includes calculated wastewater flow values produced per household.

ii. Recommended Improvements

The Concrete Pad has been completed and the conveyor installation is substantially complete. There are a few punch list items to be resolved.

iii. Effluent Irrigation Improvements and Authorizations

Parameter	April Average	Limit	Unit	Limit Type
Turbidity		3	NTU	30-day average
BOD_5	6.4	5	mg/l	30-day average
E. coli	*0.0*	20	/100 ml	30-day geometric mean (MPN or CFU)
E. coli	*0.0*	75	/100 ml	Maximum single grab sample (MPN or CFU)

Table 1. Effluent Quality Data and Permitted Limits

MEC and Inframark are coordinating on reducing the BOD levels in the effluent to levels allowing for reuse of the water for irrigation purposes.

b. 210 Irrigation Conversion Project

MEC received bids for the Reunion Ranch Water Control Improvement District Irrigation Pump Skid Supply and Installation Project Thursday May 18th at 2pm. We had two bids submitted. The low bid was submitted by Prota Inc at $554,681 and was $20,919 less than the second bidder at $575,600 from Austin Engineering. The Bids were within 3.6% of one another.

Several alternatives have been considered including items that could be negotiated with the current low bidder. It is recommended that these be discussed in executive session due to the impact on negotiations with the low bidder. A confidential Memorandum has been prepared and forwarded to counsel for review and distribution to the Board.

c. LCRA Grant Extension

If required MEC will prepare a second extension request for LCRA approval. The need for a second extension will be determined by the course of action decided on for the 210 Conversion Project.

d. Texas Land Application Permit (TLAP)

The RRWCID TLAP expires in 2024. MEC has begun work on the renewal application. MEC is submitting an application with a 10-year renewal period rather than the current 5-year renewal period as the system has been completely built out.

e. Lead and Copper Rule Revision (LCRR)

The RRWCID lead and copper rule responsibilities including the system inventory has begun. Inventory is due Oct 16th, 2024.

f. Water Supply and Distribution System Update

Attached are charts showing the historic and current water use by the community, both total and per connection.

g. Stormwater and Water Quality System Update

No ongoing projects or updates.

h. Emergency Management Plan(s)

Texas Senate Bill No. 3 – Emergency Preparedness Plan

MEC submitted the EPP on February 22nd, 2022, to the TCEQ. The 90-day review and comment period has expired.

Wastewater System Emergency Response Plan

MEC is continuing to work on the list of emergencies, including dividing them into primary and secondary emergencies to help clarify the process of using the plan.

i. Long-Term Improvements and Asset Management Plan

Several items were included in the budget for this year, a table of the projects is included on the following page.

j. Approvals Related to Ongoing Construction Contracts

Currently there are no ongoing contracts.

k. Approvals Related to Upcoming Construction Contracts/Permitting

A discussion and perhaps action for the 210 Conversion project is required.

Project	Description	Original Budget	Actual Contract Cost	Cost to Date	Final Cost	Estimated Start	Estimated Completion	Final Completion Date	Additional Notes
210 Irrigation Skid Installation	Install a pump skid capable of providing effluent to the various irrigation areas in the District, including associated engineering efforts.	$230,000.00				22-May	23-Jun		A single bid was received, engineer recommends rebidding and attempting to determine why the bid was so high and no other bids were received.
SADDS Skid Cover	Inframark's contractor to install a cover over the SADDS Skid to protect the equipment from weather.	$5,000.00	$8,435.00		$8,435.00	22-Feb	22-Sep	22-Sep	Final Completion - Late September 2022
Main Line Valve Maintenance	Locate and clean/exercise valves	$2,000.00				23-Jan	23-Jul		Needs to be done FY23
Service Line verification	Verify Service Lines via record or field verification	$10,000.00				23-Jan	23-Dec		This may lead to higher costs in FY24 to pothole for verification
Service Line Survey/Database	Create a database of service lines and materials to comply with the RLCR (Revised Lead and Copper Rule)	$10,000.00				23-Jan	23-Dec		
WWTP Entrance Maintenance	Install roadbase and cleanup brush/rock/debris	$12,000.00				23-Jan	23-Jul		Delayed in favor of other projects.
Drip Skid Pump Maintenance	JNM to confirm, est. close $8000 in parts	$8,000.00	$14,312.45			23-Jan	23-Jul		PO approved at October meeting
Sludge Storage Basin Mixer Replacement	Sludge storage basin mixer motor was damaged while the basin was covered due to corrosive gases in the headspace. The unit needs replaced in order to continue operation of the mixer	$15,000.00				23-Jan	23-Jul		The motor will be replaced when it fails

Effluent Lift Station (Filter Feed Pumps) Pump Replacement	Replace the submersible pumps that are not operating according to their design point	$50,000.00				23-Jan	23-Jul		Note, potential additional upgrades in the future, $50K
Replace Hypchlorite Tank at WWTP	Replace the existing hypochlorite tank at the WWTP with a 500 gallon tank	$5,000.00				23-Jan	23-Jul		Request from Inframark
Storage shed at WWTP	Install a shed to store spare parts at the WWTP, storage on site was significantly reduced because of the WWTP Exp	$5,000.00				23-Jan	23-Jul		Delayed to bridge the budget gap for fixing the drip skid.

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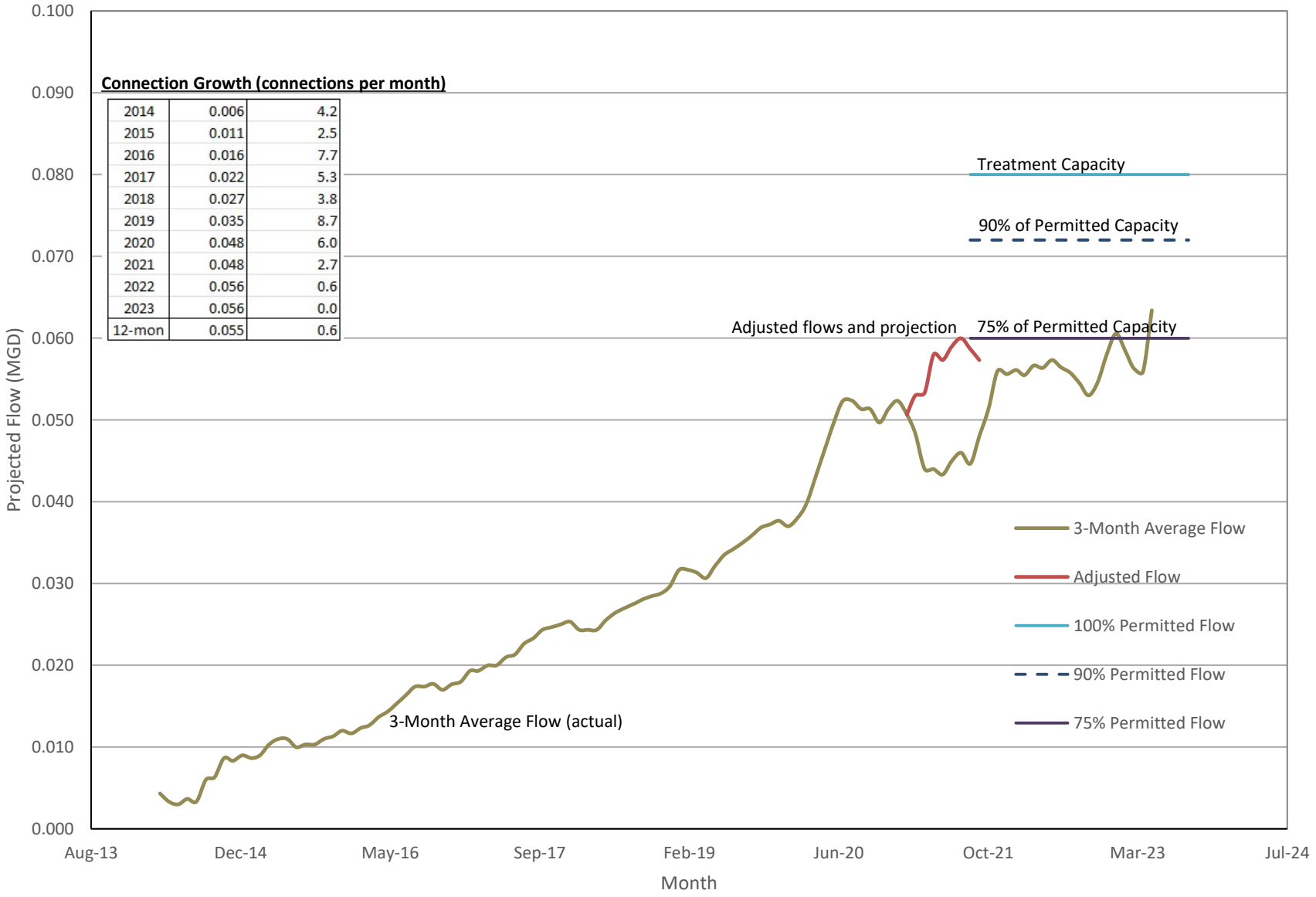
Reunion Ranch WCID
Wastewater Flow Projections



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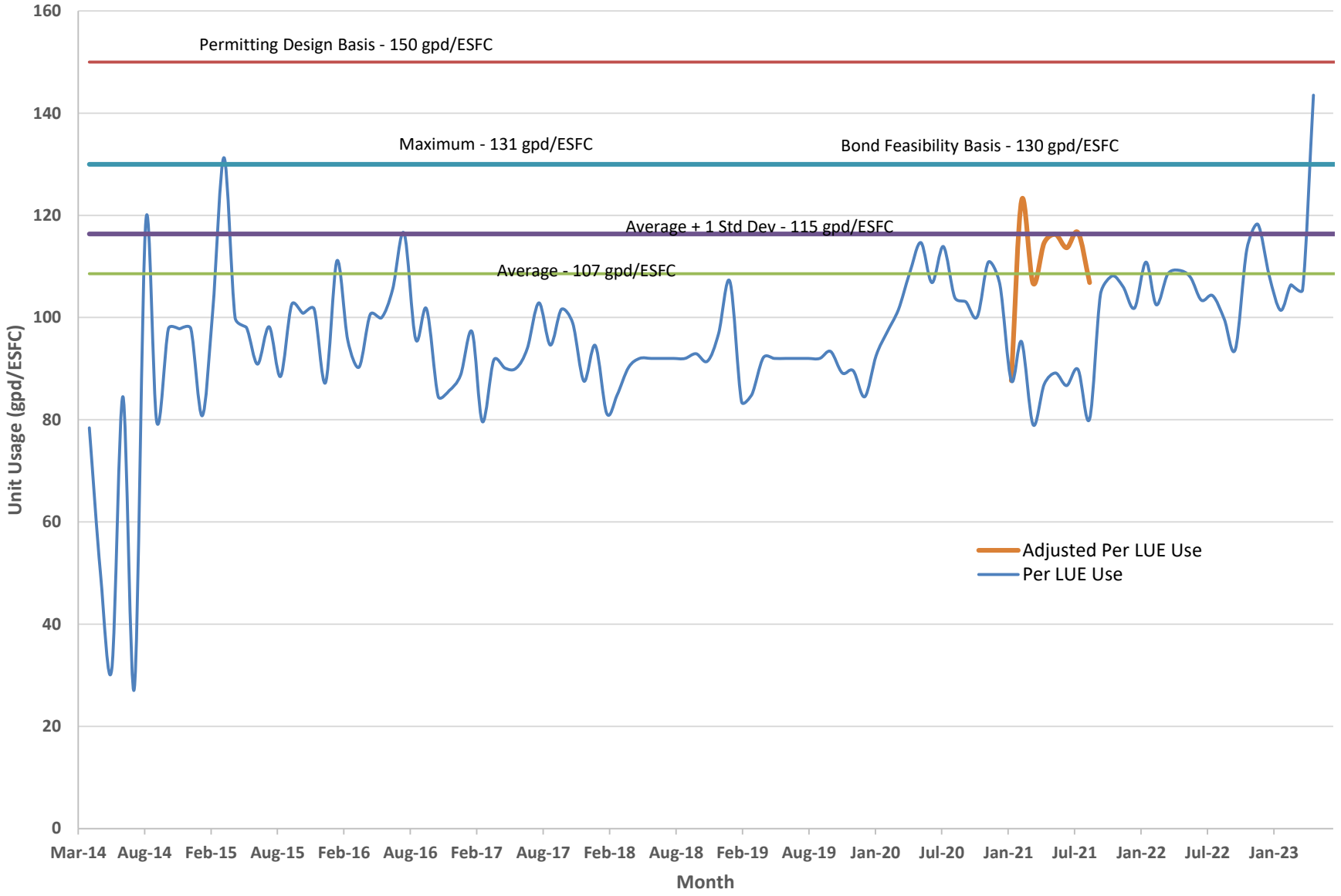
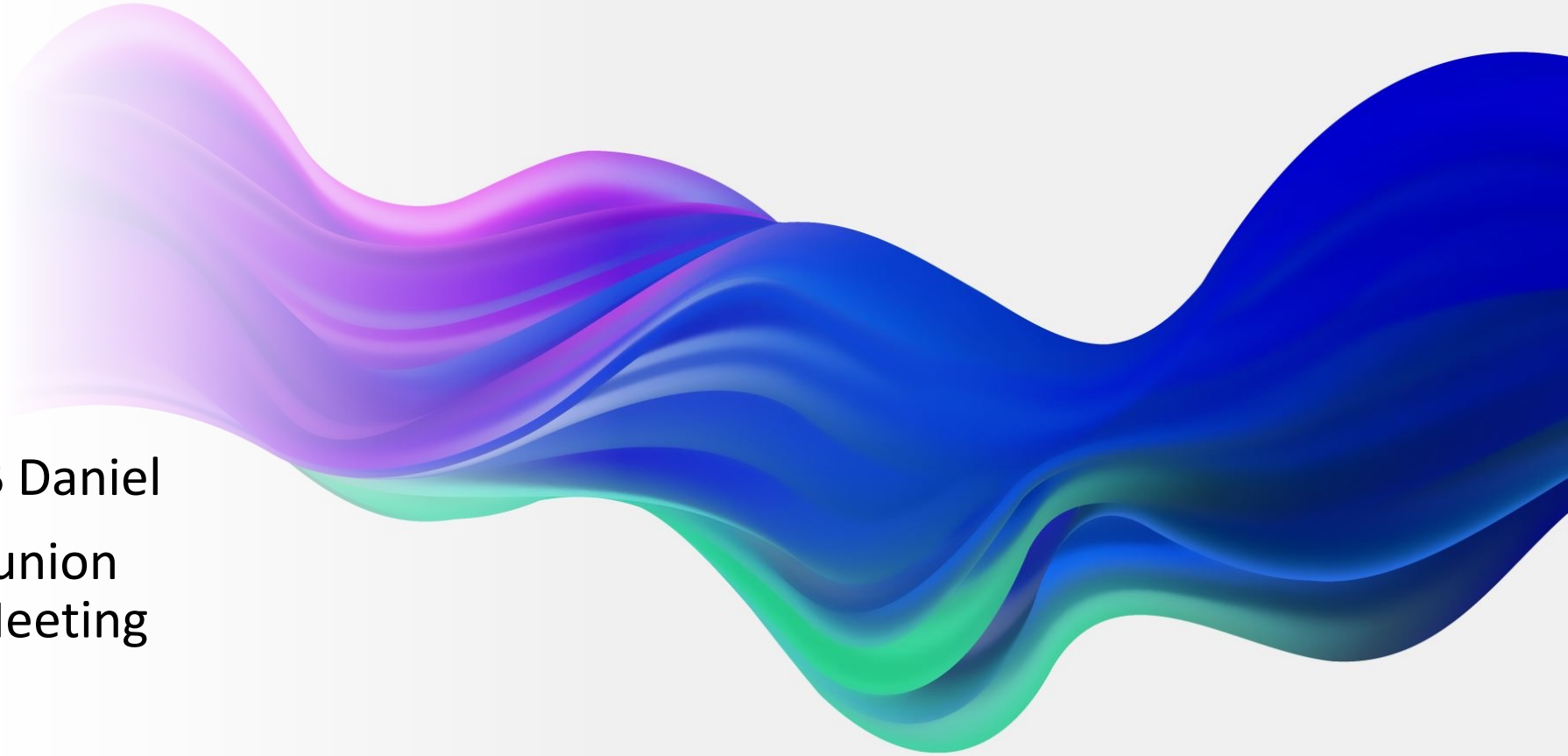
Reunion Ranch WCID
WWTP Unit Usage Analysis



Comparison of Alternatives for Treated Wastewater Effluent Disposal



Prepared by Dennis B Daniel

For June 20, 2023 Reunion Ranch WCID Board Meeting

- ***Currently Designed Improvements***

  Build an independent effluent pump station sufficient to provide treated effluent to the entire neighborhood for the design capacity of the wastewater treatment plant.

- ***Minimum Improvements***

  Improve the existing subsurface effluent pumps to serve both surface and subsurface irrigation needs of approximately 58,000 gpd and limit the 210 Permit surface irrigation to the lower part of the neighborhood (Reunion Blvd from Bear Creek to FM 1826).

Assumptions

Minimum Improvements

Only provide effluent for surface irrigation along Reunion Blvd from Bear Creek to FM 1826

Rough estimate cost of pump improvements is ~$275k plus 30% contingency

LCRA grant is reduced by 33% based upon less raw water

Currently Designed Improvements

Sufficient to supply treated effluent for irrigation throughout community

Bid cost of $555k for pump improvements plus 5% contingency

LCRA grant of $100k is fully available

Other key assumptions

WWTP produces 57,270 gpd (annual daily average)

Existing subsurface irrigation fields reduced to minimal irrigation (i.e., will be less green)

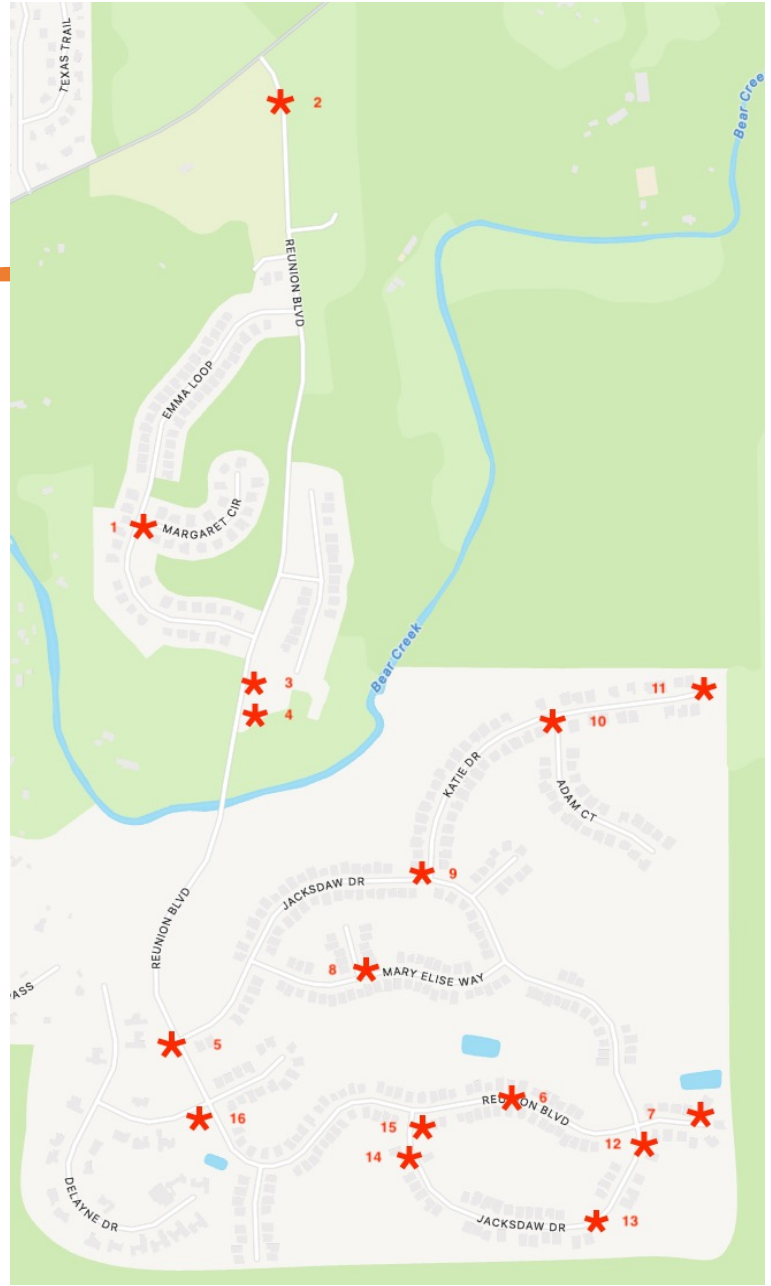
Overall inflation is 3% & water supply inflation is 2%

Marginal cost of potable water is $1.85/kgal (PUA & LCRA charges)

210 Permit irrigation system improvements are $75,000 north of & $75,000 south of Bear Creek

Irrigation water use over the last 3 years is representative of future needs

Extension of LCRA grant is approved



Minimum Improvements

- Net cost **~$365k** in 2023
- Saves ~$19k/yr for 2024 - 2034
  - ~8.6 million gal/yr potable water saved
  - ~7.9 million gal/yr potable water purchased
- Internal Rate of Return is 4.4% over 30 years
- Redesign required; LCRA grant at more timing risk (~$67k)

Currently Designed Improvements

- Net cost is **~$616k** (~$557k in 2023 plus ~$59k in 2024)
- Saves ~$24k/yr for 2024 - 2034
  - ~12.7 million gal/yr potable water saved
  - ~3.8 million gal/yr potable water purchased
- Internal Rate of Return is 2.1% over 30 years
- Bid and ready to go; LCRA grant low timing risk ($100k)

And……..

- Cost differential may not be as much if current design can be value engineered, but this will take some time.
- Rebidding, if necessary, will take time and put the grant from LCRA at higher risk.
- Cost of 210 Permit irrigation system improvements is not known. Placeholder guess was used. This will affect the overall economics of both alternatives, but not the difference between them.
- Essentially, the question is: Do we spend an additional ~$100k-$250k over the minimum required improvements to get pumps sufficient to irrigate the entire community and that would also use less potable water year to year?

The figures above are based upon available information as of June 15, 2023 and are subject to change