City of Mineral Wells
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NOTICE OF MEETING

The Mineral Wells City Council will hold a regular meeting at 6:00 PM on Tuesday, June 16, 2026 in the City Council Chambers at the City Hall Annex, 115 S.W. 1st Street, Mineral Wells, Texas to consider the following agenda:

Call to Order

Invocation - no one has signed up yet

Pledges of Allegiance to U.S. and Texas Flags

PRESENTATION

PUBLIC COMMENT

This is an opportunity for the public to address the City Council regarding an item on the agenda, except for public hearings that are included on the agenda. Comments related to public hearings will be heard when the specific hearing begins. Public comments are limited to three (3) minutes per speaker, unless the speaker requires the assistance of a translator, in which case the speaker is limited to six (6) minutes, in accordance with applicable law. To address the City Council, each speaker who is present at the site must complete a Speaker Form and provide it to the City Clerk prior to the start of the meeting. Each speaker shall approach the designated speaker location and state his/her name and city of residence before speaking. Speakers shall address the City Council with civility that is conducive to appropriate public discussion. Speakers can address only the City Council and not individual officials, commission members, committee members, or employees. The public cannot speak from the gallery but only from the designated speaker location.

STAFF REPORTS

1. Introduction of new City employees.
   a. Police Officer Nathan Groce (prior Animal Control Officer)
   b. Police Officer Joshua Almanza

2. Recognition for City employees' years of service and promotions.
   a. Police Officer Melissa Patino - promoted to Corporal.
   b. Police Officer Thomas Lively - promoted to Corporal.

CONSENT AGENDA

(4) 3. Consider and take appropriate action on the minutes of the regular meeting held on June 2, 2026.

(10) 4. Approve the City of Mineral Wells Strategic Plan.

ITEMS FOR INDIVIDUAL CONSIDERATION

(21) 5. HDR Water Treatment Plant Presentation.

(229) 6. Department Heads to provide the City Council with insight into the additional resources departments are requesting for the 2026-2027 fiscal year budget.

(324) 7. Consider and take appropriate action on the Mineral Wells Regional Airport Airfield Drainage Study prepared by Garver Engineering and authorize staff to coordinate with the Texas Department of Transportation Aviation Division to advance the highest-priority drainage improvement project identified within the study.

(417) 8. Consider and take appropriate action on a resolution for a Texas Water Development Board Grant and funding for the Master Water Plan.

9. Future agenda items/requests by Councilmembers to be on next agenda—***Councilmembers shall not discuss or take action on any item that is not on the agenda. A Councilmember may request that an issue be placed on a future agenda and, if a second Councilmember supports the request, the item shall be placed on a City Council agenda within two Council meetings.***

10. **EXECUTIVE SESSION:** In accordance with Texas Government Code, Section 551.001, et seq., the City Council will recess into Executive Session (closed meeting) to discuss the following:

    a. §551.071(2): Consultation with Attorney on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with the Open Meetings Act, regarding (i) Millsap Water Supply Wholesale Water Contract.

    b. § 551.087: To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City and with which the City is conducting economic development negotiations;

and/or to deliberate the offer of a financial or other incentive to the business prospect, regarding airport projects: (i) Project Flying Car, (ii) Project Produce and (iii) Project Prestige.

11. **RECONVENE INTO OPEN SESSION:** In accordance with Texas Government Code, Chapter 551, the City Council will reconvene into Regular Session to consider action, if any, on matters discussed in Executive Session.

12. Adjourn

Notes: Disabled persons requiring special assistance are requested to notify the City of Mineral Wells 24 hours in advance of the meeting by calling the City Clerk's office at 940.328.7702.

The City Council reserves the right to meet in Executive Session closed to the public at any time in the course of this meeting to discuss matters listed on the agenda, as authorized by the Texas Open Meetings Act, Texas Government Code Chapter 551, including §551.071, (private consultation with the attorney for the City); §551.072 (purchase, exchange, lease or value of real property); §551.074 (personnel or to hear complaints against personnel); §551.076 (deployment, or specific occasions for implementation of security personnel or devices); and §551.087 (economic development negotiations). Any decision held on such matters will be taken or conducted in Open Session following the conclusion of the Executive Session.

State of Texas §
City of Mineral Wells §

I hereby certify that notice of this meeting of the Mineral Wells City Council was posted by 6:00 pm on the 10th day of June 2026.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 9th day of June 2026.

(SEAL)

Sharon McFadden, City Clerk

AGENDA ITEM COMMENTARY

ITEM TITLE

Consider and take appropriate action on the minutes of the regular meeting held on June 2, 2026.

INITIATOR/STAFF INFORMATION SOURCE

Sharon McFadden, City Clerk

BACKGROUND

EXHIBITS

1. 2026-06-02 Minutes

ITEM NUMBER 3.
MEETING DATE 6/16/2026

MINUTES REGULAR MEETING
MINERAL WELLS CITY COUNCIL
CITY HALL ANNEX
June 2, 2026 – 6:00 pm

Mayor Johnson called the meeting to order at 6:02 p.m. Deacon Steve Watson of St. Luke's Anglican Church led the invocation, which included the recitation of the Pledge of Allegiance to the U.S. and Texas flags.

Councilmembers present were Mayor Regan Johnson, Mayor Pro-Tem Beth Watson, Charles Ramsay, Kyle Kelley, Glenn Mitchell, and Mike Rankin. A quorum of City Councilmembers was present. Jonathon Rusher was absent.

Staff members present were City Manager Jason Weeks, Finance Director/Assistant City Manager Aaron Bovos, Police Chief Tim Denison, Development Services Director Richard Glass, Public Works Executive Director Howard Huffman, Public Works Administration David Morgan, Public Works Administration Dakota York, Economic Development Executive Director Nate Dyhre, Marketing & Communications Manager/PIO Brittany Brown, City Clerk Sharon McFadden, and City Attorney Eileen Hayman.

PRESENTATION:

1. Police Chief Denison recognized Officer Antonio Ochoa with the Life Saving Award.

STAFF REPORTS:

2. Introduction of new City employees.
   a. Police Chief Denison introduced new Police Officer Ricky Hunter.

3. Recognition for City employees' years of service.
   a. Police Chief Denison recognized School Resource Officer (SRO) Lloyd Foley for 15 years of dedicated service.

PRESENTATION:

Mrs. Brown announced the graduation of the inaugural Well-Engaged Civic Academy graduates. The graduates present at the Council meeting included Christine Crook, Cheryl Breckenridge, Clay Breckenridge, Hannah Burkhall, Coral Albers, Howard Huffman, Marisa Martin, Christina Phenix, Elisabeth Wilkerson, Tiffany Crawford, Chad Crawford, Brianna Corder, Pam Allison, and Selena Newcomb. Mr. Weeks and Mayor Johnson expressed their appreciation to Mrs. Brown for leading the program and thanked the graduates for participating.

PUBLIC COMMENT: No one signed up to speak.

CONSENT AGENDA:

Mrs. Watson requested that the minutes of the regular meeting held on May 19, 2026 be updated to reflect the spelling of the Council kid's last name as Lemons. Mrs. McFadden noted the correction. Mr. Kelley seconded, and a vote of 6-0 approved the Consent Agenda.

4. Consider and take appropriate action on the minutes of the regular meeting held on May 19, 2026.

5. Consider and take appropriate action on the April 2026 monthly financial report.

6. Consider and take appropriate action on a Contract for Property Tax Billing and Collection Services for the 2026 Tax Year with the Palo Pinto County Tax Assessor-Collector in an amount not to exceed $80,000, subject to review and approval by the City Attorney.

7. Ratification of a Contract with TXU Energy Retail Company LLC to Extend Electric Services to City Facilities.

8. Consider and take appropriate action on an Electric Vehicle Charging Station Host Site Agreement between the City of Mineral Wells / Mineral Wells Regional Airport and BETA Technologies, Inc., for the installation and operation of an electric vehicle and an aircraft charging station at Mineral Wells Regional Airport, subject to review and approval by the City Attorney.

ITEMS FOR INDIVIDUAL CONSIDERATION:

9. Consider and take appropriate action regarding a Final Plat of a subdivision of 30.468 acres out of the Southwest ¼ Section Number 40, T&P RR Company Survey, Block 'A' E.O.B, (J.B. Pollard Survey), Abstract Number 377, Palo Pinto County, Texas, to Lot 1 through 199 and HOA Lot 1 through HOA Lot 7, Ranches of Mineral Wells, Mineral Wells, Palo Pinto County, Texas.

   Mr. Glass presented the request to consider the Final Plat for the Ranches of Mineral Wells.

   Mr. Ramsay moved to approve the Final Plat as presented. Mr. Mitchell seconded, and the motion carried 6-0.

10. Consider and take possible action on a resolution establishing an Airport Strategic Committee for the Mineral Wells Regional Airport and appointing members thereto.

    Mr. Weeks provided details of the resolution to establish and appoint Councilmembers to the Airport Strategic Committee.

Mayor Johnson recommended appointing Mr. Rankin, Mrs. Watson, and Mr. Ramsay to represent the City Council on the Airport Strategic Committee. Mr. Kelley made a motion to appoint Mayor Johnson's recommendations. Mrs. Watson seconded, and the appointments were approved 6-0.

Mrs. Hayman stated that the City Council also needs to take action on the associated resolution being presented with the agenda item.

Mr. Kelley made the motion to approve the resolution as presented to establish the Airport Advisory Committee. Mr. Ramsay seconded, and the motion carried 6-0.

11. Receive an update regarding the Strategic Plan Action Items identified during the March 2026 Strategic Planning Event.

    Mr. Weeks presented the updated details of the Strategic Plan.

    No action taken on this item.

12. Consider and take appropriate action on a contract with GoTo Communications, Inc. for VoIP telephone services and equipment for a five (5) year term at a cost not to exceed $120,000.00.

    Mr. Bovos presented the proposed contract to the City Council.

    Mr. Rankin made the motion to approve the GoTo Communications, Inc. contract. Mr. Kelley seconded, and the motion carried 6-0.

13. Consider and take possible action on a resolution adopting the City of Mineral Wells GASB 87 Lease Policy related to the accounting, reporting, and administration of lease agreements in accordance with the Governmental Accounting Standards Board Statement No. 87.

    Mr. Bovos presented the GASB 87 Lease Policy and resolution to the Council.

    Mr. Kelley moved to approve the policy and resolution. Mr. Mitchell seconded, and the motion carried 6-0.

14. Consider and take possible action on a resolution adopting the City of Mineral Wells GASB 96 Subscription-Based Information Technology Arrangements (SBITA) in accordance with the Governmental Accounting Standards Board Statement No. 96.

    Mr. Bovos presented the GASB 96 SBITA policy and resolution to the Council.

Mrs. Watson moved to approve the policy and resolution. Mr. Ramsay seconded, and the motion carried 6-0.

15. Consider and take possible action on a resolution adopting the City of Mineral Wells Fiscal Monitoring and Financial Contingency Policy.

    Mr. Bovos presented the policy to the Council.

    Mrs. Watson made the motion to approve the policy, and Mr. Kelley seconded. The motion carried 6-0.

16. Consider and take possible action on a resolution adopting the City of Mineral Wells Budget Administration Policy.

    Mr. Bovos presented the policy to the Council.

    Mr. Ramsay made the motion to approve the policy, and Mr. Rankin seconded. The motion carried 6-0.

17. Future Agenda Items/Requests by Councilmembers to be on the next agenda.

    Mayor Johnson requested that a wrap-up be provided for the April 29, 2026, tornado.

18. **EXECUTIVE SESSION:** In accordance with the Texas Government Code, Section 551.001, et seq., the City Council recessed into Executive Session (closed meeting) At 8:01 p.m., to discuss the following:

    a. § 551.087: To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City and with which the City is conducting economic development negotiations; and/or to deliberate the offer of a financial or other incentive to the business prospect, regarding airport projects: (i) Project Mystery; (ii) Project Golden; (iii) Project Prestige; (iv) Project Ground Up; (v) Project Noble Air, and (vi) Project Flying Car.

    b. § 551.072: Deliberate the purchase, exchange, lease, or value of real property, regarding: (i) Project Produce.

19. **RECONVENE INTO OPEN SESSION:** In accordance with Texas Government Code, Chapter 551, the City Council reconvened into Regular Session at 9:27 p.m. to consider action, if any, on matters discussed in Executive Session.

20. There was no further business, and the meeting was adjourned at 9:27 p.m.

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Regan Johnson, Mayor

ATTEST:

____

Sharon McFadden, City Clerk

____

APPROVED

AGENDA ITEM COMMENTARY

ITEM TITLE

Approve the City of Mineral Wells Strategic Plan.

INITIATOR/STAFF INFORMATION SOURCE

BACKGROUND

On March 3, 2026, the Mayor and City Council participated in a Strategic Planning Event to discuss the City's long-term vision, operational priorities, organizational objectives, and key initiatives intended to guide the City's future growth and service delivery. During the event, a series of strategic action items and deliverables were identified, discussed, and subsequently prioritized by the Mayor and City Council.

Following the Strategic Planning Event, City staff reviewed each identified action item and assigned departmental ownership and responsibility for implementation. In addition, staff developed supporting activities, timelines, and measurable deliverables associated with each strategic initiative to ensure accountability and transparency throughout the implementation process.

On June 2, 2026, the City Manager presented the final Strategic Plan, along with the implementation and timeline while requesting the Mayor and City Council to provide feedback on the deliverables and timelines as a collective body. To-date, no communication has been received that would require changes to the proposed Strategic Plan; therefore, staff has placed this item on the Consent Agenda for formal adoption to allow staff to move forward with the implementation plan.

Moving forward, staff will provide quarterly updates to the Mayor and City Council regarding the status and progress of the Strategic Plan Action Items as implementation efforts continue.

COST

There is no direct fiscal impact associated with this agenda item. Individual projects, initiatives, or programs identified in the Strategic Plan may have future fiscal impacts which will be presented to the Mayor and City Council for consideration during future budget discussions or agenda items as appropriate.

FUNDING SOURCE

N/A

RECOMMENDATION

Approve the Strategic Plan Action Items identified during the March 3, 2026, Strategic Planning Event.

EXHIBITS

1. Strategic Plan List 060826

ITEM NUMBER 4.
MEETING DATE 6/16/2026

CITY OF MINERAL WELLS

STRATEGIC PLAN FY 2026-2030

June 15, 2026

Category	Goals	Implementation Plan	Timeline
Communications & Marketing	Find a way to brand the City's water billing system to wholesale customers.	Will work with Staff and Utility Billing department to weigh the pros and cons and costs associated with this transition.	Fiscal Year 2026-2027
Communications & Marketing	Find other ways to communicate other than Facebook (i.e., digital signage, newsletters, etc.)	Strategic comms plan with CM and ACM for review. Gathering digital signage costs for review.	Strategic plan- implementaion already in progress. Digital sign would likely need to be a decision package for 2026-2027 budget.
Communications & Marketing	Continue increasing citizen knowledge of what is going on within the City.	Addressed in strategic comms plan above.	Ongoing
Communications & Marketing	Partner with MW Area Chamber of Commerce to host "knowledge" event for datacenters	TBD	TBD
Communications & Marketing	Having "ground breaking" events for projects	Working with staff to get clarification on what types of businesses or projects we want to do this on. Can be a collaboration with the Chamber of Commerce as well but need to finalize what happens at each ground breaking, what type of projects and who covers cost, if any.	Can be ready for the next project we identify if budget allows.
Development Services	Develop a policy and procedure within Development Services that requires code compliance (code enforcement) officers notify non-compliance by door hangers before issuing two certified citation notifications.	Verify with City Manager if the door hangers are something code enforcement is to make the first step before any NOV's are sent. Pro's and con's with door hangers, will discuss.	Code Enforcement is working on a list of pros and cons and their current SOP's. Will meet with management to discuss by 5/2026.

Development Services	Increase more beautification efforts through code enforcement and not being too stringent on landscaping requirements.	Will meet with staff to get a better understanding of the zoning districts and tighten up Section 6-9 of the ordinance for landscaping requirements.	Meeting with code enforcement on their current procedures and will update accordingly. Begin 4/2026.
Development Services	Evaluate cost-effectiveness of inspections on rental homes every two years or when utility accounts change.	Discuss with City Manager on the feasibility of annual inspections similar to a license inspection. This will ensure that homes are being maintained and not being run by a slum lord. Pro's and con's to annual inspections.	Will start the process after meeting with management and the hiring of a new building official.
Development Services	Implement Development Services Department overseen by the Development Services Director.	City Council approved the creation of the Development Services Dept on 3/17/26.	Completed 3/17/26
Development Services	Bring plan review services in-house.	Begin with development of board of appeals for permits and fire marshal to update the codes before bringing plan review in-house.	Working on the creation of Building Code of Appeals Board. Once created we can begin the process or presenting codes to the board. Would like to have new codes by 10/1/2026.
Development Services	Bring building inspections in-house.	Contingent on the hiring of a new building official. Once the building official is in place, we will begin the process.	Would like to begin inspections by 6/2026, contingent on the hiring of a building official.
Development Services	Upgrade from 2012 building codes to minimum 2021 building codes.	See comments on Plan Review row. Ideally look to update to the 2024 ICC and 2023 NEC.	See comments on Plan Review row. Prefer to adopt the 2024 codes.
Development Services	Hire Development Services Director	City Council approved the appointment of Richard Glass as the new Development Services Director at their 3/17/26 Council meeting. His start date is 4/13/26.	Completed 4/13/26
Development Services	Define data centers, what zone allowed to operate, and require special condition use permit.	Will further review the different zones and locations in the city. Meet with staff to receive input and begin work on locations. Maybe discusspossibility of NAICS and SIC codes as uses tied to certain zones and requiring of SCUPs.	Begin reviewing 4/2026.

Development Services	Revise sign and fence ordinance.	Will meet with staff to discuss current issues with signs and fences to get a ground floor on what needs to be revised. Then have a thorough review of the ordinance and update accordingly.	Begin reviewing 4/2026.
Development Services	Strengthen code enforcement function to give them a viable method obtaining compliance regarding unsightly/unsafe properties.	The City currently has a dangerous building ordinance and it also has adopted the IPMC	Will meet with code enforcement on current standards. Will work on
Development Services	Develop a financial and operational plan for a demolition crew.	RFP / ITB has been developed by Finance. Will be let and proposals evaluated. An agenda item will be presented to Mayor and Council for consideration in the near future.	Award contract before the end of the fiscal year.
Financial Stability	Discontinue the acceptance of American Express credit card as a payment method to reduce the credit card fees.	Updates and changes to merchant processors - complete. New signage ordered and disseminated to all departments.	Complete - April 30, 2026.
Financial Stability	Evaluate the cost-effectiveness of bringing legal in-house.	TBD	To be complete by December 31,2026.
Financial Stability	Repurpose the Palo Pinto County Municipal Water District No. 1 remaining unspent debt issuance funds (approximately $59 million) toward the Hilltop WTP project.	Howard Huffman	Plan A - send TWDB a letter requesting action and have Sen. King follow up. - In process Plan B - Sen King to draft local legislation to instruct TWDB to do so.
Financial Stability	Utilize the funding received from the sale of city-owned property to start a fund to use to maintain the parks & library.	First property on City Council agenda for May 5, 2026 - goal is to keep one in the pipeline at all times.	This will take several years to complete based upon the number of properties we have to liquidate.
Financial Stability	Work to identify a grant writer or administrator to assist with finding state and federal grants for the Turkey Peak, Brazos Pump & Pipeline capital projects.	Contract with A Plus Grants on agenda for May 5, 2026. Initial term is 6 months to determine fit / feasibility.	End of the calendar year 2026.
Financial Stability	Develop 5-10 Year Capital Improvement Plan (all departments).	Finance staff completing education and research on 5-year CIP Plans.	Will be developed as part of the FY 2027 budget process.

Financial Stability	Conduct annual utility rate study.	Engagement with NewGen underway - signed March 2026.	To be completed July / August 2026 for inclusion in the FY 2027 Budget.
Financial Stability	Complete Millsap WSC water agreement.	100 day letter sent to Millsap by Lloyd Gosselink requesting they complete their contract. Milsap has engaged an attorney to assist in their review and comments.	Contract expires August 19, 2026
Financial Stability	Complete Santo SUD water agreement.	Waiting for Santo to re-schedule meeting to discuss their requested changes.	Contract expires August 2, 2031
Financial Stability	Sell un-needed city-owned property.	See line 49 above.	See line 49 above.
Infrastructure & Facilities	Identify a dedicated person that will be charged with moving the new Hilltop Water Treatment Plant capital project forward.	We will have a draft PER to review by the end of April. We will know more about what type of contract we will be issuing and then we can determin what type of person we need.	
Infrastructure & Facilities	Bring information technology systems up-to-date.	Waiting for Technology Department to complete assessment of infrastructure, hardware, network, and security.	Would like to have components so that discussion can occur for FY 2027 budget.
Infrastructure & Facilities	Construction of Reverse Osmosis project.	TBD	TBD
Infrastructure & Facilities	Design & construction of the new public safety complex (police, fire & dispatch).	Currently working on negotiations on land purchase. Ryan & Tim are set to attend conferences on design of the public safety building.	FY 2025-2026
Infrastructure & Facilities	Develop a street replacement program that provides a year-to-year schedule for the public to know which streets are being replaced.	TBD	TBD
Infrastructure & Facilities	Develop a street replacement program based on streets with no utility infrastructure needing to be replaced vs. those that need all utility	TBD	TBD

Infrastructure & Facilities	Lease building next to City Hall Annex to allow for adequate office space for finance, human resources, development services, and utility billing (if applicable).	Agenda item on the June 2, 2026 agenda to complete this engagement.	Building is anticipated to be available for occupance in December 2026 / January 2027.
Infrastructure & Facilities	Develop Master Water Study.	Kimley-Horn HB500 Application	Grant application due June 30, 2026 or before.
Infrastructure & Facilities	Develop Master Wastewater Study.	TBD	TBD
Infrastructure & Facilities	Develop long-term plan for eastside water treatment plant and wastewater plant.	TBD	TBD
Infrastructure & Facilities	Complete capital improvement projects (parks, water, streets, and wastewater).	TBD	TBD
Infrastrurcture & Facilities	Develop Master Thoroughfare Study (if the one from Comprehensive Plan is not usable).	Not started	TBD
Organizational Excellence	Hire Executive Director of Public Works	City Council approved the appointment of Howard Huffman as the new Executive Director of Public Works at their 3/17/26 Council meeting. His start date is 4/1/26.	Completed 4/1/26
Organizational Excellence	Develop and implement city-owned vehicle take home policy and procedures.	Under review	To be completed by December 31, 2026.
Organizational Excellence	Develop and implement a merit-based compensation pay plan that separates public safety employees from civilian employees.	Under review	TBD
Organizational Excellence	Develop and implement a family-care benefit policy and procedures for city employees.	Under review	TBD
Organizational Excellence	Develop and implement city employee certification benefit policy and procedure.	Under review	TBD

Organizational Excellence	Increase the Texas Municipal Retirement System percentage from 5% to 7%.	Under review for the FY 2027 budget.	TBD
Organizational Excellence	Increase the minimum pay rate wage for full-time city employees to $20 per hour.	Under review for the FY 2027 budget.	TBD
Organizational Excellence	Develop and implement an annual city employee evaluation system.	Under review. Automated software to conduct reviews becomes available with the Tyler Incode V10 upgrade.	TBD
Organizational Excellence	Evaluate the cost-effectiveness of bringing solid waste in-house.	Assigned to Nathan	TBD
Organizational Excellence	Work with Palo Pinto County on paying their fair share of the Mineral Wells animal shelter and Boyce-Ditto Public Library.	Under review as part of FY 2027 budget.	TBD
Organizational Excellence	Develop and implement a Code of Ethics policy for city employees.	Draft circulated to leadership team for review; second draft being formulated.	To be completed by December 31, 2026.
Organizational Excellence	Implement policy that requires all new development to have concrete curb/gutter and streets.	TBD	TBD
Organizational Excellence	Increase customer service throughout all city departments.	Working on formulating a city-wide customer service training based on our Leadership training with Forward Partners.	Summer or Fall 2026
Organizational Excellence	Develop administrative agreement between the City of Mineral Wells and Palo Pinto County Municipal Water District No. 1 on how to handle operations & maintenance items.	Assigned to Rhett Warren	Draft completed scheduled for PPCMWD #1 and City of Mineral Wells consideration in the June / July timeframe.
Organizational Excellence	Establish airport strategic planning committee (three council members and two airport advisory members).	Airport Advisory Committee has been asked to nominate 2-3 members to be appointed to this group. Next steps will be to write by-laws / goals, identify which City Council members would like to be on the group, and then conduct first meeting.	Resolution to create the committee and to nominate City Council members is scheduled for the June 2, 2026 agenda.

Organizational Excellence	Better working relationship with Palo Pinto County Emergency Services District No. 1.	Currently we have had joint trainings, meetings, and creating shared agreements for resources, so we do not spend money on the same items. Moving forward in discussions with the Public Safety building will enhance relationship between the two organizations.	3/1/2026
Organizational Excellence	Remove deed restrictions from properties at Fort Wolters	We are working with Congressman Goldman's office to help get the deed restrictions lifted. Already provided the information they requested, waiting on further information.	TBD
Organizational Excellence	Develop economic plan incorporating areas outside of downtown, especially at the airport.	Need to work with Airport Advisory Board and/or new Airport Committee on the new economic development plan for the airport. Hope these projects coming to CC will give us a start. Still working with property owners at Fort Wolters to have a plan on a way forward. Met with Texas Gas to discuss expansion of infrastructure there and airport, they understand the need and are willing to meet with whomever (tech, defense). In short, Fort Wolters will likely be 75% tech, defense, manufacturing/assembly and 25% retail/residential.	TBD
Public Safety	Work with the Palo Pinto County Emergency Services District No. 1 on utilizing space within the new public safety building for ESD #1 Fire & EMS and pay their fair share of capital and operations costs.	We are currently in talks with ESD #1. The team has had individual meetings and attending workshop on 04/01/2026.	Started 03/20/2026
Public Safety	Evaluate the cost-effectiveness of police and fire utilizing same drone.	We have met, and the FD drone is with PD it see if it will be effective for their operations	3/26/2026
Public Safety	Hire 3 firefighters/EMT's to allow for enough staff to operate two ambulances and two fire apparatuses on each shift.	Currently putting together a strategic plan to impliment, if granted. Also calculating ISO rate, which could potentially move our city to a "2" from a "3".	3/1/2026

Public Safety	Reduce fire services to either Extraterritorial Jurisdiction or City Limits.	Currently working through negotiation. This will be discussed in depth after we find out the direction of ESD #1 and the new public safety building.	4/1/2026
Public Safety	Replace 2019 Fire Command Tahoe.	The command tahoe is needing to be replaced due to the age, miles, and issues occuring. This can be completed in the next fiscal year	FY 2026-2027
Public Safety	Replace 2017 Fire Squad vehicle.	The Squad in now approaching 10 years and has had numerous mechanical problems. This is uesd to respond to EMS calls and we would like to change this operatinal challenge. Instead of replacing it with the exact same model (mini-pumper "$300 K"), we would like to replace it with two 1/2 ton trucks (75 K each). This would reduce wear on our Engine and other fire apparatus that currently responds to EMS calls. Order would be placed with the command tahoe to hopefully reduce cost.	FY 2026-2027
Public Safety	Hire clerical staff for Fire/EMS	We currently have the ability to collect other revenues. FD Admin is unable to fufill all duties in a timely manner because of the overwhelming clerical duties. This can enhance processes and revenues. There are 34 employees in the FD, and is unique due to process that no other department are required to accomplish. This would be a major assest to be more effecient and productive while increasing revenues. This can be completed FY 2026-2027 first quarter.	FY 2026-2027
Quality of Life	Implement policy that requires all developments more that five continuous lots require sidewalk on both sides of the street.	TBD	TBD

Quality of Life	Amend the alcohol sale curfew ordinance to mirror state law (either 1 am or 2 am).	TABC requires adoption by Ordinance. Businesses will need to apply for the extended hours. Police Chief and his staff want to provide input on how change would adversely affect the PD.	Amendment can be prepared when instructed to do so.
Quality of Life	Increase the number of neighborhood parks by installing play equipment for "all" (inclusive).	Staff will identify underserved neighborhoods for pocket parks with inclusive play equipment, using walkability principles and guidance from the National Recreation and Park Association. The City will pursue phased development and look into grant funding opportunities to expand neighborhood park access for all residents.	Ongoing
Quality of Life	Partner with Mineral Wells Independent School District for increasing play equipment at the MWISD schools that could be used by the public.	TBD	TBD
Quality of Life	Increase/Update the number of soccer and baseball fields.	Staff will evaluate opportunities of additional fields at the city gym for recreational use . Staff have already met with The Sports Facilities Company to discuss possible feasibility studies and long-term complex concepts for tournament-style venues.	FY 2026-2027
Quality of Life	Evaluate the likelihood of the Dunbar Recreation Center to be utilized by the city (either by agreement or purchase) as another recreation center. (work with Clarence Hollman)	Staff will meet with Dunbar to explore all potential partnership and acquisition opportunities.	TBD
Quality of Life	Be more initiative with parks and library program that attracts more kids (i.e. nerf wars)	Over the next year, staff will plan and implement a mix of recurring and special events designed to increase participation, strengthen community relationships, and create fun, educational experiences through partnerships with all city departments.	Ongoing

AGENDA ITEM COMMENTARY

ITEM TITLE

HDR Water Treatment Plant Presentation.

INITIATOR/STAFF INFORMATION SOURCE

Cory Shockley and Sophie De Respino, HDR
Howard Huffman, Executive Director of Public Work

BACKGROUND

The Hilltop Water Treatment Plant has reached the end of its useful life. An evaluation of the existing facility and an alternative analysis were completed to identify the most effective path forward. Based on that evaluation, the selected alternative is construction of a new water treatment plant located south of the existing facility.

HDR has completed the Preliminary Engineering Report (PER) for the new facility. This presentation provides an overview of the project, including the proposed site layout, process flow diagram, and key design decisions evaluated during development of the PER, including the conversion from chlorine gas disinfection to liquid chlorine.

The PER represents a refinement of the selected alternative and includes an updated Opinion of Probable Construction Cost (OPCC).

EXHIBITS

1. Hilltop WTP Improvements_PER - FINAL

ITEM NUMBER 5.
MEETING DATE 6/16/2026

CITY OF
MINERAL WELLS

Preliminary Engineering Report (PER)

Hilltop Water Treatment Plant Improvements

Palo Pinto County Municipal Water District No. 1

City of Mineral Wells, Texas
June 4, 2026

FINAL

HDR Engineering, Inc.
Texas Registered Firm No. F-754

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Contents

Tables

Figures

Appendices

1 Introduction

The Hilltop Water Treatment Plant (WTP) is a surface water plant located south of the City of Mineral Wells, Texas. The Hilltop WTP is owned by Palo Pinto County Municipal Water District No. 1 (PPCMWD No. 1) and operated by the City of Mineral Wells (City). The primary source water for the Hilltop WTP is Lake Palo Pinto and during periods of drought additional water from the Brazos River, which is brackish, is blended to extend the water supply. PPCMWD No. 1 is currently moving forward with a water supply project, Turkey Peak Reservoir, to improve storage and resiliency during periods of drought. Treated water from the Hilltop WTP is the sole drinking water source for the City and seven wholesale water suppliers in Palo Pinto and Parker Counties.

The Hilltop WTP was constructed in 1962 and has a design rated production capacity of 12.0 million gallons per day (MGD). Modifications and replacements of various components have been made to the treatment plant over the years. The WTP consists of the following facilities and treatment processes: a presedimentation reservoir, a presedimentation pump station, pretreatment (rapid mix, flocculation, and sedimentation), filtration, clearwells, high service pumping, and a reclaim water system.

Hilltop WTP demands, treatment goals, and a treatment technology evaluation were completed prior to this preliminary design report (PER). Technical Memorandum (TM) No. 1 Demand Projections and Finished Water Quality Goals and TM No. 2 Alternatives Summary with Recommended Alternative are included in **Appendix A** and **Appendix B**, respectively.

1.1 Project Description and Objectives

The purpose of this PER is to further develop the selected Hilltop WTP expansion alternative determined in TM No. 2. This PER describes the proposed treatment processes, process unit configuration, and design standards and codes.

1.2 Project Schedule

The project schedule includes a planning phase and final design phase. The planning phase is from May 2026 to October 2026. The final design phase will begin with a Basis of Design Report (BODR) in September 2026. The original project schedule was submitted to the Texas Water Development Board in December 2025, before the PER was completed. The original estimated date to submit engineering planning documents of October 15, 2026, will be postponed.

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2 Water Treatment Facility Design Criteria

2.1 Overview

2.1.1 Existing Facilities

The Hilltop WTP was constructed in 1962 and has a treatment capacity of 12 MGD. The treatment process is outlined in **Figure 2-1** and consists of the following facilities and treatment processes:

- A 375 million gallon (MG) presedimentation reservoir, known as the Hilltop Reservoir, for raw water storage, flow equalization, and settling.
- An intermediate pump station, referred to as the presedimentation pump station, to pump water from Hilltop Reservoir to the pretreatment splitter box.
- Chlorine dioxide is applied in the raw water line immediately after the presedimentation pump station for disinfection credits and to treat taste and odor (T&O).
- A static mixer located in a below grade vault for mixing coagulant is located downstream of the chlorine dioxide injection. Chemfloc 3315, a proprietary aluminum chlorohydrate (ACH) and cationic polymer product, is currently used as coagulant. Aluminum sulfate (alum) with polymer has also been used for coagulation.
- Two circular clarifiers and two rectangular clarifiers for pretreatment. Raw water enters a splitter box that distributes flow to each of the on-line clarifiers which operate in parallel.
- Settled water from the clarifiers is dosed with chlorine for disinfection and powder activated carbon (PAC) for T&O prior to filtration.
- Four rapid sand granular media filters, each rated for 5.0 MGD. Filter media consists of 24 inches of anthracite, 12 inches of sand, and plastic block (Leopold) underdrains. All filters have surface washing and air scour systems to enhance backwashing. Two backwash pumps and two surface wash pumps are located at the HSPS. A single centrifugal multi-stage blower for air scour supply is located adjacent to filters.
- After filtration the following chemicals are added:
  - Caustic for pH adjustment
  - Chlorine and ammonia to form chloramines
  - A polyphosphate blend for corrosion control in the distribution system
- Two unbaffled and one baffled circular clearwells for storage of filtered water. The maximum operating volumes of the clearwells are 0.5, 1.0, and 2.0 MG for a total storage capacity of 3.5 MG.
- A finished water pump station, referred to as the High Service Pump Station (HSPS), to pump water to the distribution system. There are currently four high service pumps with capacities of 9-MGD (two pumps), 6-MGD, and 3-MGD.

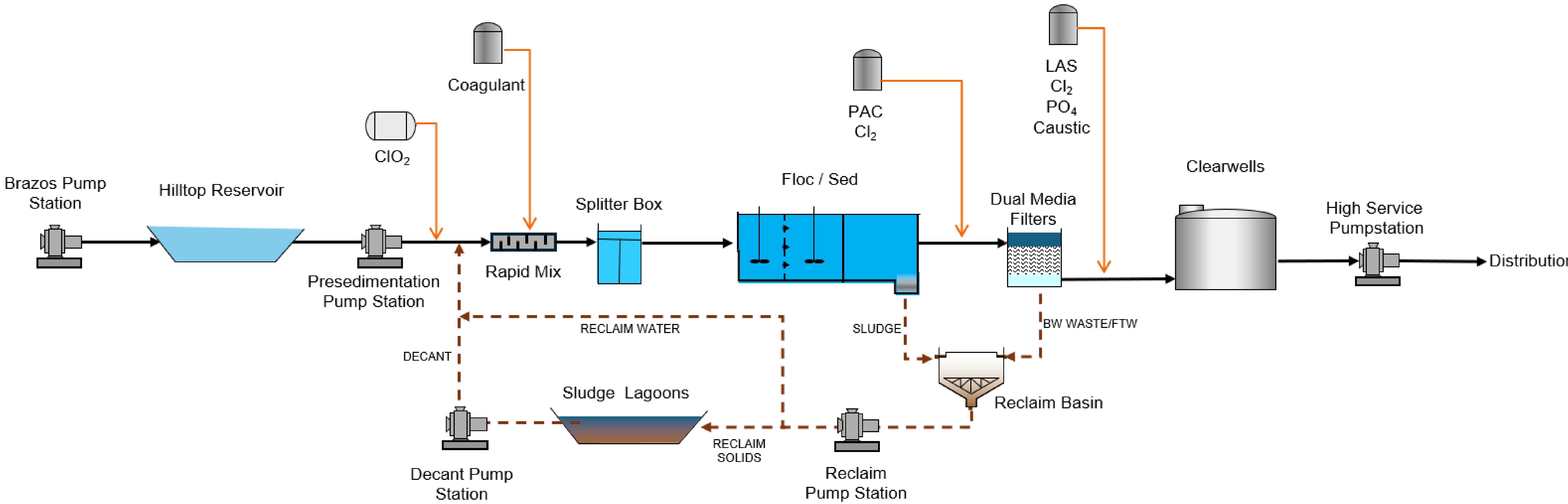
- A reclaimed water system consisting of a 300,000-gallon reclaim basin and a pump station. Filter backwash, filter surface wash, and sludge blow-down from the clarifier basins flows to the reclaim basin, from which decant water is pumped back into the Hilltop Reservoir. The underflow sludge is sent to the lagoons. Decant water from the lagoons can also be returned to Hilltop Reservoir.

The existing pumping and treatment capacities for the WTP as well as distribution system storage volumes are summarized in **Table 2-1**.

Table 2-1. Existing Hilltop WTP Treatment Capacity and Distribution System Storage Summary

Facility	Min. Required Capacity/Storage	Existing Capacity/Storage
Brazos Pump Station	N/A	9.3 MGD (firm)
Presedimentation Pump Station	12 MGD	14.4 MGD (firm)
Sedimentation Basins	12 MGD	12.46 MGD (firm)
Filters	12 MGD	15 MGD (firm)
WTP Clearwell Storage	0.6 MG (TCEQ)	3.5 MG
High Service Pump Station	12 MGD	18 MGD (firm)
Treatment Plant	12 MGD	12 MGD
Distribution System Elevated Storage	1.4 MG (TCEQ)	3.55 MG (City)
Distribution System Total Storage	2.77 MG (TCEQ)	7.05 MG (Total)

Figure 2-1. Hilltop WTP - Existing Process Flow Diagram



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2.1.2 Proposed Facilities

The Hilltop WTP expansion design flows are shown in **Table 2-2**. The WTP will be designed for a maximum flow of 12.0 MGD, and the chemical facilities (storage and feed pumps) will be designed for a plant flow of 16.0 MGD.

The proposed WTP expansion utilizes the existing presedimentation pump station, reclaim basin, sludge drying beds, and the 2.0 MG clearwell. The proposed treatment process includes a pretreatment facility (rapid mix, flow-splitting, flocculation and sedimentation basins), dual-media filters, residual pump station, clearwell, and a high service pump station. An operations building and chemical building are also included in the proposed WTP expansion.

This alternative includes partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, circular sedimentation basins, rectangular sedimentation basins, splitter box, chemical buildings, and eastern circular sedimentation basin will be abandoned in place. The proposed process flow diagram is shown in **Figure 2-2**, and a conceptual site plan is shown in **Figure 2-3**.

Table 2-2. Hilltop WTP Design Flows

Flow Condition	Flow, MGD
Minimum Day Flow	2.9
Average Day Flow	4.8
Maximum Day Flow	12.0
Chemical Systems Design Flow	16.0

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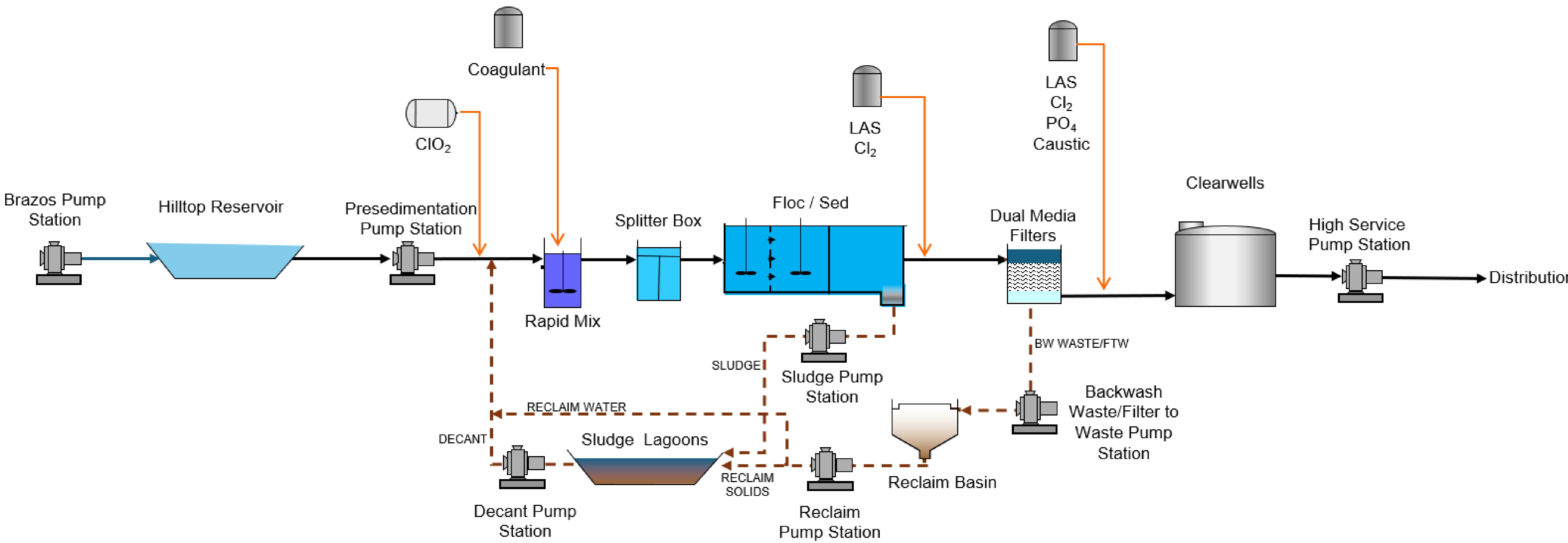
Figure 2-2. Hilltop WTP - Proposed Process Flow Diagram



Note: This diagram assumes the existing reclaim basin is reused.

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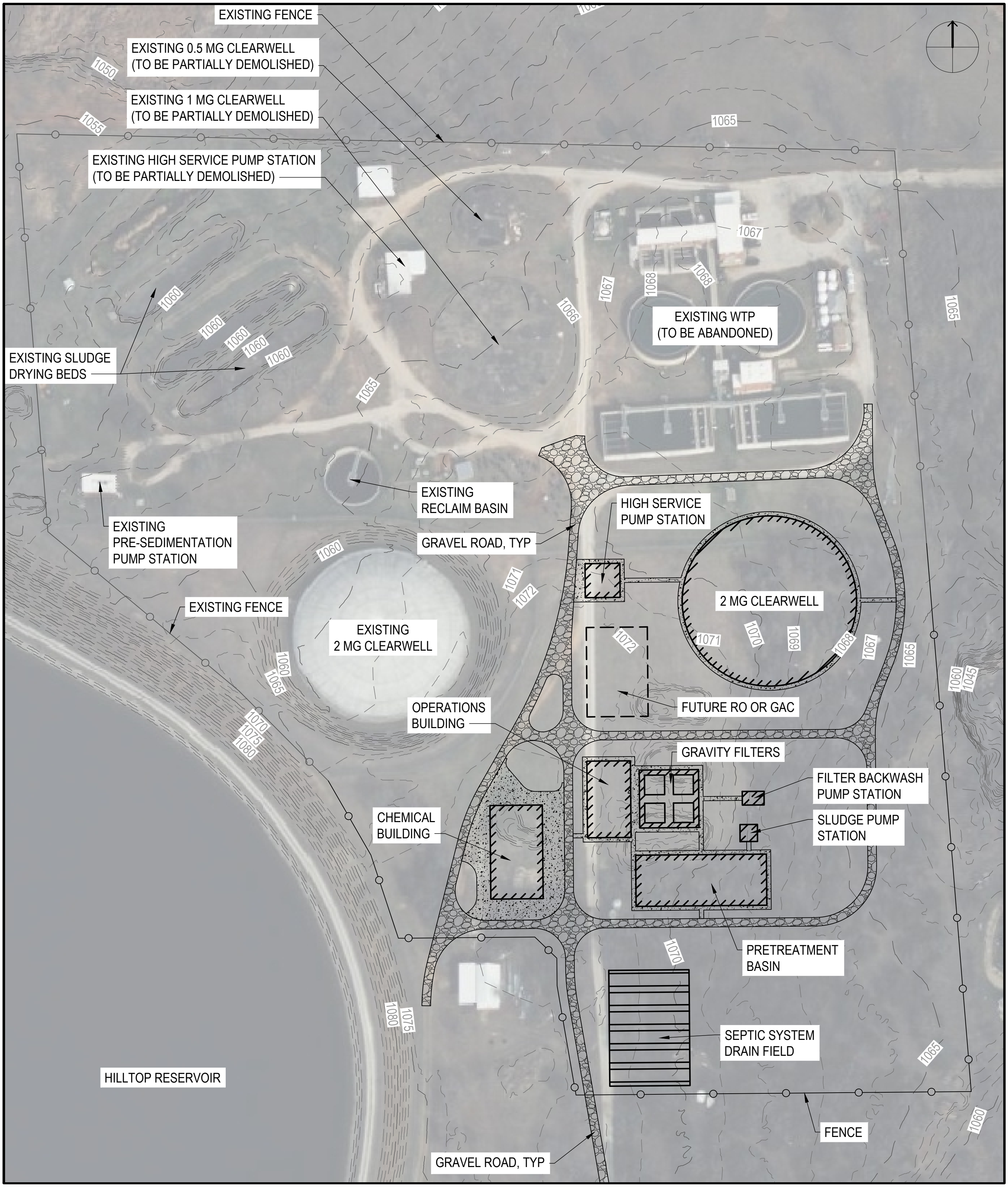

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HILLTOP WTP
CONCEPTUAL SITE PLAN

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WTP IMPROVEMENTS PROJECT

FIGURE

2-3

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2.2 Process Design

The WTP process design was based on water treatment goals outlined in TM No.1 Demand Projections and Finished Water Quality Goals, provided in **Appendix A**. The subsections below describe the design criteria for each proposed WTP process.

2.2.1 Presedimentation Pump Station

The presedimentation pump station, installed in 1994, transfers raw water from Hilltop Reservoir to Hilltop WTP. The station has three vertical propeller pumps and a firm capacity of 14.4 MGD. There is space available for a future fourth pump. **Table 2-3** summarizes the design criteria for the existing pumps.

The station is a single room, concrete block building with a brick veneer and skylights for pump removal. Electrical gear is located in the room with the pumping units.

As noted in **Table 2-3**, the existing pump TDH is 13 feet. A hydraulic profile will be developed during the preliminary design and will be used to evaluate the existing pumps for the proposed WTP improvements. If the TDH of the existing pumps is inadequate, the pumps will be replaced with higher head units.

Table 2-3. Existing Presedimentation Pump Design Criteria

Parameter	Design Value		
	Pump 1	Pump 2	Pump 3
Type	Vertical Propeller	Vertical Propeller	Vertical Propeller
Design Capacity, MGD	7.2	7.2	7.2
Design Head (TDH, ft)	13	13	13
Motor HP	40 (US Motor)	40 (US Motor)	40 (US Motor)
VFD	Yes	Yes	No
Installation Date	1994	1994	1994

2.2.2 Raw Water Piping

With the location of the proposed pretreatment structure, a raw water pipeline from the presedimentation pump station to the proposed pretreatment facilities will be required. The existing site piping consists of 885 LF of 30” diameter pipe installed in 1994. A portion of the existing pipeline will remain in service to serve the new WTP. The new pipeline will be approximately 660 linear feet (LF) of 30” diameter pipe to convey a maximum flow of 22 MGD without exceeding a velocity of 7 ft/s. Raw water pipe materials, including ductile iron, carbon steel, PVC, and concrete, and a hydraulics analysis will be evaluated during the design phase.

2.2.3 Pretreatment

Pretreatment will consist of rapid mix, flow splitting, three stage flocculation, sedimentation with plate settlers, and sludge collection. Common wall construction of multiple trains will be implemented, with the number of trains to be determined in preliminary design.

2.2.3.1 Rapid Mix and Flow Splitting

Rapid mix tanks will be used to disperse coagulant and ensure uniform distribution throughout the raw water. The rapid mixers will be vertical shaft units with axial flow impellers.

Following rapid mix, weirs and gates will be used to split flow to the flocculation and sedimentation basins downstream.

2.2.3.2 Flocculation

The flocculation process will be three-stage with sequential compartments. Each stage will have a vertical shaft, mechanical flocculator to provide the required G-value for the stage. This configuration promotes controlled particle aggregation and formation of settleable floc. Design parameters and typical vertical paddle wheel flocculators are shown in **Table 2-4** and **Figure 2-4**.

Table 2-4. Flocculator Design Criteria

Parameter	Design Value
Stage 1 Gradient (s^{-1})	54
Stage 2 Gradient (s^{-1})	44
Stage 3 Gradient (s^{-1})	31

Figure 2-4. Typical Vertical Paddle Wheel Flocculator

2.2.3.3 Sedimentation

Water from the final flocculation stage flows into the sedimentation basin. The sedimentation basin provides adequate hydraulic detention time and reduced velocities to allow flocs to settle. The sedimentation process will utilize inclined plate settlers. Design criteria for the plate settlers are shown in **Table 2-5**. Typical plate settlers are shown in **Figure 2-5**.

Table 2-5. Plate Settler Design Criteria

Parameter	TCEQ Design Guideline	Design Value
Maximum plate settler loading rate (gpm/ft^2)	-	0.25
Plate angle of inclination from horizontal (degrees)	-	55
Projected horizontal surface area required (12 MGD)	-	33,333 ft^2
Minimum plate efficiency (%)	-	80

Figure 2-5. Typical Plate Settler System

Sludge will be removed from sedimentation basins using a hose-less sludge removal system. This system uses the hydraulic head differential between the water surface and the sludge discharge elevation to direct sludge into dual header orifices. The dual-header design provides sludge removal while also minimizing water waste. A typical collector mechanism is shown in **Figure 2-6**. Collected sludge will be pumped to the sludge lagoons/drying beds.

Figure 2-6. Typical Hose-less Sludge Removal System

2.2.4 Gravity Filtration

2.2.4.1 Filters

High-rate gravity, dual media sand and anthracite filters will be utilized for filtration. The filters will have plastic block underdrains with media retention caps similar to the existing filters. The filters will have an air scour and pumped backwash water system for backwashing and a filter-to-waste (FTW) system. **Table 2-6** summarizes the design criteria and pertinent TCEQ design guidelines for the proposed filters. Each filter will have a capacity of 4 MGD, yielding a firm capacity of 12 MGD with one filter out of service.

Table 2-6. Gravity Filter Design Criteria

Parameter	TCEQ Design Guideline	Design Value
No. of Filters	N/A	4
Filter Surface Area, ft^2, per filter	N/A	695
Design filter capacity, gpm	N/A	2,778
Design filter capacity, mgd	N/A	4
Design capacity filter area, ft^2	1 filter out of service	2,084
Rate of filtration, gpm/ft^2	<5.0	4.0
Maximum velocity of water to filters, ft/s	N/A	2.0
Depth of filter box, ft	N/A	20.0

Table 2-6. Gravity Filter Design Parameters (cont.)

Parameter	TCEQ Design Guideline	Value
Distance to a backwash trough, ft	N/A	2.0
Backwash flow rate, gpm/ft^2	> 12.5 < 21.8	Low rate: 4-6 High rate: 15-20
Backwash flow rate, gpm	N/A	13,900
Air scour rate, $scfm/ft^2$	N/A	5.0
Air scour rate, scfm	N/A	2,781
Anthracite	Total media depth 24 in 0.9-1.1 E.S. < 1.60 U.C.	24 in depth 0.9-1.1 E.S. < 1.60 U.C. > 1.40 specific gravity < 1.70 specific gravity < 2.0% acid solubility < 5.0% caustic solubility Minimum 3.0 Mohs
Sand	12 in depth minimum 0.45-0.55 mm E.S. < 1.60 U.C.	12 in depth 0.45-0.55 mm E.S. < 1.60 U.C. > 2.50 specific gravity < 5% acid solubility
Support gravel	12 in depth minimum 1/16" to 2.5" 3-5 layers	Media retainer caps with plastic block underdrains[1]
Number of wash troughs per filter	N/A	4
Width of wash troughs, in	N/A	24
Depth of wash troughs, in	N/A	20.0
Maximum horizontal travel to wash troughs, ft	N/A	3.0

E.S. = Effective Size; NA = not applicable; U.C. = Uniformity Coefficient; * adjustable to lower flow rates
[1] Support material that differs from the TCEQ design guideline may be approved on an individual basis.

2.2.4.2 Filter Backwash System

The proposed filters will have a backwash system that provides air-only, air/water wash, and water-only wash sequences. Air scour provides the vigorous agitation of the bed and causes collisions and abrasions between media grains that break deposited solids loose. Once the solids are separated, the backwash water can flush the solids from the filter. The system will have two washwater flow rates – a low rate (4 to 6 gpm/ft^2) and a high rate (15-20 gpm/ft^2). Backwash water will be supplied by variable speed, vertical turbine pumps located in the HSPS. The design flow and number of pumps will be determined during final design. Air scour air will be supplied by multistage centrifugal or positive displacement blowers (1 duty and 1 standby).

2.2.5

2.2.5 Clearwell

A 2-MG clearwell will replace the existing 0.5 and 1-MG clearwells that are to be demolished. The clearwell will be an AWWA D110 Type III prestressed concrete tank with baffles. **Table 2-7** summarizes the design criteria for the clearwell.

Table 2-7. Clearwell Design Criteria

Parameter	Design Value
Number of units	1
Volume (MG)	2
Inside Diameter (ft)	196
Side Water Depth (ft)	9
Roof Type	Concrete Dome

2.2.6 High Service Pumping

The existing HSPS contains four vertical turbine pumps: two 9-MGD units, one 6-MGD unit, and one 3-MGD unit. The proposed HSPS with vertical turbine pumps will be built near the proposed clearwell. The station will have a minimum firm capacity of 12 mgd. The HSPS design parameters, including number of pumps, pump capacity and TDH, will be developed based on the distribution system hydraulic model prepared during the preliminary design phase. Each pump will have a variable frequency drive (VFD). The pump capacity distribution can remain identical to the existing pump capacities or can be adjusted to four 4-MGD pumps.

2.2.7 Residuals Processing

2.2.7.1 Residuals Production

The two primary sources of residuals that need to be managed daily come from the residuals produced from the coagulation/flocculation/sedimentation process and the filters as backwash water and FTW water. Residuals quantities are summarized in **Table 2-8** and **Table 2-9**.

Table 2-8. Filter Residuals and Sampling Water Quantities

Parameter	Design Value
Average backwash rate, gpm/ft^2	15.0
Filter-to-waste rate, gpm/ft^2	4.0
Maximum sample line rate, gpm	2.0
Backwash duration, min	15.0
FTW duration, min	15.0
Backwash volume, gal	156,263
Filter-to-waste volume, gal	41,670
Backwash and FTW volume, gal	197,933
Maximum backwashes per day, unit	1
Average backwashes per day, unit	0.33
Average wash water and FTW volume, gpd	65,318
Maximum wash water and FTW volume, gpd	197,933

Table 2-9. Sedimentation Basin Solids

Parameter	Design Value
Average coagulant does, mg/L	30
Average dry coagulant loading rate (lb/d)	3,448
Solids concentration, %	3
Specific gravity	1.01
Solids generation (gal/day)	13,645

2.2.7.2 Residuals Conveyance

Filter backwash waste and FTW streams will be sent to the existing reclaim basin. A dedicated pump station located adjacent to the proposed filter complex will be included in the project, and the design criteria for this station will be determined during final design. An 8-inch diameter pipeline will carry this flow to the reclaim basin.

A separate pump station is required to send solids blow-down from the sedimentation basins to the existing reclaim basin or the sludge lagoons/drying beds. This pump station will be located next to the pretreatment basin and have a dedicated pipeline.

Design criteria for these pump stations will be determined during final design. Each station will have two pumps (1 duty and 1 standby) to provide redundant units.

2.2.7.3 Reclaim Basin

The existing reclaim basin is 65-ft in diameter with a 14-ft side-water depth and 12-ft operating depth, providing 300,000 gallons of storage. Currently, filter backwash waste and sedimentation basin solids are sent to this basin. The solids are is allowed to settle and are pumped to the sludge lagoons/drying beds. Once the solids are removed, the clarified water is returned to the presedimentation basin pump station pipeline. A submersible pump station, installed in 2002, is used for both residual flow streams.

Reuse of the reclaim basin for the project will be evaluated in the design phase. Several limitations exist as follows:

- As shown in **Table 2-8**, the approximate filter backwash waste and FTW volume is 197,933 gallons. The existing reclaim basin will not be able to accommodate more than one filter backwash/FTW cycle per day.
- Use of the existing reclaim basin requires a dedicated filter backwash waste/FTW pump station and a 700 LF pipeline to the existing reclaim basin.
- The existing reclaim pumps withdraw flow from the bottom of the reclaim basin. Clarified decant and sludge cannot be separated with this configuration.

2.2.7.4 Sludge Lagoons/Drying Beds

The existing WTP has three sludge lagoons/drying beds. Two sludge drying beds are approximately 200-ft by 25-ft with a depth of 6.5-ft. The third bed is approximately 170-ft by 30-ft with a depth of 6.5-ft. The total combined volume of the lagoons is approximately 734,000 gallons, which is sufficient to manage solids generated by a 16 MGD flowrate based on a coagulant dose of 30 mg/L and solids generation rate of 13,645 gal/day. Settled (decant) water from the lagoons will be recycled to Hilltop Reservoir via an existing pump station.

2.2.8 Chemical Facilities

The chemicals used at the Hilltop WTP will include the following:

- Chlorine dioxide – raw water oxidant
- Sodium chlorite – chlorine dioxide constituent
- Chemfloc 3315 – raw water coagulant
- Chlorine gas – pre- and post- filter disinfection
- Liquid ammonium sulfate (LAS) – post-filter formation of chloramines for disinfection
- Sodium hydroxide (caustic) – post-filter pH adjustment
- Polyphosphate – finished water corrosion control

Table 2-10 summarizes the dosages for each chemical based on plant data from 2021 to 2024.

Table 2-10. Chemical Dosage Summary

Chemical	Dose (mg/L)		
	Minimum	Average	Maximum
Coagulant (Chemfloc 3315)	11.2	25.8	43.7
Chlorine gas	2.8	6.2	12.2
LAS (39% solution)	0.63	1.2	2.3
Sodium hydroxide (25% solution)	13.3	29.4	58.1
Polyphosphate	0.3	0.5	0.9
Chlorine Dioxide	0	0.7	2.1

Using the average chemical dosages and future maximum plant flow of 16 MGD, the TCEQ required 15-day storage volumes were calculated and are summarized in **Table 2-11**. See **Section 2.2.8.1** for information on the sodium chlorite storage and feed system requirements.

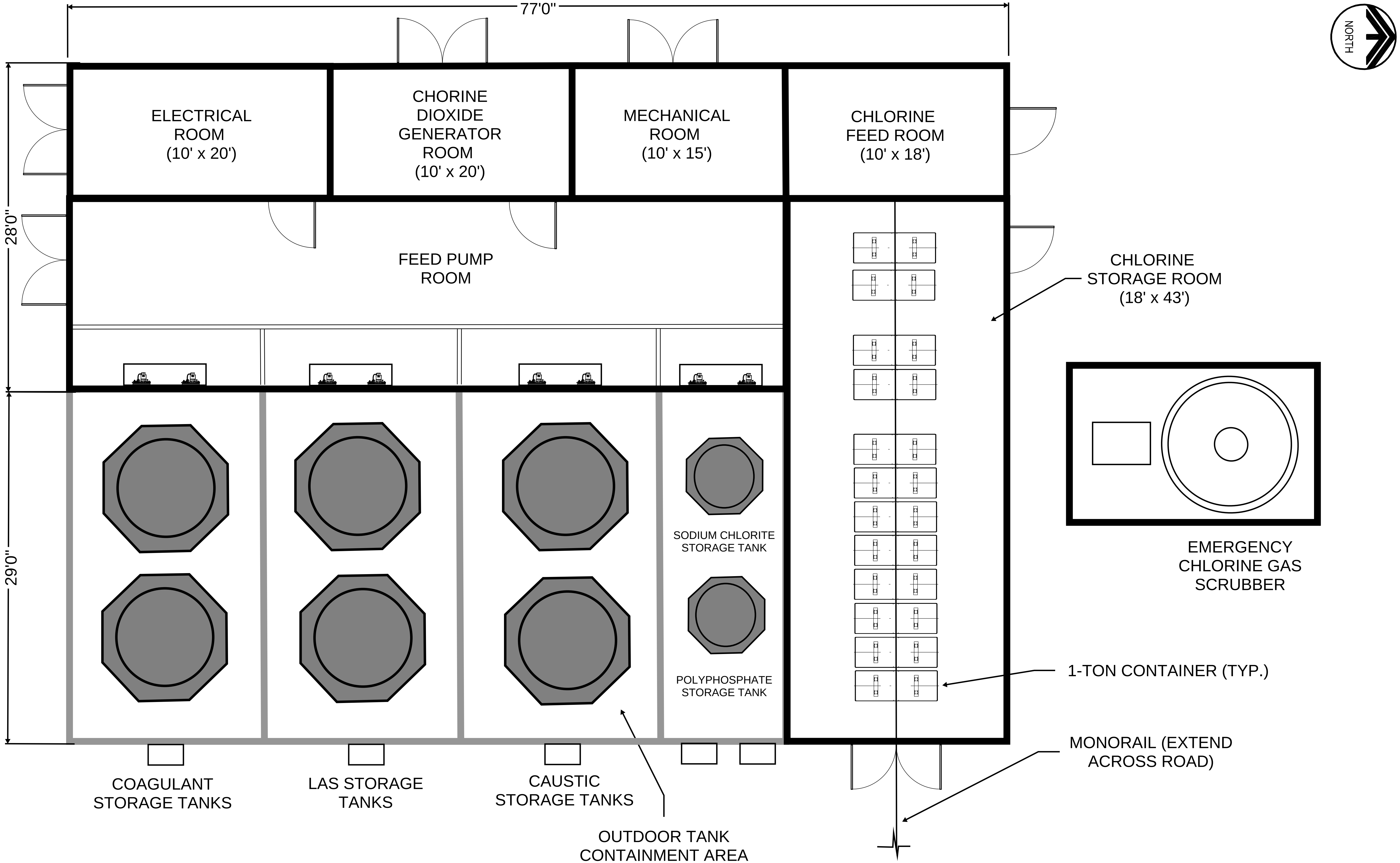
Table 2-11. Chemical Feed Rates and Storage Criteria

Chemical	Feedrate at Avg. Dose/Max. Flow (lb/d)	Minimum Storage Required by TAC 290.42	
		lb	gal
Coagulant	3,500	52,500	9,850
Chlorine gas	823	12,349	N/a
LAS (39% solution)	165 (as NH_3)	N/a	2,340 (LAS)
Sodium hydroxide (25% solution)	3,109	46,635	14,620
Polyphosphate	67	1,013	231

A chemical building will be constructed as part of the plant improvements to house the chemical storage tanks and feed systems. This facility will replace the existing chemical storage facilities.

Several of the chemicals are hazardous, and storage of large volumes of these chemicals requires special building requirements in accordance with the International Building Code (IBC). These requirements are discussed in **Section 10.0**. The chemical storage facility will also comply with TAC Rule §290.42.

PPCMWD and the City have expressed interest in switching from chlorine gas to sodium hypochlorite. The storage and feed systems and required building footprint are different for each chemical. Two preliminary chemical building layouts are shown in **Figure 2-7** (chlorine gas) and **Figure 2-8** (sodium hypochlorite).



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HILLTOP WATER TREATMENT PLANT
CHEMICAL BUILDING ALTERNATIVE NO. 1

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WTP IMPROVEMENTS PROJECT

FIGURE
2-7

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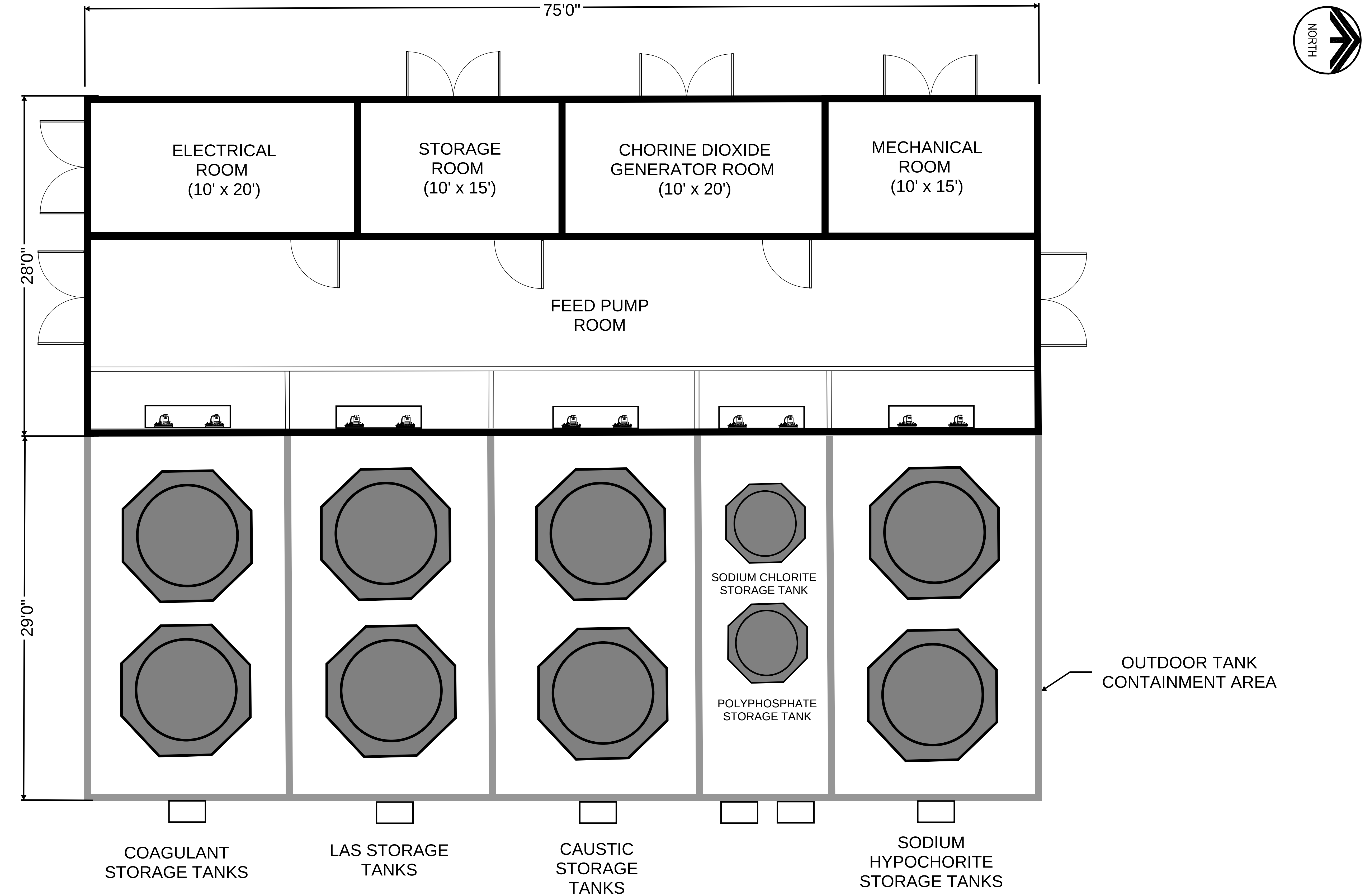

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HILLTOP WATER TREATMENT PLANT
CHEMICAL BUILDING ALTERNATIVE NO. 2

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WTP IMPROVEMENTS PROJECT

FIGURE
2-8

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2.2.8.1 Chlorine Dioxide

The project includes a sodium chlorite storage and feed system to support on-site chlorine dioxide generation. Sodium chlorite will be supplied in liquid form (commonly 25% solution) and stored in a bulk storage tank located at the chemical building. The proposed system will require a dedicated room for the chlorine dioxide generator system and feed equipment.

For preliminary sizing, the sodium chlorite storage volume will be based on the chlorine dioxide demand at maximum plant flow and average design dose. The required storage volume will be established during final design in coordination with the selected chlorine dioxide generation equipment manufacturer to ensure adequate chemical autonomy and operational flexibility. Redundant storage and feed pumps will be provided to ensure continuous operation.

The required number and capacity of sodium chlorite metering pumps will be determined during final design. The pumps will be designed to provide turndown capability consistent with plant flow variation and chlorine dioxide demand, with appropriate redundancy (typically 2 duty/1 standby or similar configuration depending on system criticality).

Chlorine dioxide is currently generated on-site using chlorine gas and sodium chlorite. Converting from chlorine gas to liquid chlorine (sodium hypochlorite) would require modification of the chlorine dioxide generation process and the addition of a separate chemical feed system, typically including sodium hypochlorite and an acid source, to support chlorine dioxide production. This change would introduce additional chemical storage, metering equipment, and control requirements compared to the existing gas-based generation system.

2.2.8.2 Coagulant

Tables 2-12 and **2-13** below summarize the tank design parameters for the coagulant storage tanks and feed pumps. The number of pumps assumes two rapid mix chambers and one stand-by pump unit.

Table 2-12. Coagulant Storage Tank Design Criteria and Features

Parameter	Design Value
No. of Storage Tanks	2
Tank Diameter, ft	8
Tank Height, ft	15
Tank Volume, gallons, each	5,265
Tank Material	Fiberglass or HDPE

Table 2-13. Coagulant Feed Pump Design Criteria and Features

Parameter	Design Value
No. of pumps	3
Type of pump	Peristaltic
Capacity range, gph	4.3-27.4
Required turndown ratio	10:1
Power requirement, VAC/phase	120/1

2.2.8.3 Chlorine

The existing WTP uses a 1-ton container chlorine gas system for disinfection. As noted above, the PPCMWD and the City have expressed an interest in switching to sodium hypochlorite for disinfection. Requirements for both systems are described below.

Chlorine Gas

STORAGE AND FEED

With continued use of chlorine gas, a 1-ton container system similar to the existing system is recommended. The proposed system will require two rooms in the chemical building – one room for container storage and one room to house the chlorine feed (chlorinators and injectors) equipment.

Two types of 1-ton container systems are available – full-vacuum systems and pressure manifold systems. Either type of system can be provided for the project, and the system type will be determined during final design.

Using the TCEQ required 15-day chlorine storage of 12,350 lbs in **Table 2-11** (maximum plant flow and average dose), a minimum of 7, 1-ton containers (14,000 lbs) must be stored onsite. Four connected containers will provide 8,000 lbs of available chlorine. Assuming a maximum daily withdrawal rate of 400 lbs/day (8 lbs/deg F at 50 deg F), four connected containers will provide approximately 10 days of storage a chlorine dose of 6.2 mg/L at the future maximum plant flow of 16 mgd.

The required number of chlorinators and injectors will be determined during final design.

SAFETY REQUIREMENTS

The chlorine storage and feed rooms will require continuous ventilation to meet the latest International Fire Code (IFC) requirements (see **Section 6**). These rooms will also require an emergency gas scrubber to provide neutralization of 2,000 lbs (single largest container) of chlorine gas in the event of a leak. Dry media, packed tower type scrubbers are the most commonly used technology to meet this IFC requirement. An emergency valve shut-off system for the 1-ton containers is also recommended. These systems consist of electric actuators connected directly to the container valves and are designed to close upon detection of chlorine gas in a chlorine room.

Sodium Hypochlorite

A sodium hypochlorite system would require storage tanks and feed pumps similar to the other proposed liquid chemicals. To meet the TCEQ storage requirements, 9,000 gallons of storage is needed. Two storage tanks will be provided and the number of feed pumps required will be determined during final design.

2.2.8.4 Liquid Ammonium Sulfate

Tables 2-14 and **2-15** below summarize the tank design parameters for the LAS storage tanks and feed pumps. The number of pumps assumes one feed location and one stand-by unit.

Table 2-14. LAS Storage Tank Design Criteria and Features

Parameter	Design Value
No. of Storage Tanks	2
Tank Diameter, ft	6
Tank Height, ft	10
Tank Volume, gallons, each	1,900
Tank Material	Fiberglass or HDPE

Table 2-15. LAS Feed Pump Design Criteria and Features

Parameter	Design Value
No. of pumps	2
Type of pump	Peristaltic
Capacity range. gph	0.8-6.5
Required turndown ratio	10:1
Power requirement, VAC/phase	120/1

2.2.8.5 Sodium Hydroxide

Tables 2-16 and **2-17** below summarize the tank design parameters for the [] storage tanks and feed pumps. The number of pumps assumes one feed location and one stand-by unit.

Table 2-16. Sodium Hydroxide Storage Tank Design Criteria and Features

Parameter	Design Value
No. of Storage Tanks	2
Tank Diameter, ft	10
Tank Height, ft	14
Tank Volume, gallons, each	7,650
Tank Material	Fiberglass or HDPE

Table 2-17. Sodium Hydroxide Feed Pump Design Criteria and Features

Parameter	Design Value
No. of pumps	2
Type of pump	Peristaltic
Capacity range. gph	6-41
Required turndown ratio	10:1
Power requirement, VAC/phase	120/1

2.2.8.6 Polyphosphate

Tables 2-18 and **2-19** below summarize the tank design parameters for the storage tanks and feed pumps. The number of pumps assumes one feed location and one stand-by unit.

Table 2-18. Polyphosphate Storage Tank Design Criteria and Features

Parameter	Design Value
No. of Storage Tanks	1
Tank Diameter, ft	8
Tank Height, ft	12
Tank Volume, gallons, each	4,136
Tank Material	Fiberglass or HDPE

Table 2-19. Polyphosphate Feed Pump Design Criteria and Features

Parameter	Design Value
No. of pumps	2
Type of pump	Peristaltic
Capacity range, gph	3.8-11.4
Required turndown ratio	10:1
Power requirement, VAC/phase	120/1

2.2.9 Operations Building

The project will include an operations building, co-located with the gravity filters to allow routine observation of the filters. Three building layouts were developed to accommodate City requests and understand cost differences associated with each layout, which is shown in **Section 11.0**. The layouts consist of a one-story building, two-story building, and two-story building with a condensed second floor. The building will include a laboratory, conference/training room, breakroom, offices, a storage room, and restrooms. Designated space for electrical and mechanical equipment is also included. Additional discussions on the operations building are included in **Sections 4.0**, **5.0**, and **10.0**.

3 Site Civil

3.1 Overview

3.1.1 Existing Conditions

The site is currently developed as a water treatment plant and includes a gravel roadway that provides circulation around the property and access to the existing facilities. Primary site access is provided by a single, gated driveway connection to U.S. Highway 281. Areas adjacent to the internal roadway are generally open and maintained.

Vegetation across the site consists primarily of low grass cover, with a dense wooded area located along the southeastern portion of the property that includes mature trees and undergrowth. The remaining portions of the site are generally open with minimal vegetation.

The property perimeter is enclosed by chain-link fencing.

3.1.2 Demolition

Demolition activities are anticipated to include partial demolition of the existing 0.5 and 1 MG clearwells to below grade, removal of existing trees, removal of haystacks, removal of chain-link fencing as needed, and possible realignment of the existing gravel roadway to accommodate the proposed improvements.

3.1.3 Site Plan

Proposed site improvements include the construction of treatment facilities located primarily south of the existing treatment plant. A gravel roadway will be constructed around the proposed structures to provide access for operations and maintenance. The proposed roadway will tie into the existing internal gravel road as feasible to maintain efficient site access.

Concrete sidewalks will be provided where necessary to support accessibility requirements and routine maintenance activities. Sidewalk locations will be coordinated with building access points and operational areas to ensure safe and functional pedestrian circulation throughout the site.

The proposed site layout contains sufficient space for an additional sedimentation basin and gravity filter to reach a firm treatment capacity of 16 MGD. Site piping will be strategically located for ease of expansion. Additionally, a stub-out will be included in the piping to the clearwell for future GAC or RO treatment.

3.1.4 Grading and Drainage

Ground surface elevations across the site generally fall from the northwest toward the southeast. Slopes within the developed areas are mild, typically ranging from approximately 1 to 3 percent.

Previous coordination with PPCMWD No. 1 and the City has confirmed stormwater detention is not required for this site. Drainage improvements will be designed to utilize surface drainage and shallow swales, as needed, to direct stormwater away from proposed structures and toward the southern perimeter of the site.

Proposed grading will be limited to areas necessary to support new improvements and maintain positive drainage throughout the site.

3.1.5 Erosion Control

Temporary erosion and sediment control measures will be implemented during construction to limit off-site sediment movement. Silt fence will be installed along downgradient areas of the site, primarily along the southern and southeastern edges, where surface drainage flows away from the higher ground. Locations will be adjusted as needed to protect adjacent areas during grading activities.

A stabilized construction entrance will be provided at the connection to U.S. Highway 281 to minimize sediment tracking onto public roadways. Tree protection fencing will be installed around trees designated to remain, particularly near the wooded area in the southeastern portion of the site. All erosion control measures will be installed prior to earthwork and maintained throughout construction.

4 Structural

4.1 Overview

Structural improvements for the WTP Improvements project include below-grade and above-grade reinforced concrete process structures, foundations, and structural systems supporting the proposed treatment facilities. Major structural elements include a pretreatment facility (rapid mix, flow splitting, flocculation and sedimentation), gravity filter basins, a clearwell, a chemical building, an operations building, and a high service pump station.

Structural systems will be designed to resist operational, environmental, and maintenance loads. Structural design will be coordinated with geotechnical recommendations, applicable design codes, and other engineering disciplines during subsequent phases of the project.

4.2 Structural Design Criteria

Structural design criteria for the proposed improvements were developed based on ASCE hazard data, applicable codes, and typical water treatment facility requirements. Final design criteria will be confirmed Structural design will be finalized during subsequent design phases in coordination with the project geotechnical investigation and interdisciplinary coordination.

The City has adopted the International Building Code (IBC) 2012; however, it is recommended that the proposed improvements be designed in accordance with IBC 2021 to reflect updated load provisions, material standards, and criteria applicable to water treatment facilities. The list below summarizes the applicable structural codes that will be used for the project, and **Table 4-1** summarizes the general structural design criteria for the project.

- International Building Code (IBC) 2021
- ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- ACI 318-19, Building Code Requirements for Structural Concrete
- ACI 350-20, Code Requirements for Environmental Engineering Concrete Structures
- TMS 402-16, Building Code Requirements for Masonry Structures
- AISC 360-16, Specification for Structural Seel Buildings
- SDI TD-2017, Standard for Seel Roof Deck
- SJI 100-2020, Standard Specification, Load Tables, and Weight Tables for K-Series, LH-Series, and DLH Series Open-Web Steel Joists and Joist Girders.

Table 4-1. General Structural Design Criteria

Parameter	Design Criteria
Risk Category	III
Site Soil Classification	Site Class D *
Design Code	ASCE/SEI 7-16
Exposure Category	C
Basic Wind Speed (Ultimate, 3-sec gust)	112 mph
Seismic Design Category	B
Ground Snow Load	5 psf

*Site class to be confirmed by the Geotechnical Report.

Seismic parameters, summarized in **Table 4-2**, were obtained using ASCE 7-16 and are based on mapped values for the project location.

Table 4-2. Seismic Design Parameters

Parameter	Value
Mapped Spectral Acceleration, S_s	0.085 g
Mapped Spectral Acceleration, S_1	0.047 g
Design Spectral Acceleration, S_{DS}	0.09 g
Design Spectral Acceleration, S_{D1}	0.075 g
Seismic Design Category	B

Structural elements will be designed to resist the following loads, as applicable to each structure:

- Dead loads, including self-weight of concrete, steel framing, masonry, and equipment
- Live loads associated with maintenance access, walkways, platforms, and roof systems
- Hydrostatic loads for liquid containing structures
- Lateral earth pressures and surcharge loads for below grade structures
- Buoyancy forces for below grade structures, where applicable
- Environmental loads including wind, seismic, snow, and ice loads

Load combinations will be evaluated in accordance with ASCE 7-16 and applicable material design standards.

Table 4-3 summarizes the expected primary structural materials anticipated for use on the project based on preliminary design assumptions.

Table 4-3. Materials Specifications and Grade/Type

Material	Specification / Standard	Typical Grade / Type
Structural Concrete	ACI 350, ASTM C94	f'c = 4,500psi
Portland Cement	ASTM C150	Type I/II or Type II
Blended Hydraulic Cement	ASTM C595	Type IP or IS
Reinforcing Steel	ASTM A615	Grade 60
Concrete Masonry Units (CMU)	ASTM C90	Normal weight, f'c =2,000psi
Structural Shapes: Wide Flange Shapes	ASTM A572 / A992	Grade 50
Structural Shapes: Channels, Angles and Plates	ASTM A36	Grade 36
Aluminum Plate / Ladders	ASTM B209 / B221	6061 T6
PVC Waterstop	ACI 350	6 in. ribbed

4.3 Treatment Plant Structures and Buildings

4.3.1 Rapid Mix Tanks

Rapid mix tanks will be cast-in-place reinforced concrete structures designed to contain water and support mechanical mixing equipment. Structural design will account for hydrostatic loads, mixer loads, piping penetrations, and required access for operation and maintenance. The structure is assumed to be supported on a shallow reinforced concrete mat foundation, unless geotechnical recommendations indicate otherwise.

Concrete elements will be detailed as liquid-containing structures with appropriate crack control. Construction joints will include waterstops to limit leakage.

4.3.2 Pretreatment Facility

The pretreatment facility will be a common wall structure with flow-splitting, rapid mix, flocculation, and sedimentation basins. The facility will be a cast-in-place reinforced concrete structure. Structural design will consider operating water levels, hydraulic loading, flow control components, and access for maintenance. The structure is assumed to be supported on a shallow reinforced concrete mat foundation, unless geotechnical recommendations indicate otherwise.

Walls and slabs will be cast-in-place reinforced concrete with waterstops at construction joints. Embedded items and openings will be coordinated with process requirements.

4.3.3 Gravity Filters

Gravity filters will consist of cast-in-place reinforced concrete basins designed to support filter media, hydrostatic loading, and associated piping. Structural design will consider both operating and empty basin conditions, including uplift effects where applicable.

The gravity filters may include a lightweight cover structure to limit weather exposure and associated operational impacts. The cover structure would be supported by the filter structure itself or by independent foundations provided around perimeter, with loads transferred into the filter walls or by supporting structural elements.

Potential cover options include a tensioned fabric system or a lightweight metal roof system supported by either framing members attached to or bearing on the filter structure or by independent foundations provided around perimeter. Loads associated with the cover structure will be considered as part of the overall filter structural design. The need for a cover and the final cover type will be evaluated during subsequent design phases.

The structure is assumed to be supported on a shallow reinforced concrete mat foundation, unless geotechnical recommendations indicate otherwise.

4.3.4 Clearwell

The proposed clearwell will be an AWWA D110 Type III prestressed concrete water storage structure designed for full hydrostatic loading, roof loads, soil pressures, and buoyancy effects. The prestressing system and associated clearwell design shall be provided as a delegated design by the tank manufacturer's specialty engineer.

Foundation design will be coordinated with geotechnical recommendations and tank manufacturer requirements.

4.3.5 Chemical Building

The chemical building will be supported on cast-in-place reinforced concrete foundations and designed to support chemical storage, feed equipment, and associated loads. The structure is assumed to be supported by shallow mat foundation bearing on engineered fill or native soils. Final foundation type, bearing capacities, and settlement criteria will be established based on the project geotechnical investigation. Floor slabs will accommodate equipment loads and containment requirements.

Structural materials and details will be selected considering the corrosive environment associated with chemical handling. Structural layout will be coordinated with architectural, mechanical, and life safety requirements.

4.3.6 Operations Building

The operations building structural system will be designed to support office, laboratory, and support spaces. The primary structural framing may consist of reinforced masonry, or structural steel depending on the selected building layout and final architectural configuration. The roof framing is anticipated to consist of structural beams and joists with metal deck supported on load bearing CMU walls or steel framing. The roof structure will be designed to support roofing dead loads, roof live loads, wind loads and any equipment loads. The structure is assumed to be supported on shallow spread footings or mat foundations bearing on engineered fill or native soils. Final foundation type, bearing capacities, and settlement criteria will be established based on the project geotechnical investigation.

Design loads will include standard office live loads, localized equipment loads, and applicable environmental loads. Foundations are anticipated to consist of shallow foundations and will be designed based on final structural loads and geotechnical recommendations.

4.3.7 High Service Pump Station

The proposed high service pump station will be supported on cast-in-place reinforced concrete foundations designed for pump dead loads and operating loads.

4.4 Durability and Waterproofing

Concrete exposed to water will incorporate durability measures including adequate reinforcement cover, joint waterstops, and waterproofing systems. The project is anticipated to utilize integral crystalline waterproofing admixtures for water-retaining structures to reduce permeability and enhance long-term resistance to water intrusion. Protective coatings will be provided where necessary to reduce chemical exposure and extend service life.

Railings, handrails, ladders, stairs, and grating provided as part of the project shall be fabricated from hot-dip galvanized steel or aluminum.

4.5 Future Expansion Considerations

Structural layouts will allow for future expansion identified in this PER, including additional sedimentation basins and gravity filters. Where practical, foundations and framing will be configured to facilitate future connections while minimizing disruption to existing facilities.

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5 Architectural

5.1 Overview

An operations building and chemical building will be provided as part of the project. Design of these facilities will comply all applicable codes including the following:

- International Building Code (IBC) 2021
- 2015 International Energy Conservation Code (IECC)
- 2012 Texas Accessibility Standards (TAS)

5.2 Operations Building

5.2.1 Layout Alternatives

The operations building will include a laboratory, conference/training room, a breakroom, offices, a storage room, and restrooms. Designated spaces for electrical and mechanical equipment will also be included. Three proposed layout alternatives were developed:

- One story with approximately 6,000 SF (**Figure 5-1**).
- Two stories with smaller second floor, approximately 7,400 SF (**Figure 5-2** and **5-3**). This alternative does not require an elevator.
- Two stories with expanded second floor, approximately 8,000 SF (**Figure 5-4** and **5-5**). This alternative requires an elevator but locates the control room on the second floor for plant views.

The OPCCs for these alternatives are included in **Section 11** and the selected alternative will be confirmed during final design.

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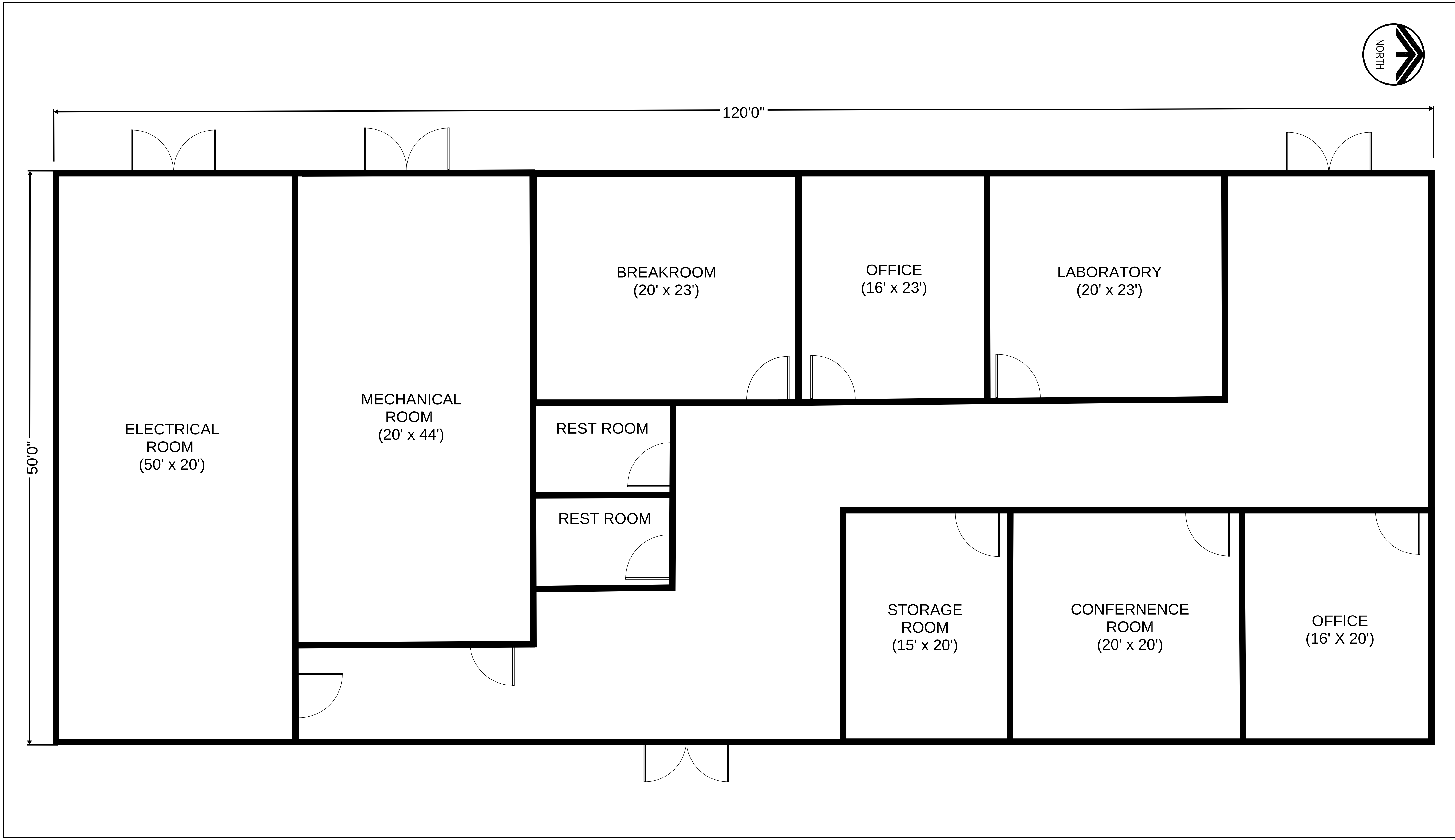

Texas P.E. Firm
Registration No. F-754

HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
SINGLE STORY

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE
5-1

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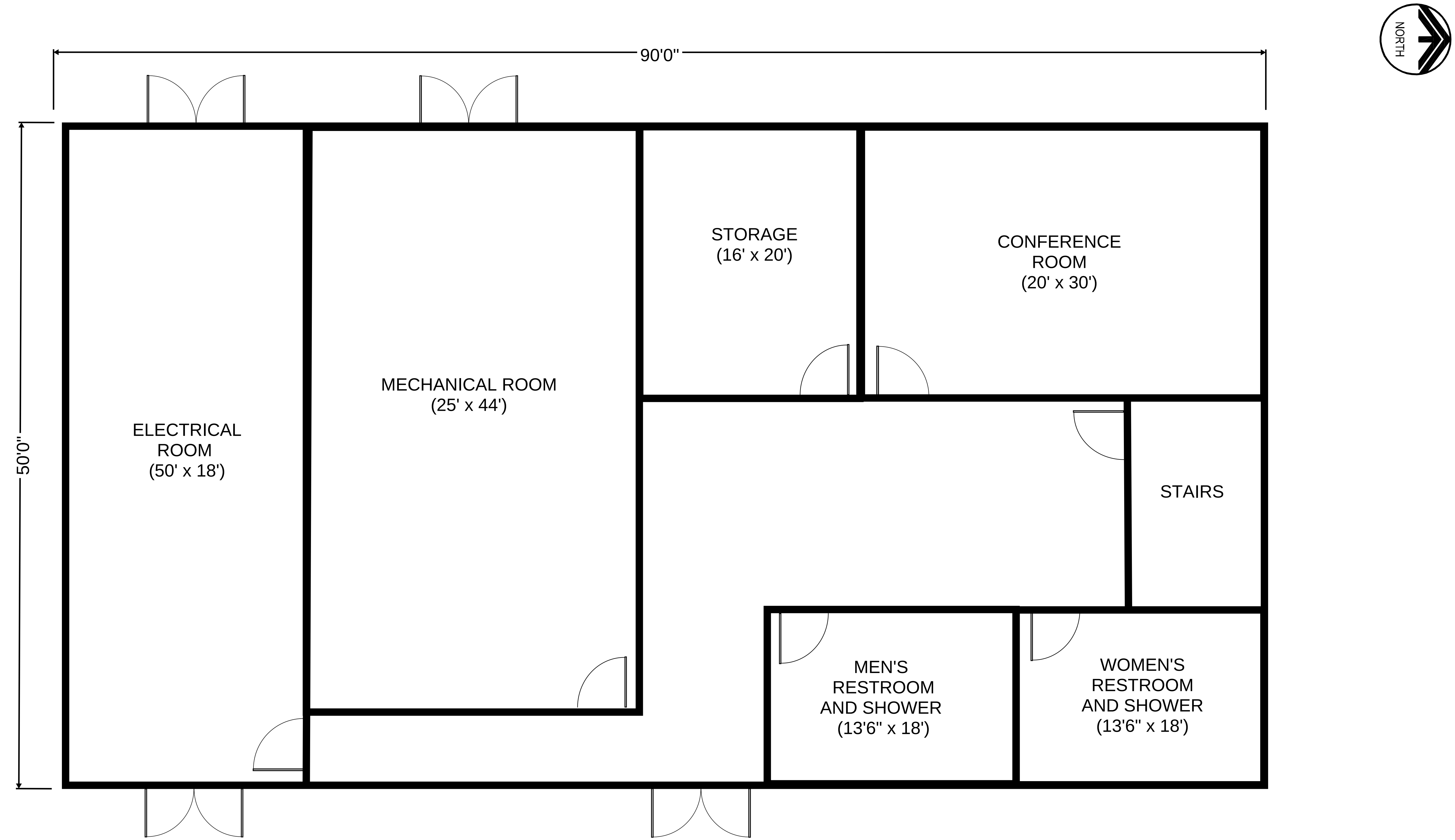

Texas P.E. Firm
Registration No. F-754

HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
TWO STORY (CONDENSED) FIRST FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE

5-2

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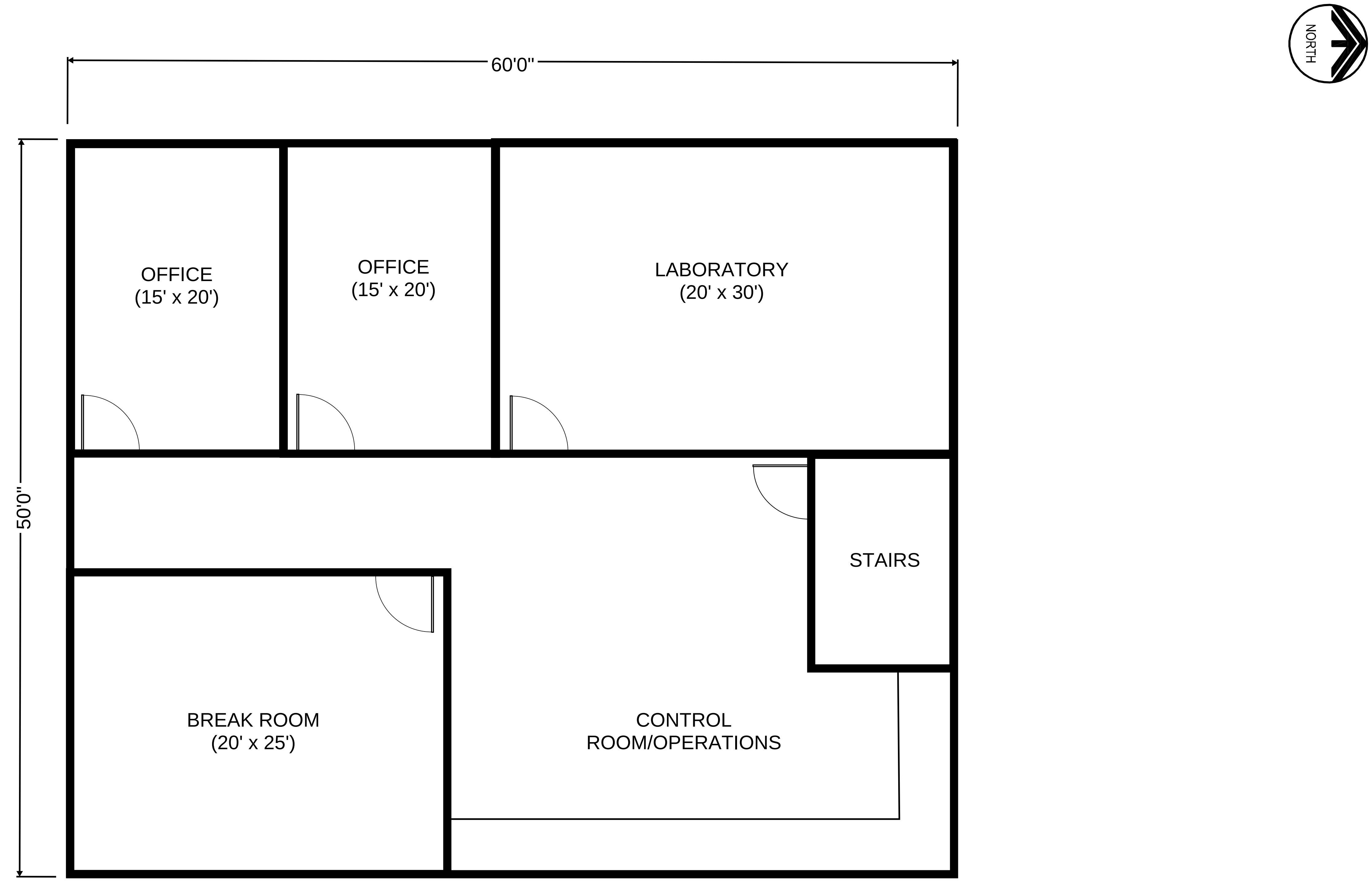

Texas P.E. Firm
Registration No. F-754

HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
TWO STORY (CONDENSED) SECOND FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE
5-3

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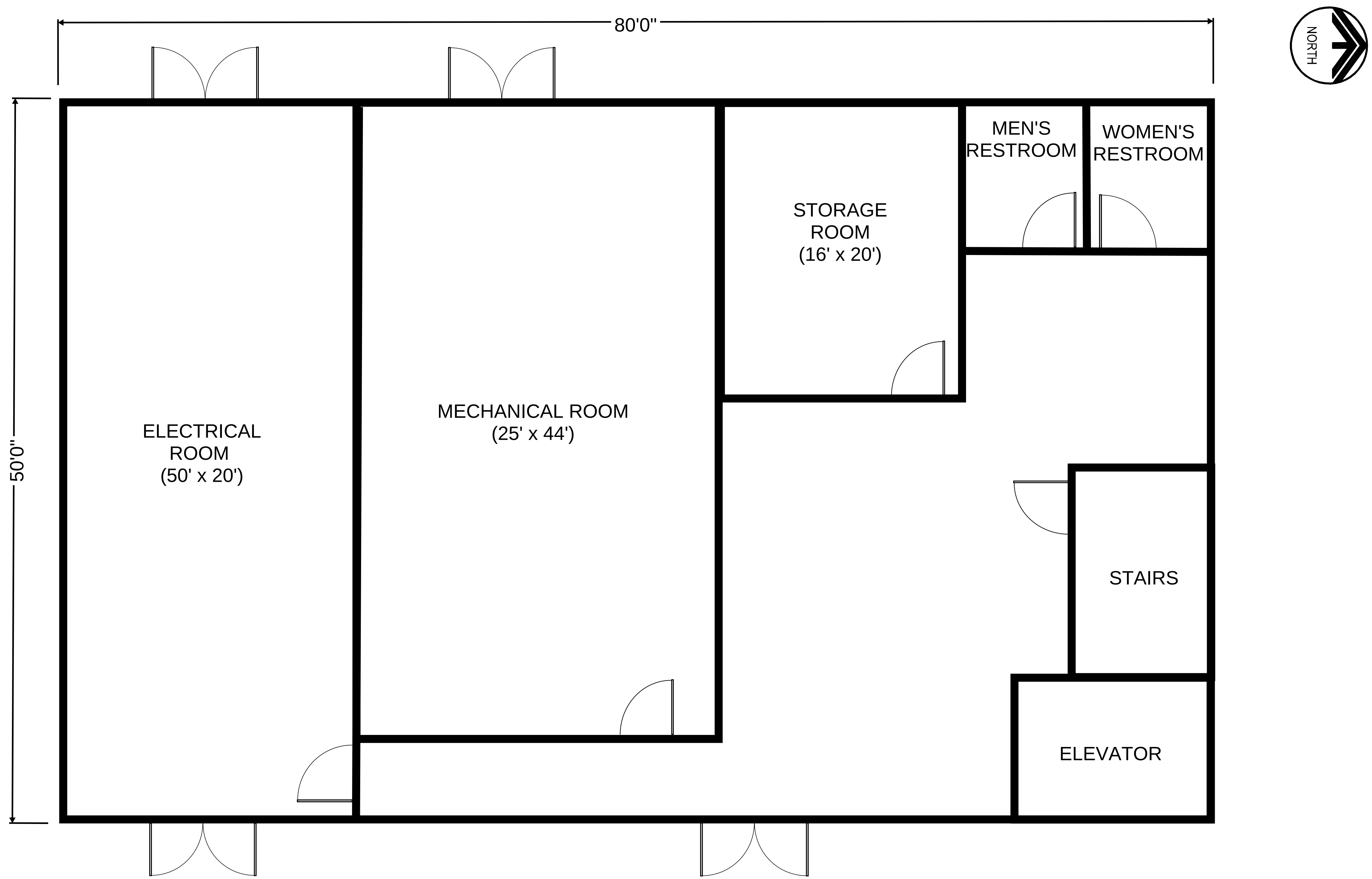

HDR

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HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
TWO STORY (EXPANDED) FIRST FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE
5-4

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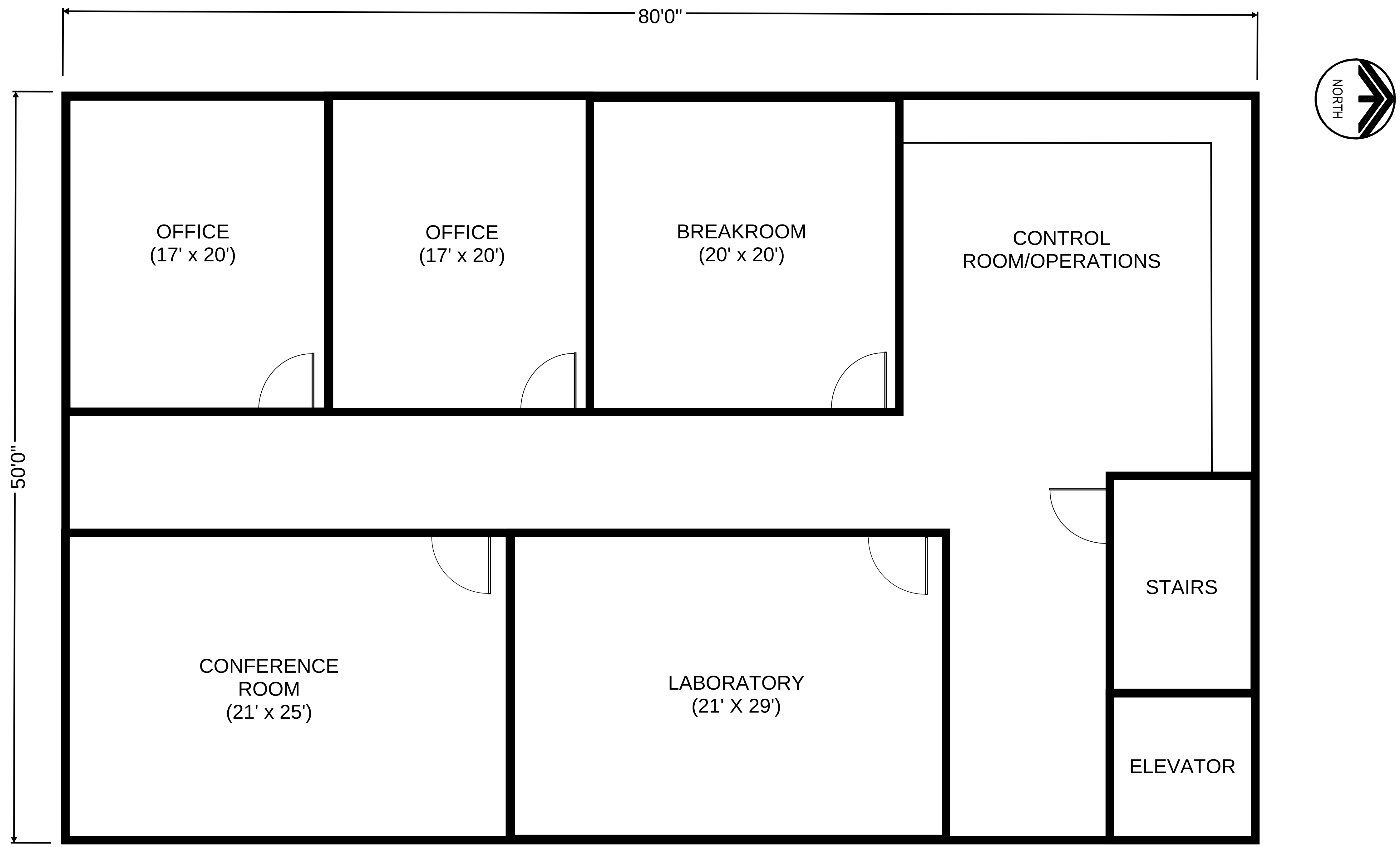

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HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
TWO STORY (EXPANDED) SECOND FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE

5-5

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5.2.2 Building Systems/Exterior Envelope Alternatives

Two potential building construction types can be used for the proposed operations building. Each type is discussed below.

5.2.2.1 CMU

The exterior wall construction will be comprised of a nominal 8 inch “back-up” CMU wall with continuous insulation/air space and nominal 4 inch (IN) architectural, integral color CMU veneer, with furring and gypsum board finishes on the interior. This cavity wall construction provides continuous thermal insulation and air barrier for energy code compliance and energy efficiency.

Pre-finished standing architectural seam metal roof will be used. The system will also include metal deck, thermal sheathing, rigid insulation and underlayment.

This system is the most durable and more conducive to meeting the energy code requirements and construction of a second floor.

5.2.2.2 Pre-engineered Metal

The exterior wall construction will be comprised of a pre-finished metal wall panel with continuous insulation over metal girt framing, with and gypsum board finishes on the interior. Additional batt insulation will be required also to provide a thermal system that meets the energy code.

Pre-finished structural architectural standing seam metal roof will be used (similar to an MR24 profile). The system will also include metal purlins thermal sheathing, and an insulation system to meet the energy code.

This system is less durable and not conducive for meeting the energy code requirements. It is better suited for the single-story layout, but less desirable for the two-story layouts.

5.2.3 Interior Construction/Finishes

Proposed interior construction and finishes for the building are as listed below.

Flooring/Base:

- Porcelain tile/porcelain tile base: restrooms
- VCT/Rubber base (vinyl composition tile): control room, conference room, corridors, offices, and breakroom
- Sealed concrete: electrical room, mechanical room, and storage rooms

Interior Walls:

- Wall structure: cold-formed metal stud and track framing
- Painted gypsum wallboard: all rooms (except as noted below)
- Ceramic tile: wainscot in the restrooms

Ceilings:

- Suspended acoustical tile: all rooms (except as noted below)
- Painted gypsum wallboard: restrooms
- Exposed painted structure: electrical and mechanical rooms

Doors:

- Exterior/Entry: insulated hollow metal doors/frames (painted)
- Interior doors: painted hollow metal frames and doors

Windows:

- Windows: tinted, Low-E, insulating glass on thermally broken aluminum frames
- Window interior sills: solid surface

5.3 Chemical Building

The building will be approximately 3,400 SF. It will include storage and feed equipment for ammonium sulfate, sodium hydroxide, chlorine dioxide, polyphosphate, coagulant, and chlorine gas. Refer to **Figure 2-7** above for proposed layout.

5.3.1 Building Systems/Exterior Envelope

Exterior wall construction will be comprised of a nominal 8 inch “back-up” CMU wall with continuous insulation/air space and nominal 4-inch architectural, integral color CMU veneer, with painted CMU on the interior. This cavity wall construction provides a continuous thermal insulation barrier for energy code compliance and energy efficiency.

Pre-finished architectural seam metal roof will be used. The system will also include concrete deck/ceiling, with thermal sheathing, rigid insulation and underlayment.

5.3.2 Interior Construction/Finishes

Proposed interior construction and finishes for the building are as listed below.

- Flooring/Base: sealed concrete (no base) in all rooms. Specialty epoxy coatings may be utilized for areas requiring more robust chemical resistance.
- Interior Walls: painted CMU
- Ceilings: exposed painted concrete structure all rooms
- Personnel Doors: fiberglass reinforced plastic (FRP) for chemical resistance
- Overhead Doors: Coiling, pre-finished steel, motorized/insulated

6 Mechanical

The mechanical systems described below include the HVAC that will serve the proposed chemical and high service pump station facilities. The HVAC systems for the filter gallery/building and operations building will be determined during final design. The following codes will govern all HVAC and plumbing systems on the project:

- International Building Code (IBC) 2021
- International Mechanical Code (IMC) 2021
- International Plumbing Code (IPC) 2021
- International Energy Conservation Code (IECC) 2021

The City of Mineral Wells is in Climate Zone 3A, warm-humid, as defined per ASHRAE 90.1-2013 and 2015 International Energy Conservation Code. The climate design information for Palo Pinto County as published by 2017 ASHRAE Handbook-Fundamentals will be used for design and sizing of HVAC systems. **Table 6-1** summarizes the outdoor conditions for HVAC design.

Table 6-1. HVAC Design Criteria – Outdoor Conditions

Parameter	Design Criteria
Winter	ASHRAE 99.6% Dry Bulb: 23.0°F
Summer	ASHRAE 0.4% Dry Bulb/Mean Wet Bulb: 100.5°F/74.6°F
Latitude/Longitude	32.90/97.04
Extreme Annual Wind Speed	1% 26.0 mph
Elevation	597

Based on 2017 ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.) Fundamentals, Climatic Design Information, for Dallas - Fort Worth.

The WTP site has an existing septic tank and septic field for on-site treatment and disposal of sanitary waste. The existing septic tank is proposed to be replaced and the septic field expanded.

6.1 Chemical Building

The indoor design criteria for the proposed chemical building rooms are summarized in **Table 6-2**.

Table 6-2. Chemical Building HVAC Design Criteria

Area	Summer		Winter		Notes
	Temp (°F)	Ventilation	Temp (°F)	Ventilation	
Chlorine Storage Room	Max 10°F above ambient	Yes	65 ± 2	Yes	1,2,3,6
Chlorine Feed Room	Max 10°F above ambient	Yes	65 ± 2	Yes	1,2,3,6
Liquid Chemical Storage and Feed Room(s)	Max 10°F above ambient	Yes	65 ± 2	Yes	1,6
Electrical/PLC Room	80 ± 2	N/A	55 ± 2	N/A	4
Mechanical Room	80 ± 2	N/A	55 ± 2	N/A	5

Notes:

1. The space will be ventilated continuously at 1 CFM/ ft^2 as minimum. It is based on the High-hazard Group H Occupancy requirement per 2015 International Fire Code.
2. The space will be ventilated at 12 air changes per hour (ACH) when it is occupied.
3. In case of accidental release of gas, the room exhaust will be directed to an emergency gas scrubber treatment system.
4. The space will be air-conditioned in summer and heated in winter.
5. The space will be ventilated periodically throughout the year and heated in winter.
6. The room temperature is estimated to be within 10°F above ambient temperature in summer with continuous ventilation.

6.1.1 Chlorine Storage and Feed Rooms

The chlorine storage and feed rooms will be ventilated so the room is at a constant negative pressure in relation to the surrounding area. Each room will include two ducted exhaust fans mounted on rooftop. One exhaust fan will be sized for continuous ventilation at a rate of 1 CFM/ ft^2 as minimum for the total floor area. The second exhaust fan will be sized for 12 air changes per hour (ACH) and will be turned on when the room is occupied. Since the chlorine fumes or vapors are heavier than air, all exhaust ducts will terminate at points within 12 inches of the floor.

The outside air intakes will be through wall-mounted louvers with backdraft dampers. The location of both the exhaust and inlet air openings will be designed to provide air movement across all portions of the floor or room to prevent the accumulation of vapors.

A separate exhaust duct system will be provided and connected to a emergency chlorine gas scrubber unit. In case of accidental release of gas, the room exhaust fans will be shut down, and the room exhaust will be directed to the chlorine scrubber located outside adjacent to the building.

All exhaust fans, louvers, dampers, and associated ductwork will be constructed of FRP material for corrosion resistance.

A manual shutoff control shall be provided outside each room in a position adjacent to the access door to the room, and the switch shall be a break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTDOWN.

A flow switch will be mounted in the exhaust duct connected to the exhaust fan for continuous ventilation of 1 CFM/ft^2 as minimum. When the air flow drops the set point, the flow switch will send alarm signals to both local alarm and SCADA (alarm is separate from a chlorine leak alarm and will not cause the chlorine scrubber to start).

The rooms will be heated by wall-mounted electric unit heaters equipped with integral thermostats with adjustable set point. The unit heaters will be constructed for washdown and corrosion resistance.

6.1.2 Liquid Chemical Storage and Feed Rooms

Like the chlorine rooms, the ventilation system for the liquid chemical storage and feed areas will include roof-mounted exhaust fans and associated exhaust ductwork. The exhaust fan will be sized for a continuous ventilation at the rate of 1 CFM/ ft^2 as minimum for the total floor area.

The outside air intakes will be through a heating-only outside air handling unit mounted on the rooftop. The outside air-handling unit is equipped with an electric heater and will discharge the outside air at the minimum rate of 1 CFM/ ft^2 into the space continuously. In the winter, the electric heater at the outside air handling unit will turn on to temper the cold outside air before discharging it into the space. The location of both the exhaust and inlet air openings will be designed to provide air movement across all portions of the floor or room to prevent the accumulation of vapors.

All exhaust fans, louver, damper, and associated ductwork will be constructed of FRP material for corrosion resistance.

A flow switch will be mounted in the exhaust duct connected to the exhaust fan and supply duct associated with the outside air handling unit. When the air flow drops below the set point, the flow switch will send alarm signals to both local alarm and SCADA.

A smoke detector will be mounted at the outside air supply duct and will send the smoke alarm to local and SCADA if the smoke is detected.

6.1.3 Electrical and PLC Room

The electrical room will be heated and air conditioned by a DX split system. The system will consist of an indoor wall-mounted ductless air handling unit, an outdoor heat pump mounted on the rooftop, refrigerant lines, and associated microprocessor-based control system. The system will be sized to handle the cooling and heating load with no redundancy.

A temperature switch will be installed inside the electrical room to monitor “HIGH TEMPERATURE” conditions that could result in electrical equipment shutdown or failure. The high temperature switch will send an alarm to local and SCADA when the indoor temperature exceeds the set point (95 Deg. F, adjustable).

6.1.4 Mechanical Room

The mechanical room will be ventilated through a rooftop exhaust fan and a wall-mounted louver with motorized damper for the outside air intake. The exhaust fan will be controlled by a manual on/off switch. The motorized damper at the louver will be interlocked with the exhaust fan. When the exhaust fan is on, the damper is open. When the exhaust fan is off, the damper is closed.

The mechanical room will be heated by wall-mounted electric unit heaters equipped with integral thermostat with adjustable set point. The unit heaters will be constructed for washdown and corrosion resistance.

6.2 High Service Pump Station

The indoor design criteria for the proposed HSPS rooms are summarized in **Table 6-3**.

Table 6-3. HSPS HVAC Design Criteria

Area	Summer		Winter		Notes
	Temp (°F)	Ventilation	Temp (°F)	Ventilation	
Pump Room	Max 10°F above ambient	Yes	55 ± 2	N/A	1
Electrical and PLC Room	80 ± 2	N/A	55 ± 2	N/A	2,3

Notes:

1. The space will be ventilated in the summer and heated in the winter.
2. The air-handling units will be provided with an air side economizer, which can utilize up to 100% outside air for "free cooling" during cool weather.
3. The space will be air-conditioned and heated year-round as needed.

6.2.1 Pump Room

The pump room will be ventilated to keep the room at a temperature no higher than 10°F above the ambient temperature in the summer. The ventilation system will include direct-drive roof-mounted exhaust fans, and louvers with two-position (open and closed) motorized dampers interlocked with the fans. The pump room will be heated by wall-mounted electric unit heaters equipped with integral thermostats with adjustable set point.

6.2.2 Electrical and PLC Room

The electrical room will be air conditioned by cooling-only direct expansion (DX) packaged air handling units. Each air handling unit will be sized for 60% of total cooling capacity assuming all variable frequency drives (VFDs) operate at full speed simultaneously.

The air handling units will be pad mounted on grade outside for access and maintenance. Each air handling unit will be equipped with dual variable speed supply fans, dual refrigerant circuits for staged cooling, MERV 11 filters, and air-side economizers. Due to the intense heat generated from VFDs, the VFD Room may require the cooling throughout the year including periods of low ambient temperature. The air-side economizer will reduce energy consumption by exhausting warm indoor air and pulling in the outside air when it is cool and dry for "free" cooling instead of running the compressors. The air-handling units will meet or exceed the minimum energy efficiency rating as required by codes.

7 Electrical

7.1 Existing Conditions

The electric utility delivering power to the site is Oncor. The existing WTP is currently fed by an overhead service that powers four pole mounted transformer banks. The first transformer bank feeds the presedimentation pumps station, the second transformer feeds the HSPS, the third transformer feeds the 0.5 MG clearwell and the fourth transformer feeds the remaining the plant facilities. There are two existing 500 kW diesel-driven generators on site. Based on preliminary equipment loads, these generators are not adequately sized to provide backup power to the proposed WTP.

7.2 Demolition

Electrical demolition will be limited to electrical circuits and distribution equipment associated with process equipment being demolished. Additionally, power feeders for the presedimentation pump station, reclaim basin, and 2 MG clearwell will be removed and rerouted to the proposed operations building electrical room.

7.3 Proposed Electrical Distribution System

The electrical design will meet the requirements of the 2011 Edition of the National Electrical Code (NEC) and the 2015 Edition of the International Energy Conservation Code (IECC) to comply with the City of Mineral Wells adopted codes.

The existing primary overhead lines that feed the existing transformer banks will be extended to an area near the proposed operations building for service. This will minimize voltage drop and eliminate the need to oversized conductors. The main electrical room will be located in the operations building or the HSPS and will distribute power to all the proposed facilities and existing facilities that will remain in service.

Electrical systems for indoor-wet (non-corrosive) and outdoor-wet areas will consist of rigid galvanized steel (RGS) conduits and fittings, NEMA 4 enclosures, vapor tight lighting fixtures, weather resistant receptacles and switches. Electrical systems for indoor-dry environments will consist of rigid galvanized conduits and fittings, and NEMA 12 enclosures. Electrical systems for indoor-wet (corrosive) areas will consist of PVC-RGS and fittings, non-metallic NEMA 4X enclosures, corrosion resistant vapor tight lighting fixtures, receptacles and switches.

Electrical systems in architecturally finished areas inside the operations building will consist of electrical metallic tubing raceways and fittings. Lights and receptacles will meet the requirements of the IECC. Dedicated receptacles will be provided in the break room and laboratory for ranges, microwave ovens, refrigerators, and lab equipment.

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8 Instrumentation and Controls

8.1 Overview

The proposed facility will have a PLC-based SCADA control system with a HMI software package to provide operator graphics, alarms, datalogging, trending, and other functions necessary for a complete system.

The SCADA system will be non-proprietary and be designed to use commercially available, off-the-shelf technology. The design specifications will limit any passwords required for software or programming by the vendor.

8.2 Existing System

The existing plant utilizes Siemens S7-1200 PLCs. These are industry standard PLCs but are scheduled to be obsolete in November 2026.

The local plant HMI software is InduSoft Web Studio used mainly as a graphical interface. The HMI runs on a single computer in the main office.

A combination of local fiber connections and GE MDS radio modems are used to connect to PLCs. The plant has issues with MDS radios and would like to explore alternatives such as fiber or cellular modems. Equipment and sites monitored include:

- High Service Pump Station
- Brazos Pump Station
- RAM Elevated Storage Tank (EST) and Pump Station (remote site)
- Welcome Mt. EST and Pump Station (remote)
- 23rd EST and Pump Station (remote site)

8.3 SCADA System Requirements

The proposed SCADA system will monitor and control both new and existing facilities. The SCADA system will also integrate data and control from the existing treatment plant, including the presedimentation pump station, distribution system, and reclaim basin. It will be designed with scalability in mind, allowing for future expansion to incorporate additional wells, pump stations, and other infrastructure.

The system will meet or exceed current cybersecurity standards and will support offsite monitoring and control capabilities.

Although remote access will be available, the plant will continue to operate as a fully staffed, 24/7 manned facility. Based on discussions with plant personnel, there are no plans to transition to remote or unmanned operations at this time.

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9 Fire Protection and Life Safety

This section summarizes the fire protection and life safety features and requirements for the proposed facilities.

9.1 Applicable Codes

- 2012 International Building Code (IBC)
- NFPA 1 – 2021 Fire Code
- NFPA 10 – 2018 Standard for Portable Fire Extinguishers
- NFPA 13 – 2019 Standard for the Installation of Sprinkler Systems
- NFPA 72 – 2019 National Fire Alarm and Signaling Code
- NFPA 101 – 2021 Life Safety Code

9.2 Use and Occupancy Classification

9.2.1 Chemical Building

Building use and occupancy is defined in accordance with IBC Chapter 3. The occupancy classification is as follows:

<u>Group H-2 High Hazard Occupancy (IBC Chapter 3)</u>

The High-Hazard Classification for the Chemical Building is due to the presence of Hazardous Materials in amounts exceeding the Maximum Allowable Quantity (MAQ) as defined by IBC, Tables 307.1(1) and 307.1(2). Hazardous Materials posing a physical hazard include Flammable Gases, Oxidizing Gases and Water Reactive Chemicals. Hazardous Materials posing a health hazard include Corrosive Gases, Corrosive Liquids and Toxic Gases. **Table 9-1** details the proposed hazardous materials, proposed quantities, and IBC Hazard Classification associated with the hazardous material.

Table 9-1. Summary of Hazardous Materials and IBC Classifications

Chemical	IBC Hazard Classification	MAQ	Stored Quantity
Coagulant (Chemfloc 3315)	Flammable Liquid, H-2 Corrosive Liquid Toxic Liquid	Exceeds the 120 gal limit for Flammable Liquid Exceeds the 500 gal limit for Corrosive Liquid and exceeds the 500 lb limit for Toxic Liquid	10,530 gal
Chlorine gas	Oxidizing Gas, H-3 Corrosive Gas Toxic Gas	Exceeds the 150 lbs liquid limit for Oxidizing Gas, Exceeds the 500 gal limit for Corrosive Gas and the 500 lb limit for Toxic Gas	14,000 lbs minimum storage
Liquid ammonium sulfate	None	N/A	3,800 gal
Sodium hydroxide (aqueous – 25%)	Water Reactive Class 1 Corrosive Liquid; H-4	N/A	15,300 gal
Polyphosphate	Corrosive Liquid Toxic Liquid	Maximum storage of 500 gallons	Quantities to be Determined
Sodium chlorite	Oxidizer, H-2 Corrosive Liquid Toxic Liquid	Maximum storage of 500 gallons	Quantities to be Determined

9.2.2 Operations Building

Building use and occupancy is defined in accordance with IBC Chapter 3. The occupancy classification will be Group B Occupancy (IBC Chapter 3).

9.3 Special Detailed Requirements Based on Use and Occupancy

9.3.1 Chemical Building

Hazardous Materials:

Ventilation: Ventilation shall be provided in accordance with IFC and IMC (IBC §414.3).

Explosion Control: Explosion deflagration venting shall be provided in accordance with IBC, Table 414.5.1 and IFC.

Emergency Power: Emergency power for ventilation, detection systems and alarm systems shall be provided in accordance with the IFC (IBC §414.5.3).

Spill Control, Drainage and Containment: Liquids hazardous materials shall be provided with a means to control spillage and to contain drain-off spillage and fire protection water, in accordance with the IFC (IBC §414.5.4).

Treatment systems shall be capable of diluting, adsorbing, absorbing, containing, neutralizing, burning or otherwise processing the contents of the largest single vessel of compressed gas. Where a total containment system is used, the system shall be designed to handle the maximum anticipated pressure of release to the system when it reaches equilibrium. (IFC §6004.2.2.7.1)

9.4 Type of Construction

9.4.1 Chemical and Operations Building

Construction types are defined by IBC Chapter 6. Type IIB Construction features the following fire rating (IBC, Table 601):

- Primary structural frame: 0-hour rating
- Exterior bearing walls: 0-hour rating
- Interior bearing walls: 0-hour rating
- Exterior non-bearing walls: 0-hour rating
- Interior non-bearing walls: 0-hour rating
- Floors and secondary members: 0-hour rating
- Roofs and secondary members: 0-hour rating

The fire resistance rating of the non-bearing walls and partitions must have a fire resistance rating in accordance with IBC 705.5. If the fire separation distance is at least 30 feet, a 0-hour fire-rated barrier can be provided.

The chemical building will require 1-hour fire walls for any control areas.

9.5 Fire Protection Systems

9.5.1 Chemical Building

Fire protection systems will be provided in accordance with IBC Chapter 9 and local amendments.

Automatic Sprinkler Systems:

- Group H High Hazard occupancies are required to be protected with an automatic sprinkler system (IBC Section 903).

Fire Flow and Fire Department Access:

- Minimum Fire Flow shall be 1,500 gpm at 20 psi. Average hydrant spacing within the facility shall be 500-ft. Dead-end fire apparatus access roads less than 500-ft shall have a minimum width of 20-ft. Access road greater than 150-ft and less than 500-ft shall be equipped with cul-de-sac having a minimum diameter of 96-ft or shall be provided with 120-ft hammerhead of 60-ft turnaround “Y”.

Portable Fire Extinguishers:

- Portable fire extinguishers are required in accordance with (IBC § 906.1) and must be installed in accordance with NFPA 10 (4-A:60-B:C minimum rated).

Fire Alarm and Detection Systems:

- A manual fire alarm system is required for monitoring the automatic sprinkler system.

Emergency Alarm Systems:

- An emergency alarm system for the detection and notification of an emergency condition is required for All Group H (High-Hazard) occupancies (IBC §908.1). A gas detection system must be provided in the chlorine rooms of the Chemical Building to detect the presence of chlorine gas. The system must be capable of monitoring the discharge from the gas treatment systems at or below one-half of the IDLH limit. The gas detection system design must initiate local alarms inside the building and outside the building and be monitored at a remote control location. The gas detection system must also automatically close the shut-off valve at the gas supply source.

9.5.2 Operations Building

Fire Flow and Fire Department Access:

- Minimum Fire Flow shall be 1,500 gpm at 20 psi. Average hydrant spacing within the facility shall be 500-ft. Dead-end fire apparatus access roads less than 500-ft shall have a minimum width of 20-ft. Access road greater than 150-ft and less than 500-ft shall be equipped with cul-de-sac having a minimum diameter of 96-ft or shall be provided with 120-ft hammerhead of 60-ft turnaround “Y”.

Portable Fire Extinguishers:

- Portable fire extinguishers are required in accordance with (IBC § 906.1) and must be installed in accordance with NFPA 10 (4-A:60-B:C minimum rated).

10 Construction Sequencing

The proposed WTP facilities can be constructed without significantly impacting the current WTP operations. Connections to the existing presedimentation pump station pipeline and distribution system will need to be coordinated and scheduled to avoid extended interruptions to the supply of finished water. Ideally, these connections will be made in the winter when demand is low. The raw water pipeline will connect to the existing pipeline when there is sufficient storage for the current WTP to go offline. The HSPS transmission pipeline will run east of the existing WTP to connect to the distribution system. This routing will significantly limit the impact to existing yard piping. Before sending water to the distribution system, the new WTP will go through a demonstration period to ensure processes are fully operational. During this time, treated water will be sent to the reclaim basin and recycled through the plant processes.

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11 Recommendations

HDR, PPCMWD No. 1, and the City met on May 19th, 2026 to discuss the PER and remaining design questions. Discussions and final recommendations are included below.

11.1 Operations Building

The recommended operations building layout is the condensed two-story configuration. This layout allows staff to overlook the treatment plant and filter facilities while maintaining a secure controls area on the second floor. Locating the control room and operational workspaces at an elevated level improves visibility across the site, allowing operators to more effectively monitor plant activities and facility conditions. The second-floor configuration also enhances security by limiting access to critical operational areas while providing clear sightlines to key treatment processes.

An updated operations building layout is shown in **Figure 11-1** and **11-2**.

11.2 Chemical Building

Based on the evaluation of operational, safety, and long-term risk considerations, sodium hypochlorite is the preferred disinfection alternative for the WTP. The workshop discussions focused on safety concerns with chlorine gas, with the City noting that their institutional knowledge on how to operate chlorine gas systems has been lost over the past 25 years. The City also noted that the risk of a chlorine gas accident occurring increases every year as the highway gains more traffic, new businesses open nearby, and residences move closer to the treatment plant.

Chlorine gas systems require specialized operator training, additional safety systems, and more stringent operational procedures. Given the declining industry familiarity with chlorine gas systems and the challenges associated with maintaining operator proficiency over the life of the facility, sodium hypochlorite provides a more manageable and sustainable solution.

11.3 Pretreatment Trains

The recommended number of pretreatment (rapid mixing/flocculation/sedimentation) trains is three, 4-MGD trains. This option allows the City to maintain 8 MGD of treatment capacity when one train is down for maintenance.

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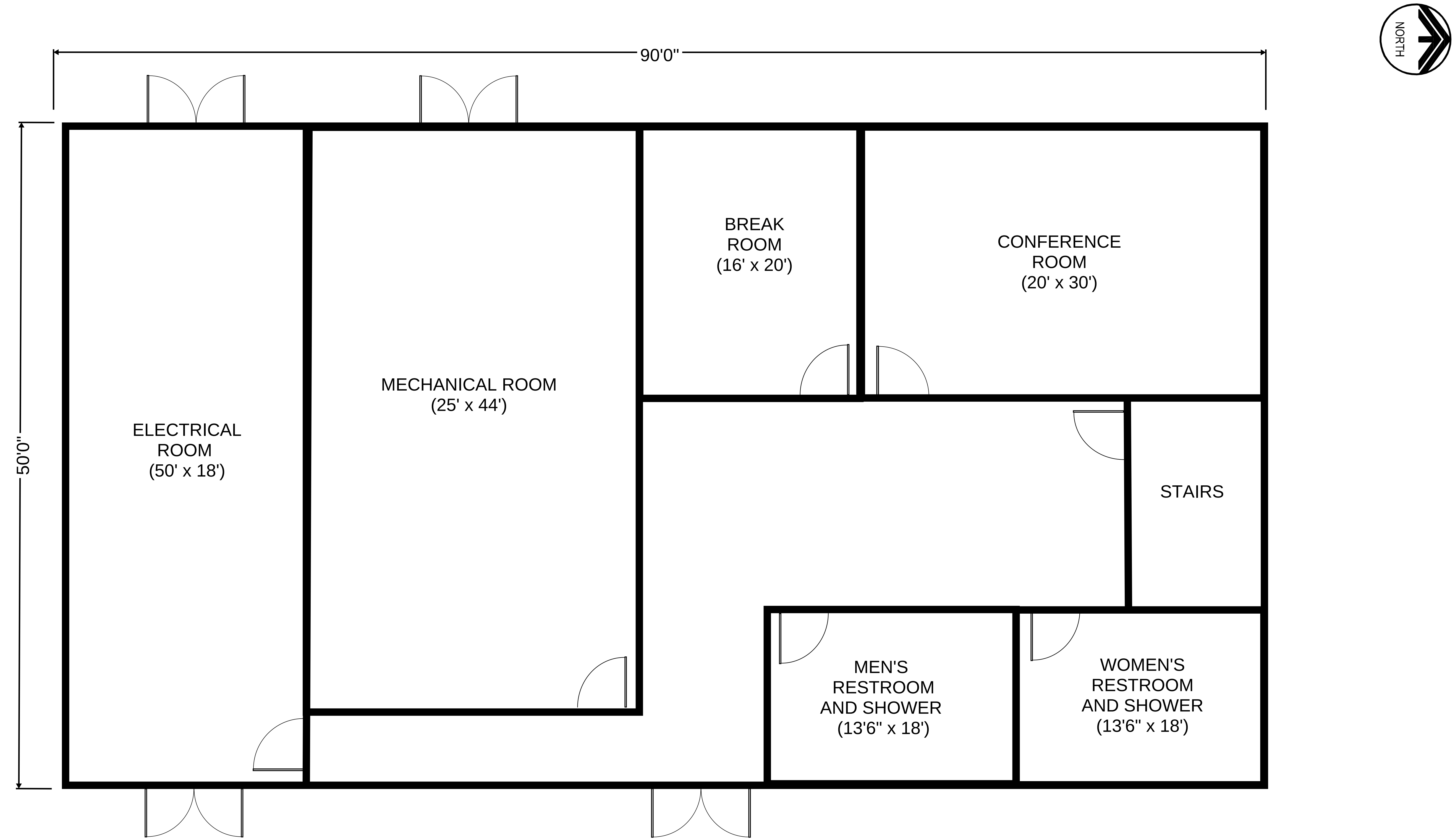

Texas P.E. Firm Registration No. F-754

HILLTOP WATER TREATMENT PLANT OPERATIONS BUILDING TWO STORY (CONDENSED) FIRST FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE 11-1

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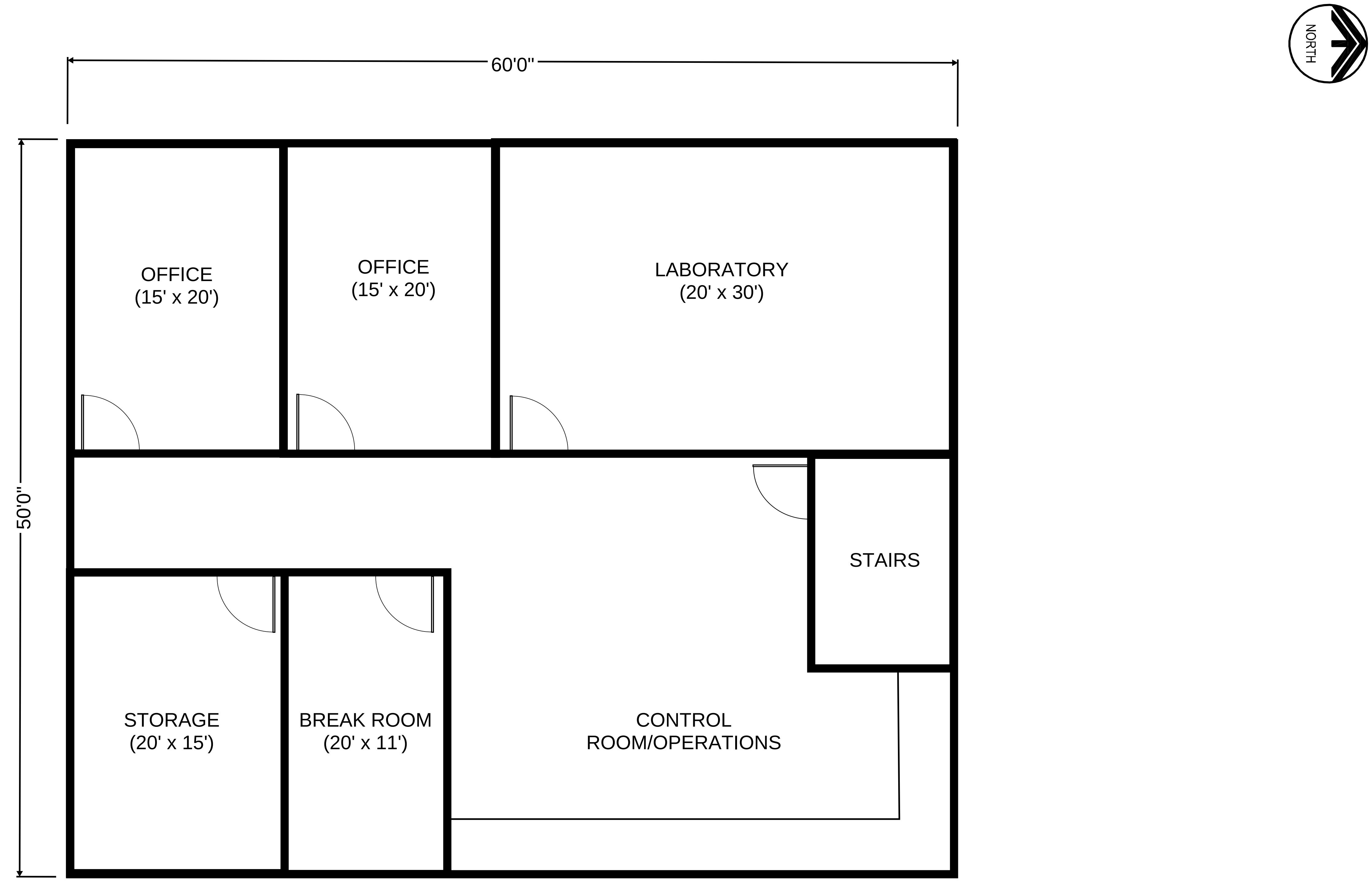

Texas P.E. Firm
Registration No. F-754

HILLTOP WATER TREATMENT PLANT
OPERATIONS BUILDING
TWO STORY (CONDENSED) SECOND FLOOR

PALO PINTO COUNTY MUNICIPAL WATER DISTRICT
HILLTOP WATER TREAMENT PLANT IMPROVEMENTS PROJECT

FIGURE
11-2

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12 Opinion of Probable Construction Costs

The Opinion of Probable Construction Costs (OPCCs) presented below are Association for the Advancement of Cost Engineer (AACE) 18R-97 Class V estimates, with an expected accuracy range of -35% to +60%. The OPCC provided below was developed in August 2025 and will have to be escalated prior to construction. The cost is based on information available to HDR; however, since HDR has no control over the cost of labor, materials, equipment, or services furnished by others, or over the contractor's methods of determining prices, or over competitive bidding or market conditions, HDR does not guarantee that proposals, bids or actual project or construction cost will not vary from OPCCs or cost estimates prepared by HDR.

12.1 Operations Building

Three layouts of the operations building were discussed in **Section 5.2**. The OPCC for each of these alternatives is shown in **Table 12-1**. The building costs assume a unit cost of $600 per square foot of floor area. The two-story building with a reduced footprint second floor (Two Story – Condensed) is the recommended alternative and is included in the overall OPCC (**Table 12-4**).

Table 12-1. Operations Building Alternatives Cost Comparison

Alternative	Cost
Operations Building - Single Story (6,000 SF)	$3,600,000
Operations Building - Two Story – Condensed (7,400 SF)	$4,400,000
Operations Building - Two Story – Expanded (8,000 SF)[1]	$4,900,000

[1] Total cost includes the unit cost of $600/SF of floor area, plus an estimated $50,000 for an elevator.

12.2 Chemical Building

Two chemical building layout alternatives were presented in **Section 2.2** based on continuing to use chlorine gas for disinfection or convert to sodium hypochlorite. The chemical building OPCCs are shown in **Table 12-2**. The chemical building with chlorine gas is included in the overall OPCC, shown in **Table 12-4**.

Table 12-2. Chemical Building Alternatives Cost Comparison

Alternative	Cost
Chemical Building with Chlorine Gas[1]	$1,800,000
Chemical Building with Sodium Hypochlorite	$1,200,000

[1] Total cost includes chlorine scrubber estimated to cost $500,000.

12.3 Existing Clearwell Demolition

Identified as a necessary component of this project and shown in Figure 2-3 is the partial demolition and abandonment of the existing 0.5-MG and 1.0-MG clearwells. These clearwells have flat roofs that do not meet current TCEQ regulatory requirements. Modifications required to bring the structures into compliance would be costly, and replacement of the roofs is not considered a practical or cost-effective solution.

The unused clearwells would present a potential safety hazard if left in place and should be properly abandoned. Conceptually, abandonment would include removal of the existing roof structures and demolition of the walls to approximately 5 feet below finished grade. Openings would be created in the floor slab to allow drainage, and the remaining structure would be backfilled and graded to match surrounding site conditions.

The City has indicated that this work may either be self-performed or completed under a separate contract and is therefore not currently included in the scope of this project. Estimated costs for the abandonment work are provided in **Table 12-3**. These estimates assume that backfill material would be imported from an off-site source. During design, a detailed cut-and-fill evaluation will be completed. If sufficient excess fill material is available on site, incorporation of this work into the project may be re-evaluated.

Table 12-3. Clearwell Demolition Estimated Costs

Component	Cost
Demolition of 0.5 MG Clearwell	$1,500,000
Demolition of 1 MG Clearwell	$3,100,000

12.4 Project OPCC

The overall project OPCC is shown in **Table 12-4**.

Table 12-2. Hilltop WTP Expansion OPCC

Item	Component	Quantity	Unit	Unit Cost	Total
1	Raw Water Piping	660	LF	$1,300	$900,000
2	Operations Building - Two Story Condensed	7,400	SF	$600	$4,400,000
3	Chemical Building (Sodium Hypochlorite)	1	LS	$1,200,000	$1,200,000
4	Flocculation/ Sedimentation Basins	3	EA	$1,902,016	$5,700,000
5	Liquid Chemical Feed Systems	10	EA	$250,000	$2,500,000
6	Rapid Mix Tank	2	EA	$50,000	$100,000
7	Splitter Box	1	LS	$250,000	$300,000
8	Gravity Filters	1	LS	$4,167,901	$4,200,000
9	Residuals Pumps and Force Main	1	LS	$500,000	$500,000
10	Clearwell, 2 MG	1	LS	$3,800,000	$3,800,000
11	High Service Pump Building	1,700	SF	$400	$700,000
12	High Service Pumps	5	EA	$293,800	$1,500,000
13	Septic System	1	LS	$50,000	$100,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$25,900,000**
B	Sitework + Soil Conditions			15%	$3,900,000
C	Site Piping, Valves, Manholes			15%	$3,900,000
D	Interior Process Piping & Valves			20%	$5,200,000
E	Mechanical			5%	$1,300,000
F	Electrical			20%	$5,200,000
G	Instrumentation and Controls			8%	$2,100,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$47,500,000**
I	Contingency			30%	$14,300,000
J	**Construction Subtotal 3 = H+I**				**$61,800,000**
K	General Conditions, Mobilization, Demobilization			10%	$6,200,000
L	**Construction Subtotal 4 = J+K**				**$68,000,000**
M	General Contractor Overhead + Profit			10%	$10,200,000
N	**Construction Subtotal 5 = L+M**				**$78,200,000**
O	Bonds + Insurance			2%	$1,600,000
P	**Construction Price Today = N+O**				**$79,800,000**
Q	Projection to Mid-point of Construction (2029)			5%/year	$97,000,000
R	Engineering, Legal, Fiscal, Administration			20%	$16,000,000
S	**TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R**				**$113,000,000**
T	CMAR Preconstruction Fee (3-5%)				**$4,850,000**
	TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = S+T				**$117,900,000**
Total Project OPCC Cost per gallon/day at 12 MGD Firm Capacity					**$9.83**

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Appendix A. Technical Memorandum 1: Demand Projections and Finished Water Quality Goals

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Technical Memorandum 1: Demand Projections and Finished Water Quality Goals

Hilltop Water Treatment Plant Improvements

Palo Pinto County Municipal Water District No. 1

City of Mineral Wells
May 14, 2025

FINAL

HDR Engineering, Inc.
Texas Registered Firm No. F-754

Contents

Tables

Figures

Appendices

1 Background and Introduction

The Hilltop Water Treatment Plant (WTP) is a surface water plant located south of the City of Mineral Wells, Texas. The Hilltop WTP is owned by Palo Pinto County Municipal District No. 1 (PPCMWD No. 1) and operated by the City of Mineral Wells (City). The primary source water for the Hilltop WTP is Lake Palo Pinto. Additional water from the Brazos River, which is brackish, is blended to extend the water supply. PPCMWD No. 1 is currently moving forward with a water supply project, Turkey Peak Reservoir, to improve storage and resiliency during periods of drought. Treated water from the Hilltop WTP is the sole drinking water source for the City and seven (7) wholesale water suppliers in Palo Pinto and Parker Counties.

The Hilltop WTP was constructed in 1962 and has a design rated production capacity of 12.0 million gallons per day (MGD). Modifications and replacements of various components have been made to the treatment plant over the years. The WTP consists of the following facilities and treatment processes: presedimentation basin (375 million gallon reservoir), presedimentation pump station, clarification, filtration, clearwells, high service pumping, and wastewater recycling system.

2 Project Description and Objectives

The objective of the Hilltop WTP Improvements project is to develop a strategic plan for improvements to the water treatment facilities. Alternative approaches considered will be upgrading existing facilities, constructing new treatment facilities, or a combination of both to provide:

- Reliable and resilient treated drinking water production.
- Continued compliance with drinking water regulations.
- Safety for operating staff.

This TM No.1 Demand Projections and Finished Water Quality Goals evaluates available population and demand data to develop a service population and demand projection through the year 2060. The objective of TM 1 is to define the finished water demand forecast and water quality goals for the evaluation of the treatment alternatives.

2.1 Key Terms

In the assessment of the water system needs, the key terms that need to be considered include:

- **Average Day Demand (ADD)**. The ADD is the total water used during the year divided by 365 days per year. The ADD is used primarily to determine whether the water system can deliver the total amount of water needed during the year. It is also used as the common basis for developing peak demand projections. The ADD is the basis for estimating the maximum day and maximum hour demands and will be used for developing financial assessments of the system.

- **Special Utility District (SUD)**. SUDs provide water, wastewater, and firefighting services to their customers. They differ from other water districts in that they are unable to levy taxes.
- **Peak Demand or Maximum Day Demand (MDD)**. The peak demand or MDD is the maximum recorded daily demand, representing the single highest system demand for a given day. The water supply and treatment plant must be capable of supplying, treating, and transmitting sufficient water to meet the MDD.
- **Peaking Factor (PF)**. The PF is the ratio between the maximum day demand and the average day demand.
- **Maximum Contaminant Levels (MCL)**. MCLs are the maximum level of contaminant allowed in drinking water. MCLs are enforceable standards set by the United States Environmental Protection Agency (EPA).
- **Maximum Contaminant Level Goal (MCLG)**. A MCLG is the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, allowing an adequate margin of safety.
- **Milligram per Liter (mg/L)**. A mg/L is a standard unit of measurement to determine the amount of a substance present in every liter of water.
- **Monthly Operating Reports (MOR)**. MORs are a monthly report generated by public water utilities. They are federally mandated and submitted to the state. Surface water treatment plants must submit monitoring data for turbidity, pH, temperature, and disinfectant residual.
- **Secondary Maximum Contaminant Levels (SMCL)**. SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor.
- **Texas Commission on Environmental Quality (TCEQ)**. TCEQ is the state environmental agency responsible for enforcing regulations on air, water, and waste.
- **Texas Drinking Water Watch (DWW)**. The Texas DWW is a database of information about public water systems. This information includes sample results for various contaminants, population served, average daily demand and maximum daily demand, total storage volumes, and service pump capacity.
- **Water User Group (WUG)**. A WUG is an identified user or group of users for which water demands and existing water supplies have been identified and analyzed and plans developed to meet water needs.

3 Population and Demand Projections

The population and growth rate projections were derived from TM No. 1: Demand Forecast and Firm Capacity of the Brazos Pump Station (BPS) Preliminary Engineering Report (PER), dated March 14, 2025. The following sections present an updated comparison of these projections, verifying and refining the original estimates based on water demand data collected since 2023, as well as historical Average Day Demand (ADD) data from the Hilltop WTP Monthly Operating Reports (MORs) from 2016 through

2024. Additionally, the projections have been revised to account for anticipated increases in wholesale contract connections resulting from the Turkey Peak Reservoir, which is expected to come online in 2028 and will boost the source water supply by 83%.

3.1 Population Projections

The development of the population projections and associated growth rates to the year 2060 were the basis for the estimated customer connections to be supplied by the Hilltop WTP.

In accordance with Texas Administrative Code (TAC), Title 30, Rule 290.45, surface water supplies must meet the following TCEQ requirements:

- Raw water pump capacity of 0.6 GPM per connection with the largest pump out of service.
- Treatment plant capacity of 0.6 GPM per connection under normal rated design flow.
- Transfer pumps (where applicable) with a capacity of 0.6 GPM per connection with the largest pump out of service.
- Covered clearwell storage capacity at the treatment plant of 50 gallons per connection or, for systems serving more than 250 connections, 5.0% of daily plant capacity.
- Total storage capacity of 200 gallons per connection.
- Elevated storage capacity of 100 gallons per connection, or a pressure tank capacity of 20 gallons per connection.
- Emergency power for systems which serve more than 250 connections and do not meet the elevated storage requirement.

Service populations and projections for the Hilltop WTP are based on existing public data sources including the Texas Water Development Board (TWDB) 2026 Regional Water Plan and Texas Drinking Water Watch (DWW) data from 2024. Estimates of population growth rates have been derived from public data sources which have included development plans prepared independently by municipalities, existing census data, and historical growth trends.

3.1.1 Existing Estimated Service Population

The existing estimated service population for the Hilltop WTP, from the 2024 Texas Drinking Water Watch (DWW) data, is primarily made up of the City of Mineral Wells. In addition to the City of Mineral Wells, the Hilltop WTP provides water to seven (7) water user groups (WUGs) through wholesale contracts. The population served and number of connections for the City and WUGs are shown in **Table 3-1**.

Table 3-1. Existing Service Population

Water User Group	Population Served	Number of Connections
City of Mineral Wells*	15,090	7,396
Palo Pinto WSC*	573	395
Parker County SUD	6,300	1,927
City of Graford	631	347
Millsap WSC	1,503	501
North Rural WSC	3,720	1,240
Santo SUD	3,090	1,030
Sturdivant Progress WSC	3,111	1,037
Total	**34,018**	**13,590**

*Includes residential population only

3.1.2 Updated Population Projections

As mentioned above, projections developed for the BPS PER were based on existing public data sources of population and growth predictions. Additionally, the Turkey Peak Reservoir will significantly impact the number of connections for WUGs supplied by Hilltop WTP, particularly North Rural WSC, Santo SUD, and Sturdivant Progress WSC. The number of connections for these three WUGs were estimated to increase by 70% in 2029 as a result of the increased water supply from Turkey Peak. The number of connections and population were considered to grow at equivalent rates for the purpose of the projections.

The final HDR-calculated population projections are shown below.

As shown in **Table 3-2** and **Figure 3-1**, the anticipated service population for Palo Pinto County MWD No.1 for the year 2060 will be approximately 72,643 persons. This represents a population growth of approximately 113% over the next 35 years.

From 2023 to 2028, it is expected that the population will grow at average annual growth rates ranging from 1.84% to 1.94% per year. In 2029, the total population growth rate is estimated to be 22.1% due to the increased water supply from Turkey Peak. From 2030 to 2060, it is expected that the growth rate will decrease somewhat to an average of 1.47% per year resulting in estimated service populations of 53,655 persons in 2040 and 72,643 persons in 2060.

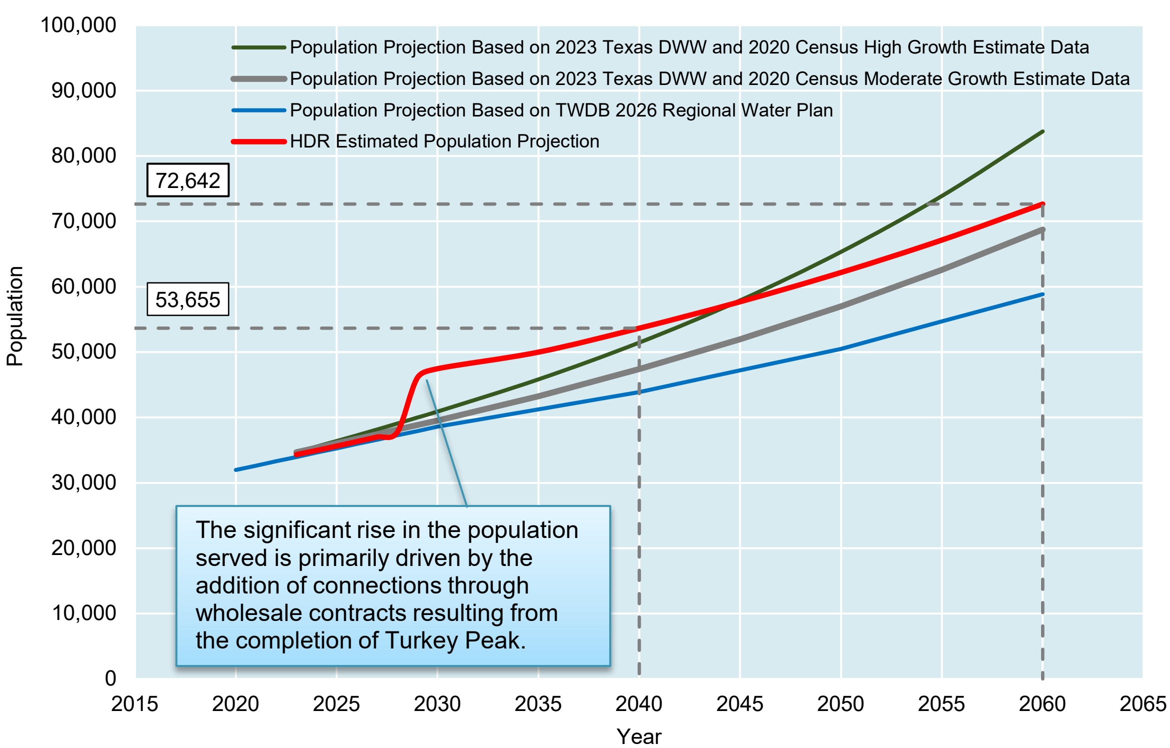
Table 3-2. Service Population Projections

Year	Population Projection Based on 2023 Texas DWW and 2020 Census High Growth Estimate	Population Projection Based on 2023 Texas DWW and 2020 Census Moderate Growth Estimate	Population Projection Based on TWDB 2026 Regional Water Plan	HDR Estimated Population Projection	Population Reported by Texas DWW
2023	34,678	34,678	33,949	34,313	34,678
2024	35,539	35,368	34,609	34,944	34,018
2025	36,396	36,047	35,269	35,615	

Table 3-2. Service Population Projections (cont.)

Year	Population Projection Based on 2023 Texas DWW and 2020 Census High Growth Estimate	Population Projection Based on 2023 Texas DWW and 2020 Census Moderate Growth Estimate	Population Projection Based on TWDB 2026 Regional Water Plan	HDR Estimated Population Projection	Population Reported by Texas DWW
2026	37,265	36,731	35,929	36,300	
2027	38,156	37,427	36,590	37,000	
2028	39,063	38,129	37,250	37,715	
2029	39,989	38,840	37,910	46,066	
2030	40,899	39,535	38,570	47,458	
2035	45,824	43,263	41,234	49,988	
2040	51,455	47,382	43,898	53,655	
2045	57,909	51,935	47,202	57,702	
2050	65,327	56,974	50,506	62,176	
2055	73,877	62,555	54,678	67,135	
2060	83,758	68,741	58,850	72,643	

Figure 3-1. Service Population Projections



3.2 Demand Projections

3.2.1 Methodology

The development of demand projections in the BPS PER was based on maximum day demand forecasts using a combination of public and private data sources. Data sources included:

- TWDB 2021 Water Audit
- 2020 Census
- 2023 Texas DWW average day flows x 2.5 peaking factor
- TWDB 2026 Regional Water Plan
- Historical average day flows
- 2023 Texas record of connections
- TCEQ Minimum System Capacity Requirements

The Turkey Peak Reservoir will significantly impact water demand for WUGs supplied by Hilltop WTP, particularly North Rural WSC, Santo SUD, and Sturdivant Progress WSC. The number of connections for these three WUGs was estimated to increase by 70% in 2029 as a result of the increased water supply from Turkey Peak.

Ultimately, the forecasted population growth rates were used to predict the number of connections for each water user group (WUG). The Parker County SUD demand was maintained at 0.4 MGD throughout the projections based on their contracted water allocation. The TCEQ minimum system capacity requirement of 0.6 GPM per service connection was applied to estimate maximum daily demand (MDD) for each WUG.

Note that the Brazos Pump Station pumps directly into the Hilltop Reservoir, the raw water supply for the WTP is provided through the plant presedimentation pumps. The BPS is therefore exempt from TCEQ's requirement for raw water pump station firm capacities to meet 0.6 GPM per distribution system connection. Furthermore, the Hilltop Reservoir provides an abundant raw water source for the Hilltop WTP to draw from to meet peak demands. For this reason, the demand projections used to determine the required firm pumping capacity of the BPS can be reduced.

3.2.2 Modified ACRs

In accordance with Texas Administrative Code, Title 30, Rule 290.45, Minimum Water System Capacity Requirements, each surface water supply must provide a raw water firm pump capacity, treatment plant capacity, and transfer pump capacity (where applicable) of 0.6 GPM per connection. However, alternative capacity requirements (ACRs) based on the maximum daily demand may be approved in lieu of minimum system capacity requirements. TCEQ has approved ACRs that reduce the 0.6 GPM per connection capacity requirement for the City of Mineral Wells and four (4) wholesale customers as shown in **Table 3-3**.

Table 3-3. Alternative Capacity Requirements by WUG

Water User Group	ACR (GPM per connection)
City of Mineral Wells	0.55
Palo Pinto WSC	0.41
Parker County SUD	0.6
City of Graford	0.22
Millsap WSC	0.25
North Rural WSC	0.6
Santo SUD	0.35
Sturdivant Progress WSC	0.6

Although ACRs were used to calculate demand projections in the BPS PER, ACRs are approved to match current demands, so they may not be relevant in future scenarios. For this reason, the TCEQ requirement of 0.6 GPM per connection was used instead of ACRs to capture growth opportunities for each WUG.

3.2.3 Demand Projection Summary

A breakdown of the forecasted number of connections and forecasted demands for each WUG is included in **Appendix A**. A summary of MDD projections for each WUG is shown in **Table 3-4**. Demands were estimated using population projections shown in **Table 3-2** and the TCEQ minimum requirement of 0.6 GPM per service connection. Forecasted growth indicates that the maximum daily demand (MDD) will increase by approximately 74% from 2025 to 2060, reaching 19.4 MGD. Based on current demand, existing plant capacity, and forecasted demand, it is recommended to increase the pre-sedimentation firm pump capacity and treatment plant capacity to 16 MGD by 2030.

Table 3-4. Projected Water Demand

Water User Group	Forecasted Maximum Day Water Demand (MGD)				
	2025	2030	2040	2050	2060
City of Mineral Wells	6.39	7.06	7.70	8.82	10.09
Palo Pinto WSC	0.27	0.29	0.31	0.34	0.37
Parker County SUD	0.40	0.40	0.40	0.40	0.40
City of Graford	0.18	0.19	0.21	0.24	0.26
Millsap WSC	0.45	0.53	0.71	0.97	1.31
North Rural WSC	1.00	1.88	2.11	2.37	2.67
Santo SUD	0.90	1.65	1.84	2.05	2.28
Sturdivant Progress WSC	1.09	1.93	1.97	2.01	2.05
Total Demand	**10.69**	**13.93**	**15.26**	**17.19**	**19.43**

In the future, new Parker County SUD leadership may want to utilize the City's water supply. Using the forecasted growth rates shown in **Appendix A**, Parker County SUD forecasted demands would increase total demands as shown in **Table 3-5**. Parker County SUD Forecasted Demands However, it is noted that Parker County SUD forecasted demands were not utilized in the HDR recommendations based on input from the City of Mineral Wells.

Table 3-5. Parker County SUD Forecasted Demands

Water User Group	Forecasted Maximum Day Water Demand (MGD)				
	2025	2030	2040	2050	2060
Parker County SUD	2.10	2.44	3.31	4.49	6.09
Total Demand	12.80	16.36	18.57	21.68	25.53

3.2.4 Comparative Evaluation of Forecasted Demand

As a litmus test of the forecasted demand shown in **Table 3-4**, a comparative evaluation of the demand projections was completed based on:

1. Per capita demands, and
2. Peaking factors

Forecasted MDDs (**Table 3-4**) were converted to ADDs using historical peaking factors of 1.54 (2016-2024) and 2.0 (2023-2024). HDR-projected population growth (**Table 3-2**) and forecasted ADDs were used to predict gallons per-capita per day (GPCD), as shown in **Table 3-7**.

3.2.4.1 Evaluation Based on Per-capita Demands

Texas DWW data, in addition to population data, provides average daily demands (ADD) for each user. The estimated GPCD were calculated with the DWW data for 2024 and are shown in **Table 3-6**. Only the residential populations were included in the values of population served for the City of Mineral Wells and Palo Pinto WSC in **Table 3-6**.

The City of Mineral Wells GPCD of 102 is representative of the total Hilltop WTP per-capita demand. Based on MOR data from the Hilltop WTP, the ADD in 2024 was 2.8 MGD. Using the total population of 34,018, the per-capita demand was determined to be 82 GPCD in 2024. Per capita demands in the United States typically average 100 – 200 GPCD but water uses such as irrigation, industry, or livestock, impact each water supply system differently. The per capita demands are lower than expected, which may be due to alternative water sources and primarily domestic water usage.

Table 3-6. GPCD by WUG Derived from DWW Data

Water User Group	Population Served	Per-capita Demand (GPCD)
City of Mineral Wells*	32,068	102
Palo Pinto WSC*	1,073	65
Parker County SUD	6,300	90
City of Graford	631	81
Millsap WSC	1,503	56
North Rural WSC	3,720	60

Table 3-6. GPCD by WUG Derived from DWW Data (cont.)

Water User Group	Population Served	Per-capita Demand (GPCD)
Santo SUD	3,090	72
Sturdivant Progress WSC	3,111	50

* Includes residential and wholesale populations for per capita demand, ADD data provided in the DWW does not divide the ADD based on residential and wholesale populations.

The projected populations and demand forecasts are more conservative than historical data from the MORs. In 2024, the Hilltop WTP GPCD was 82. The forecasted GPCDs are 1.6 to 2.3 times higher than the 2024 GPCD, allowing for potential changes in future water uses.

Table 3-7. Forecasted GPCDs

Year	Forecasted GPCD using 1.54 Peaking Factor	Forecasted GPCD using 2.0 Peaking Factor
2025	195.0	150.1
2026	194.5	149.8
2027	194.0	149.4
2028	193.5	149.0
2029	191.1	147.2
2030	190.6	146.7
2035	187.1	144.0
2040	184.7	142.2
2045	182.2	140.3
2050	179.6	138.3
2055	176.7	136.1
2060	173.7	133.8

3.2.4.2 Evaluation Based on Peaking Factors

Surface water monthly operating reports (MORs) provided by the City were used to develop historical peaking factors using ADD and MDD from 2016 through 2024. Historical peaking factors calculated using the MORs are shown in **Table 3-8**. The average peaking factor from 2016 – 2024 is 1.54 and the average peaking factor from 2023 – 2024 was 2.0.

Table 3-9 shows various sources of forecasted MDDs derived from the BPS TM No.1 Demand Forecast and Firm Capacity (March 2025). The BPS TM No.1 applied a peaking factor of 2.5 to forecast MDDs, the average historical peaking factors calculated with the MOR data were also applied to the forecasted ADD from multiple data sources and are shown in **Table 3-9**.

Table 3-8. Historical Peaking Factors

Year	Peaking Factor Based on MORs Finished Water Pumping
2016	1.50
2017	1.38
2018	1.45
2019	1.13
2020	1.42
2021	1.92
2022	1.74
2023	1.75
2024	2.24

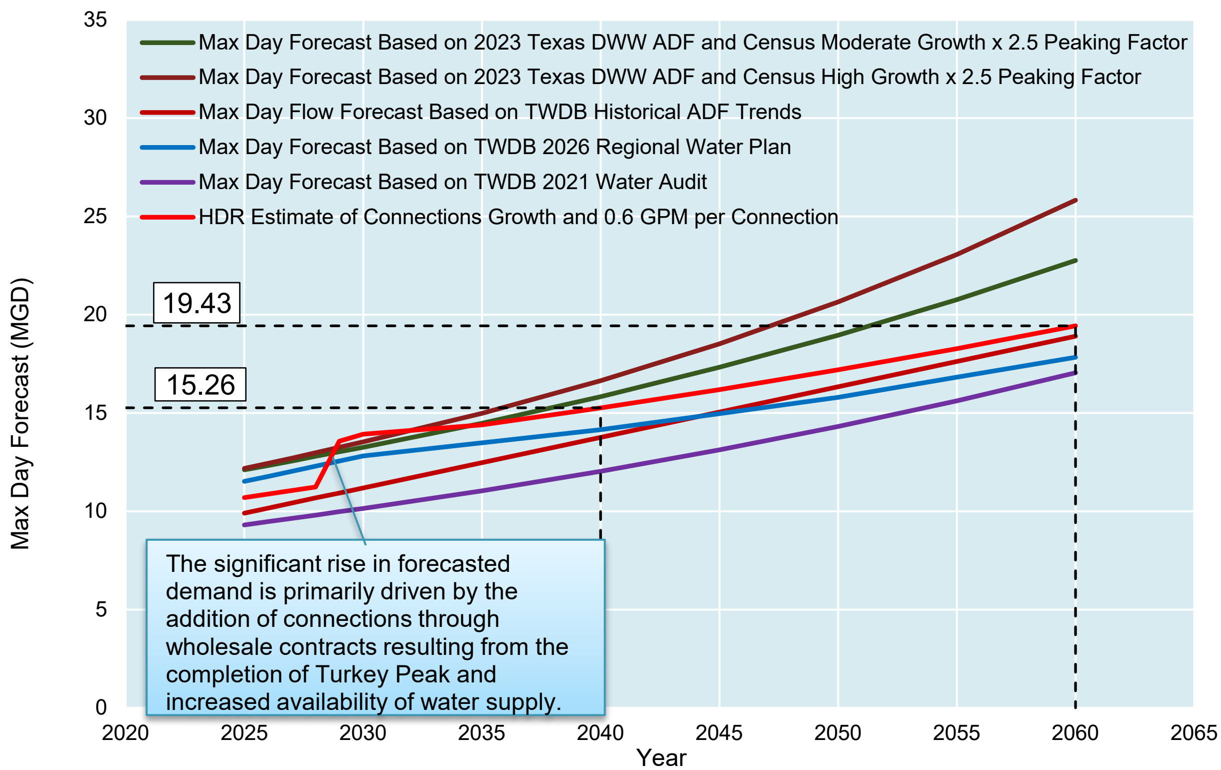
Table 3-9. Demand Forecast Comparison with Average Historical Peaking Factor

Source	Year	Forecasted MDD: ADD x 2.5 (MGD)	Forecasted MDD: ADD x 2.0 (MGD)	Forecasted MDD: ADD x 1.54 (MGD)
TWDB 2021 Water Audit and 2020 Census Moderate Growth	2025	9.3	7.44	5.73
	2040	12.03	9.62	7.41
	2060	17.04	13.63	10.5
2023 Texas DWW ADF and 2020 Census Moderate Growth	2025	12.11	9.69	7.46
	2040	15.83	12.66	9.75
	2060	22.76	18.20	14.0
TWDB 2026 Regional Water Plan	2020	10.23	8.18	6.30
	2040	14.15	11.32	8.72
	2060	17.83	14.26	10.98
2023 Texas DWW ADF and 2020 Census High Growth	2025	12.44	9.74	7.50
	2040	16.64	13.31	10.25
	2060	25.83	20.66	15.91
TWDB Recorded Historical ADF and Growth Trendline	2025	9.9	7.92	6.10
	2040	13.76	11.00	8.47
	2060	18.90	15.12	11.64

The MDD projections developed using the TCEQ minimum system capacity requirement of 15.3 MGD in 2040 and 19.4 MGD in 2060 are on the high end of the forecasted MDDs developed through the various sources as shown in **Table 3-9** and **Figure 3-2**. Maximum Day Demand Projections. Upon initial review of **Figure 3-1**, the comparison of population projection data may suggest that the HDR population projections, and consequently the projected demand, are significantly higher than other projections for the next 2 decades. However, the alternative forecast sources did not account for the additional water supply and growth opportunities available from the construction of Turkey Peak Reservoir.

Additionally, when comparing per capita demands and peaking factors, the HDR demand projections appear reasonable — neither too low nor excessively high.

Figure 3-2. Maximum Day Demand Projections



4 Water Quality

4.1 Water Treatment Regulatory Requirements

4.1.1 Primary Drinking Water Standards

The National Primary Drinking Water Regulations (NPDWR) are from the Code of Federal Regulations 40, Part 141, and are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water. Primary drinking water standards are established for the following:

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals
- Organic Chemicals

- Radionuclides

The primary contaminants that are anticipated to be of greatest concern for the PPCMWD No. 1 are summarized in **Table 4-1**.

Table 4-1. Primary Contaminants of Interest [1]

Contaminant	MCL, mg/L unless noted otherwise	Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term)	Sources of Contaminant in Drinking Water
Cryptosporidium	2-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Giardia	3-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Viruses	4-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Total Coliforms	≤5% of monthly Total Coliform samples can be positive in a month	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.
Total Trihalomethanes (Disinfection Byproduct)	0.080	Liver, kidney, or central nervous system problems; increased risk of cancer	Reaction with chlorine to form byproducts of drinking water disinfection
Haloacetic Acids (Disinfection Byproduct)	0.06	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	1.0	Anemia; infants and young children: nervous system effects	Byproduct of chlorine dioxide disinfection
Total Organic Carbon (TOC)	Varies - specific TOC removal requirements (ranging from 15 – 50 percent) determined based on treatment process, and source water TOC and alkalinity	Disinfection byproduct precursor	Decomposition of plant and animal residues
Turbidity	Individual Filter Effluent ≤1.0 NTU ≤0.5 NTU at four hours after backwash Combined Filter Effluent <1.0 for 100 percent of 4-hr observations ≤0.3 NTU in 95 percent pf samples each month	Higher turbidity levels are often associated with higher levels of disease-causing microorganisms which can cause nausea, cramps, diarrhea, and headaches.	Soil runoff
Total Chlorine Residual, as Cl_2 (Disinfectant)	≤ 4.0 ≥0.5	Eye/nose irritation, stomach discomfort	Water additive used to control microbes

Table 4-1. Primary Contaminants of Interest [1] (cont.)

Contaminant	MCL, mg/L unless noted otherwise	Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term)	Sources of Contaminant in Drinking Water
Copper	Action Level 1.3	Short term: Gastrointestinal distress Long term: Liver or kidney damage	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride	4.0	Bone disease, mottled teeth in children	Water additive which promotes strong teeth, erosion of natural deposits, discharge from factories
Lead[2]	Action Level 0.010	Infants and children: Delays in development, learning difficulties Adults: Kidney problems, high blood pressure	Corrosion of household plumbing systems, erosion of natural deposits
PFAS	Hazard Index of less than 1(unitless)[3] PFOA = 4 ng/L PFOS = 4 ng/L HFPO-DA = 10 ng/L PFHxS = 10 ng/L PFNA = 10 ng/L	Increased health risks include liver, immune, and thyroid effects. Additionally, developmental and thyroid effects following repeated exposure during pregnancy and/or childhood	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities.
Nitrite	1	Shortness of breath and death in infants	Runoff from fertilizer use, erosion of natural deposits, nitrification of ammonia in water.
Nitrate + Nitrite	10.0	Shortness of breath and death in infants	Runoff from fertilizer use, erosion of natural deposits, nitrification of ammonia in water.
Organic chemicals	Varies per chemical	Varies per chemical	Runoff from herbicide used on row crops; discharge from drug, chemical, and petroleum factories; leaching from linings, piping, gas storage tanks, and landfills

Notes:

(1) EPA.gov National Primary Drinking Water Standards https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

(2) Changes to the Lead and Copper Rule are pending implementation.

(3) To calculate the Hazard Index, a ratio is developed for each PFAS by dividing the measured level of the PFAS in drinking water by the level below which adverse health effects are not likely to occur (i.e., the Health Based Water Concentration).

4.1.2 Secondary Drinking Water Standards

EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants. EPA does not enforce these "secondary maximum contaminant levels" (SMCLs). Secondary standards are set to give public water systems guidance on removing these chemicals to levels that are below what most people will find to be noticeable. These contaminants are not considered to present a risk to human health at the SMCL.

There are a wide variety of issues related to secondary contaminants. These issues can be grouped into three categories:

- Aesthetic Effects — undesirable tastes or odors;
- Cosmetic Effects — effects which do not damage the body but are still undesirable;
- Technical Effects — damage to water equipment or reduced effectiveness of treatment for other contaminants.

The TCEQ has established SMCLs which differ slightly from the EPA's SMCLs. All public water systems in Texas are required to comply with the SMCLs established by TCEQ as stated in Title 30, Rule 290.105 of the Texas Administrative Code. The secondary contaminants of greatest concern for the PPCMWD No. 1 are summarized in **Table 4-2**. Some contaminants such as fluoride and copper have more stringent standards under the TCEQ SMCLs than the NPDWR.

Table 4-2. Secondary Contaminants of Interest[1]

Contaminant	Secondary MCL	Noticeable Effects Above the Secondary MCL
Fluoride	2.0 mg/L	Tooth discoloration
Copper	1.0 mg/L	Metallic taste; blue-green staining
Corrosivity	Non-corrosive	Discolored water; lead, copper, and iron release from pipe scale
Manganese	0.05 mg/L	Black to brown color; black staining; bitter metallic taste
Iron	0.3 mg/L	Rusty color; sediment; metallic taste; staining
Sulfate	300 mg/L	Salty taste
Chloride	300 mg/L	Salty taste
Odor	3 Total Odor Number (TON)	"Rotten-egg", musty or chemical smell
Total Dissolved Solids	1,000 mg/L	Hardness, deposits, colored water, staining, salty taste

Notes:
(1) TCEQ: Secondary Constituents https://www.tceq.texas.gov/drinkingwater/chemicals/secondary

It is important to note that the Hilltop WTP has goals for other water quality parameters for which primary and secondary standards set by the EPA do not exist. It is the intention of the Hilltop WTP to meet the TCEQ and EPA water quality standards as well as their own goals outlined in **Section 4.4.**

4.2 Raw Water Quality

Raw water quality data is essential to determining treatment processes needed to meet finished water quality goals and applicable regulatory limits. Historical water quality reports, as well as recent water quality data from samples taken from the presedimentation basin supplying the Hilltop WTP are summarized in **Table 4-3**. Raw water sampling was performed on the presedimentation basin in the August/September of 2023 when blending with Brazos River water had begun in the late spring. Therefore, constituents including total dissolved solids (TDS), chloride, and sulfate are likely higher than what would typically be seen in water from Lake Palo Pinto. Additionally, water quality reports for the Brazos River are also provided in **Table 4-5**. Water from the Brazos River is blended with Lake Palo Pinto water and can make up to 25% of the water supply to the Hilltop WTP. Limited data was however available for several parameters. Further sampling is recommended prior to proceeding with the detailed design of the selected alternative.

Table 4-3. Presedimentation Basin Raw Water Quality

Parameter(1)	Unit	Ave	Min	Max
Aluminum	mg/L	<RL	<RL	<RL
Arsenic	ug/L	<RL	<RL	<RL
Barium	ug/L	100	100	100
Beryllium	ug/L	<RL	<RL	<RL
Boron	mg/L	0.1	0.1	0.1
Cadmium	ug/L	<RL	<RL	<RL
Calcium	mg/L	33	33	33
Chloride	mg/L	71	71	71
Chromium	ug/L	<RL	<RL	<RL
Bromide	mg/L	0.447	0.447	0.447
Copper	ug/L	<RL	<RL	<RL
Fluoride	mg/L	<RL	<RL	<RL
Lead	ug/L	<RL	<RL	<RL
Magnesium	mg/L	13	13	13
Manganese	mg/L	0.05	0.05	0.05
Nitrate	mg/L	<RL	<RL	<RL
Nitrite	mg/L	<RL	<RL	<RL
Potassium	mg/L	8	8	8
Selenium	ug/L	<RL	<RL	<RL
Silica	mg/L	4.8	4.8	4.8
Silicon	mg/L	2.23	2.23	2.23
Strontium	mg/L	0	0	0
Sulfate	mg/L	57.5	57.5	57.5
Thallium	ug/L	<RL	<RL	<RL
Zinc	mg/L	<RL	<RL	<RL
Total Dissolved Solids	mg/L	420	420	420
Conductivity	µmhos/cm	526	526	526
Total Hardness (as $CaCO_3$)	mg/L	137	137	137
Alkalinity (as $CaCO_3$)(2)	mg/L	135	30	178
pH	pH units	8.1	8.1	8.1
Turbidity(2)	NTU	1	0.03	10
Total Organic Carbon(2)	mg/L	6.61	3.90	11.20
Dissolved Organic Carbon	mg/L	6.98	6.98	6.98
Phosphate	mg/L	<RL	<RL	<RL

Table Notes:

(1) Values based on data from a single sample taken September of 2024 from the presedimentation basin intake except parameters with table note 2.

(2) Values based on MOR data from 2016 – 2025 for raw samples.

Table 4-4. Brazos River Raw Water Quality

Parameter[(1)]	Unit	June 2014	Nov 2014	Aug 2023
Aluminum	mg/L	0.047	0.464	<RL
Arsenic	ug/L	NM	2.73	<RL
Barium	ug/L	100	423	190
Beryllium	ug/L	NM	<RL	<RL
Boron	mg/L	0.34	0.446	0.323
Bromide	mg/L	<RL	1.12	1.59
Cadmium	ug/L	NM	<RL	<RL
Calcium	mg/L	84	148	106
Chloride	mg/L	750	1,370	556
Chromium	ug/L	<RL	<RL	<RL
Copper	ug/L	<RL	11.5	<RL
Fluoride	mg/L	NM	0.342	<RL
Lead	ug/L	<RL	1.1	<RL
Magnesium	mg/L	34	62.8	39.1
Manganese	mg/L	0.21	0.192	0.124
Nitrate	mg/L	<RL	<RL	<RL
Nitrite	mg/L	<RL	<RL	<RL
Potassium	mg/L	8.3	18.6	11.2
Selenium	ug/L	NM	<RL	<RL
Silica	mg/L	2.0	4.8	6.49
Silicon	mg/L	0.92	NM	3.03
Strontium	mg/L	1.6	2.91	1.97
Sulfate	mg/L	590	434	318
Thallium	ug/L	NM	<RL	<RL
Zinc	mg/L	<RL	0.014	<RL
Total Dissolved Solids	mg/L	2,000	3,400	1,550
Conductivity	µmhos/cm	3,300	5,090	2,480
Total Hardness (as $CaCO_3$)	mg/L	350	628	427
Alkalinity (as $CaCO_3$)[(2)]	mg/L	50	95.2	97.5
pH	pH units	8.63	7.88	8.16
Turbidity[(2)]	NTU	9.1	17.7	7.77
Total Organic Carbon[(2)]	mg/L	6.0	6.22	5.78
Dissolved Organic Carbon	mg/L	6.0	5.75	4.57
Phosphate	mg/L	0.17	<RL	<RL

The raw water quality of Brazos River water can vary significantly depending on rainfall at the Brazos Fork where salt deposits contribute to the salinity of the Brazos River. The operation of the Possum Kingdom Dam which controls the flow of the Brazos River upstream of Mineral Wells also impacts water quality. The main water quality parameters of concern from the Brazos River when blended with Lake Palo Pinto water are TDS, chloride, and sulfate so that the SMCLs for these constituents do not get violated. A secondary water quality parameter of concern is bromide which has elevated levels in the Brazos River as well. Bromide contributes to the formation of total trihaloamethanes (TTHMs) and five haloacetic acids (HAA_5). When Brazos River water is blended with Lake Palo Pinto water the formation of these two DBPs will increase.

4.3 Finished Water Quality

A summary of the finished water quality data from the Hilltop WTP is provided in **Table 4-5**.

Table 4-5. Finished Water Quality

Parameter(1)	Unit	Ave	Min	Max
Arsenic	ug/L	NM	2.73	<RL
Barium	ug/L	100	423	190
Beryllium	ug/L	NM	<RL	<RL
Cadmium	ug/L	NM	<RL	<RL
Calcium	mg/L	84	148	106
Chloride	mg/L	750	1,370	556
Chromium	ug/L	<RL	<RL	<RL
Fluoride	mg/L	NM	0.342	<RL
Iron	mg/L	<RL	<RL	<RL
Magnesium	mg/L	14	12	16
Manganese	mg/L	0.0034	<RL	0.0034
Nitrate	mg/L	0.037	0.03	0.047
Selenium	ug/L	<RL	<RL	<RL
Sodium	mg/L	55	3	80
Sulfate	mg/L	61	49	80
Thallium	ug/L	<RL	<RL	<RL
Total Dissolved Solids	mg/L	358	297	440
Conductivity	µmhos/cm	648.8	548	832
Total Hardness (as $CaCO_3$)	mg/L	169.8	130.7	197.2
Alkalinity (as $CaCO_3$)	mg/L	125	89	153
pH(2)	pH units	7.9	2.9	13.2
Turbidity(2)	NTU	0.05	0.02	0.26
Total Organic Carbon(2)	mg/L	4.1	2.7	5.6
Langelier Index	Unitless	1.95	1.83	2.08
Chlorine Residual(2)	mg/L	3.4	1.1	4.3
Total Regulated HAAs	ug/L	24.80	17.50	34.00
Total THMs	ug/L	45.5	16.9	64.8

Table Notes:
(1) Values based on annual compliance data from 2019 – 2025 for finished water samples except for parameters with table note 2.
(2) Values based on MOR data from 2016 – 2025 for finished water samples.

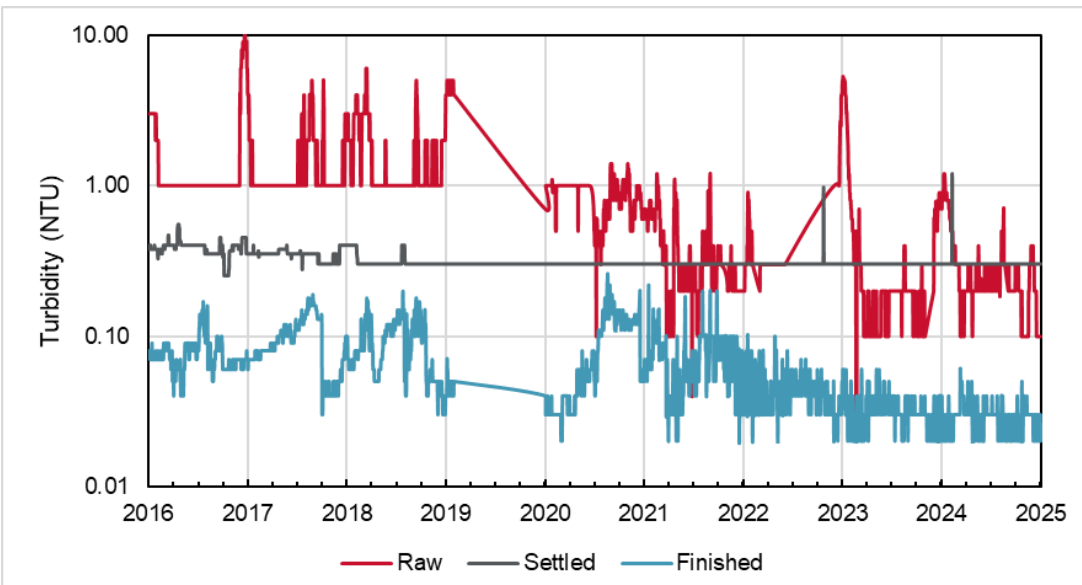
4.4 Treatment Observations

4.4.1 Turbidity

The presedimentation basin at the Hilltop WTP is effective at significantly reducing the turbidity of the raw water before it is pumped into the WTP (**Figure 4-1**). The raw water turbidity is on average 1 NTU but is regularly well below that. The settled water is consistently reduced to 0.3 NTU with the filtered water below 0.1 NTU. The effective removal of particles and low turbidity of the filtered water makes the Hilltop WTP eligible for an additional 1-log removal credit of Cryptosporidium under 30 TAC 290.111(g)(1)(A) if the following conditions are met at each filter:

- IFE measurements taken every 15 minutes excluding immediately following a backwash.
- 95% of the measurements are less than or equal to 0.15 NTU.
- No filter has two consecutive measurements of greater than 0.3 NTU.

Figure 4-1. Raw, Settled, and Finished Water Turbidity (2016-2024)



4.4.2 TOC Removal

The raw water TOC at the Hilltop WTP has varied significantly over the last 5 years as shown in **Figure 4-2**. The regulatory removal targets for TOC, set by the Stage 1 D/DBP Rule, are governed by the raw water alkalinity and TOC concentrations. The average TOC concentration since 2020 has been 6.7 mg/L. Due to the high alkalinity of the Lake Palo Pinto water, the required TOC removal is typically 25% but can increase if there are spikes in TOC or decrease if the raw alkalinity drops below 120 mg/L. TOC is removed via coagulation/sedimentation and adsorption to powder activated carbon which is applied before the filters. The TOC removal exceeds regulatory requirement 93.3% of the time (**Figure 4-3**). A goal for potential treatment improvements will be to meet the TOC removal requirement 100% of the time.

Figure 4-2. Raw and Finished Water TOC (2016-2024)

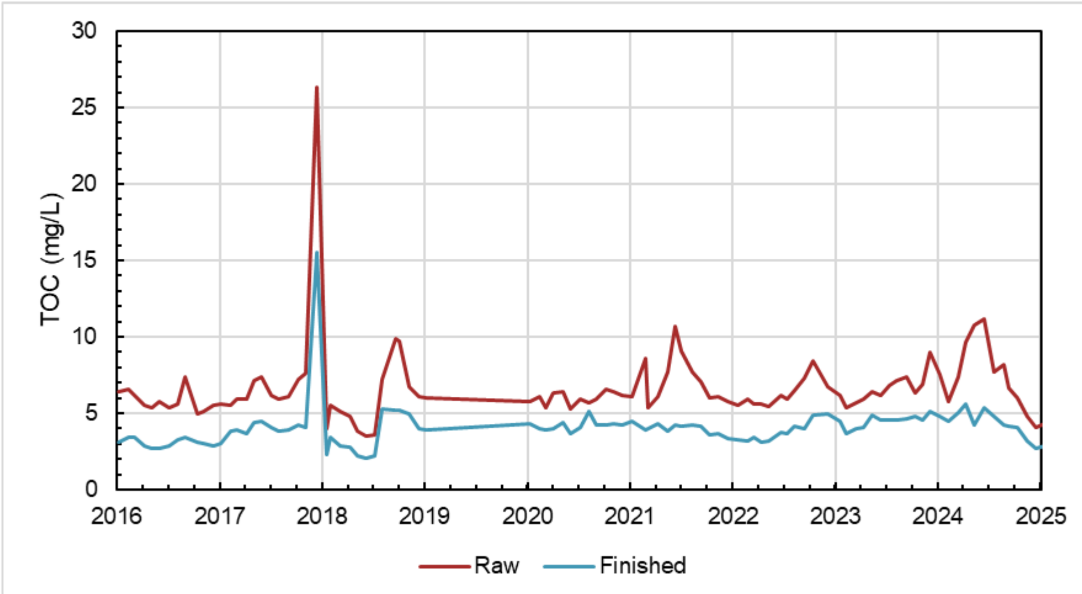
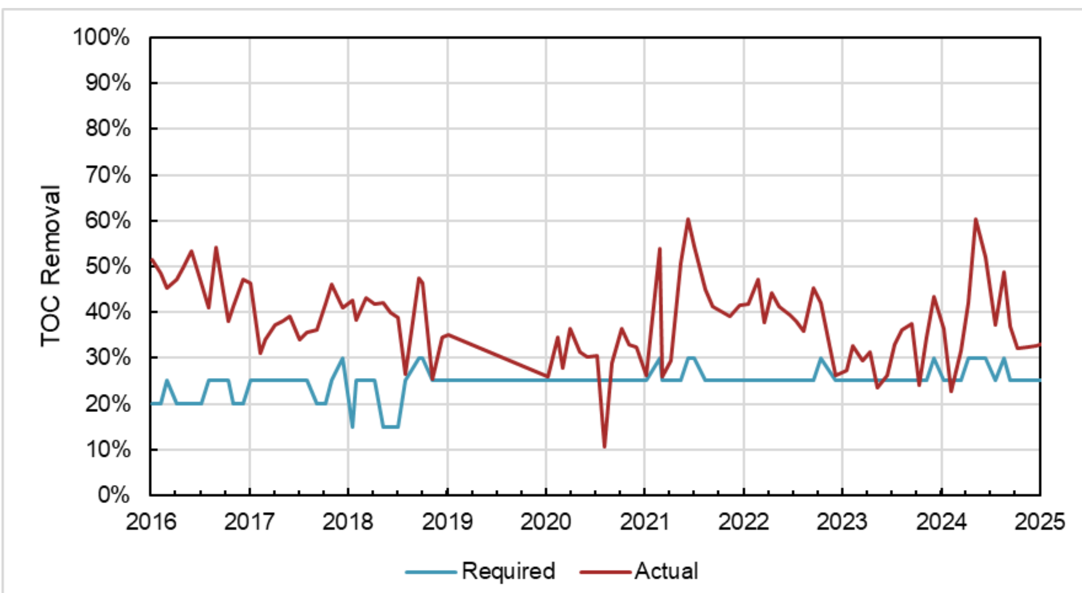


Figure 4-3. Required and Actual TOC Removal (2016-2024)



4.4.3 LSI

The Langelier Saturation Index (LSI) is a measure of the tendency of a water to form a calcium carbonate scale on a pipe wall. The LSI is calculated using pH, alkalinity, calcium hardness, TDS, and temperature. Positive values for the LSI correlate to a tendency for a calcium carbonate scale to form and negative values correlate to a tendency that a calcium carbonate scale will dissolve. The American Water Works Association recommends keeping the LSI greater than 0-0.5 to prevent corrosion. Higher LSI values can be indicative of the potential for excess scale formation which can clog pipes. The high alkalinity and calcium hardness in Lake Palo Pinto water results in the finished water from the Hilltop WTP having LSI values from 1.83 to 2.08. Reducing the LSI in the finished water may help reduce maintenance issues associated with excessive scale build up.

4.4.4 DBP Formation

The use of free chlorine and chloramines results in the formation of two regulated types of DBPs: TTHM and HAA5. For regulatory compliance TTHM and HAA5 samples are taken quarterly in the distribution system. The potential for high raw water TOC (> 8 mg/L) and elevated bromide concentrations promotes the formation of these two DBPs. The Hilltop WTP received a TTHM violation in the Spring/Summer of 2017. Improving TOC removal and making adjustments to disinfection practices can reduce DBP formation.

4.5 Established Water Treatment Goals

In addition to meeting the requirements of primary and secondary drinking water standards, PPCMWD No.1 and City of Mineral Wells staff have established water quality goals, outlined in **Table 4-6**, that will be taken into consideration for the development of plant improvements. The goals for several parameters were set at 80% of the corresponding MCL or SMCL. In some cases, the goal is less than 80% of MCL or SMCL. Separate goals are also identified for when blending with Brazos River water is occurring to account for issues specific to introducing higher salinity water into the treatment process.

Table 4-6. Water Treatment Goals

Parameter	Point of Measurement	Regulatory Compliance Requirement Treatment Goal	Treatment Goal
Particle/Microbial Parameters			
Turbidity	Individual Filter Effluent	• The turbidity level must be ≤1.0 NTU. • Turbidities of ≤ 0.5 NTU at four hours after the individual filter is returned to service after backwash or shutdown.	• Suggested goal of ≤ 0.15 NTU in at least 95 percent of samples each month in each filter and is never ≥0.3 NTU in two consecutive measurements in any filter to obtain an additional 0.5-log *Cryptosporidium* credit.
Turbidity	Combined Filter Effluent	• < 1.0 NTU for 100 percent of 4-hr observations. • Turbidities of ≤ 0.3 NTU in 95 percent of samples each month.	• Suggested goal of ≤ 0.15 NTU for at least 95 percent of 4-hr observations in any month to obtain an additional 0.5-log *Cryptosporidium* credit.
Turbidity	Settled Water	• No MCL	• ≤ 1 NTU
Cryptosporidium, *Giardia*, and Viruses	Finished Water	• 2-log removal for *Cryptosporidium* • 3-log removal for *Giardia* • 4-log removal for viruses	• Inactivation ratio of 2
Total Chlorine Residual	Finished Water	• ≤4 mg/L	• ≤ 4 mg/L
Total Chlorine Residual	Distribution System	• ≥0.5 mg/L • ≤4 mg/L	• ≥ 1 mg/L
Inorganic/Corrosion Parameters			
pH	Finished Water	• ≥ 7	• 7.8-8.2 • Coordinate with alkalinity and calcium hardness to get an LSI of 0-1
Alkalinity	Finished water	• No MCL	• Coordinate with pH and calcium hardness to get an LSI of 0-1
Calcium Hardness	Finished Water	• No MCL	• Coordinate with pH and alkalinity to get an LSI of 0-1
Langelier Saturation Index (LSI)	Finished Water	• No MCL	• 0-1 to promote calcium carbonate scale formation and prevent corrosion
DBP Parameters			
TOC Removal[1]	Settled Water	• No MCL	• Meet Step 1 TOC Removal (typically 25 percent)
TOC Removal[1]	Finished Water	• Meet Step 1 TOC Removal	• 10 percent greater TOC removal than Step 1 TOC Removal requirements
Total Trihalomethanes (TTHM)	Distribution System Water	• ≤ 80 µg/L	• ≤ 64 µg/L • ≤ 80 µg/L when blending Brazos River water
Haloacetic Acid (HAA5)	Distribution System Water	• ≤ 60 µg/L	• ≤ 48 µg/L • ≤ 60 µg/L when blending Brazos River water
Chlorite	Finished Water	• < 1 mg/L	• < 0.8 mg/L
Aesthetic Water Quality Parameters			
Chloride	Finished Water	• < 300 mg/L	• < 250 mg/L when blending with Brazos River Water
Iron	Finished Water	• < 0.3 mg/L	• < 0.24 mg/L
Manganese	Finished Water	• < 0.05 mg/L	• < 0.04 mg/L
Sulfate	Finished Water	• < 300 mg/L	• < 250 mg/L when blending with Brazos River Water
Total Dissolved Solids	Finished Water	• < 1,000 mg/L	• < 900 mg/L when blending with Brazos River Water

Notes:
(1) In accordance with the Stage 1 Disinfection and Disinfection Byproduct Rule (DBP1R) TOC Removal, TOC removal requirements in 30 TAC Section 290.112(b), and historical data of raw alkalinity and TOC shown in Figures 4-1 and 4-2.
(2) Stage 2 Disinfection and Disinfection Byproduct Rule MCLGs vary for different DBP compounds.

5 Findings

Key findings of TM No.1 include:

- Per capita demands are on the low end of typical usage for water supply systems in the United States. Wholesaler contracts with lower ACR and wholesalers' ability to draw from other water sources, in addition to limited industrial water usage, support this finding.
- The demand projections completed for the BPS PER of approximately 12.75 MGD by 2040 and 17.00 MGD by 2060 are lower than projected growth rates with a peaking factor based on historical ADD / MDD.
- The new Turkey Peak Reservoir will significantly increase the number of connections and water demand for WUGs supplied by Hilltop WTP.
- The demand projections of approximately 15.26 MGD by 2040 and 19.43 MGD account for TCEQ minimum system requirements rather than ACRs. HDR-estimated population projections of 53,655 (2040) and 72,643 (2060) were used to approximate future demands.
- Overall, this TM differed from the BPS PER projections for HWTP by anticipating increases in water demand due to the Turkey Peak reservoir. The comparative evaluation using per capita demands and peaking factors determined the HDR demand projections are reasonable —neither too low nor excessively high. Based on historical data, these projections seem either slightly overestimated or appropriately aligned.
- Raw water quality was compiled however several key water quality parameters only have data point.
- HWTP's current conventional treatment system with treatment processes coagulation, flocculation, sedimentation, filtration, and disinfection is meeting most of the finished water quality goals with the exception of the Langelier Index and DBPs.

6 Recommendations

Based on the findings of TM No.1, HDR recommends the following:

- HDR recommends utilizing a maximum day demand of 16 million gallons per day (MGD) projected for the year 2040 as the basis of design for the Hilltop Water Treatment Plant (WTP) Improvements. The design should also incorporate provisions for a future expansion to accommodate a peak day demand of 20 MGD by 2060, ensuring long-term scalability. In support of this, HDR advises planning for either an expansion of the existing facility or the construction of a new facility to achieve a peak day capacity of 16 MGD by 2030. This approach would allow the upgraded or new plant to operate for approximately 10 years before reaching capacity, providing adequate time for performance evaluation and phased growth.

- HDR recommends a service population of 53,655 persons for Palo Pinto County MWD No.1 for the year 2040, representing a population growth of approximately 58% over the next 16 years.
- Further raw water sampling is recommended prior to proceeding with the alternative analysis.

7 Next Steps

Technical Memorandum No.2: Alternatives Summary with Recommended Alternative is to follow.

Appendix A. Population and Demand Projection Tables

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Table A1-1. Population Projection Based on HDR Estimated Population Growth Projection

WUG Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050	2055	2060
MINERAL WELLS														
Forecasted Growth Rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Population	14,931	15,209	15,513	15,823	16,140	16,463	16,792	17,128	17,470	18,693	20,002	21,402	22,900	24,503
Connections	6,092	6,205	7,396	7,544	7,695	7,849	8,006	8,166	8,329	8,912	9,536	10,204	10,918	11,682
PARKER COUNTY SUD														
Forecasted Growth Rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%
Population	6,234	6,416	6,608	6,807	7,011	7,221	7,438	7,661	8,925	10,398	12,113	14,112	16,441	19,153
Connections	2,295	2,362	2,433	2,506	2,581	2,658	2,738	2,820	3,286	3,828	4,459	5,195	6,052	7,051
NORTH RURAL WSC														
Forecasted Growth Rate	1.41%	1.41%	1.41%	1.41%	1.41%	1.41%	70.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Population	3,681	3,733	3,786	3,839	3,893	3,948	6,712	7,115	7,542	7,995	8,474	8,983	9,522	10,093
Connections	1,126	1,142	1,158	1,174	1,191	1,208	2,053	2,176	2,307	2,445	2,592	2,748	2,913	3,087
PALO PINTO WSC														
Forecasted Growth Rate	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Population	567	572	577	582	588	593	598	604	631	659	689	720	752	786
Connections	312	315	317	320	323	326	329	332	347	362	379	396	414	432
SANTO SUD														
Forecasted Growth Rate	0.92%	0.92%	0.92%	0.92%	0.92%	0.92%	70.00%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Population	3,058	3,086	3,114	3,143	3,172	3,201	5,441	5,740	6,056	6,389	6,740	7,111	7,502	7,915
Connections	1,019	1,029	1,038	1,048	1,057	1,067	1,814	1,913	2,018	2,130	2,247	2,370	2,501	2,638
STURDIVANT PROGRESS WSC														
Forecasted Growth Rate	0.94%	0.94%	0.94%	0.94%	0.94%	0.94%	70.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Population	3,731	3,766	3,801	3,837	3,873	3,909	6,646	6,712	6,779	6,847	6,916	6,985	7,055	7,125
Connections	1,244	1,255	1,267	1,279	1,291	1,303	2,215	2,237	2,260	2,282	2,305	2,328	2,351	2,375
CITY OF GRAFORD														
Forecasted Growth Rate	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	1.12%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Population	624	631	638	645	652	660	667	675	688	702	716	730	745	760
Connections	208	210	213	215	217	220	222	225	236	248	261	274	288	302
MILLSAP WSC														
Forecasted Growth Rate	2.96%	2.96%	2.96%	2.96%	2.96%	2.96%	2.96%	2.96%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Population	1,487	1,531	1,576	1,623	1,671	1,720	1,771	1,824	1,897	1,973	2,051	2,134	2,219	2,308
Connections	496	510	525	541	557	573	590	608	708	824	959	1,117	1,300	1,513
TOTAL POPULATION	**34,313**	**34,944**	**35,615**	**36,300**	**37,000**	**37,715**	**46,066**	**47,458**	**49,988**	**53,655**	**57,702**	**62,176**	**67,135**	**72,643**
TOTAL POPULATION GROWTH RATE		**1.84%**	**1.92%**	**1.92%**	**1.93%**	**1.93%**	**22.14%**	**3.02%**	**5.33%**	**7.34%**	**7.54%**	**7.75%**	**7.98%**	**8.20%**

Table A1-2. Demand Projections Based on 0.6 GPM per Connection

WUG Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050	2055	2060
MINERAL WELLS														
Number of Connections	6,092	6,205	7,396	7,544	7,695	7,849	8,006	8,166	8,329	8,912	9,536	10,204	10,918	11,682
Demand (MGD)	5.26	5.36	6.39	6.52	6.65	6.78	6.92	7.06	7.20	7.70	8.24	8.82	9.43	10.09
PARKER COUNTY SUD														
Number of Connections	2,295	2,362	2,433	2,506	2,581	2,658	2,738	2,820	3,286	3,828	4,459	5,195	6,052	7,051
Demand (MGD)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
NORTH RURAL WSC														
Number of Connections	1,126	1,142	1,158	1,174	1,191	1,208	2,053	2,176	2,307	2,445	2,592	2,748	2,913	3,087
Demand (MGD)	0.97	0.99	1.00	1.01	1.03	1.04	1.77	1.88	1.99	2.11	2.24	2.37	2.52	2.67
PALO PINTO WSC														
Number of Connections	312	315	317	320	323	326	329	332	347	362	379	396	414	432
Demand (MGD)	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.29	0.30	0.31	0.33	0.34	0.36	0.37
SANTO SUD														
Number of Connections	1,019	1,029	1,038	1,048	1,057	1,067	1,814	1,913	2,018	2,130	2,247	2,370	2,501	2,638
Demand (MGD)	0.88	0.89	0.90	0.91	0.91	0.92	1.57	1.65	1.74	1.84	1.94	2.05	2.16	2.28
STURDIVANT PROGRESS WSC														
Number of Connections	1,244	1,255	1,267	1,279	1,291	1,303	2,215	2,237	2,260	2,282	2,305	2,328	2,351	2,375
Demand (MGD)	1.07	1.08	1.09	1.10	1.12	1.13	1.91	1.93	1.95	1.97	1.99	2.01	2.03	2.05
CITY OF GRAFORD														
Number of Connections	208	210	213	215	217	220	222	225	236	248	261	274	288	302
Demand (MGD)	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.21	0.23	0.24	0.25	0.26
MILLSAP WSC														
Number of Connections	496	510	525	541	557	573	590	608	708	824	959	1,117	1,300	1,513
Demand (MGD)	0.43	0.44	0.45	0.47	0.48	0.50	0.51	0.53	0.61	0.71	0.83	0.97	1.12	1.31
Total Demand (MGD)	**9.47**	**9.62**	**10.69**	**10.87**	**11.05**	**11.24**	**13.56**	**13.93**	**14.40**	**15.26**	**16.19**	**17.19**	**18.27**	**19.43**

Appendix B. Technical Memorandum 2: Alternatives Summary with Recommended Alternative

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Technical Memorandum 2: Alternatives Summary with Recommended Alternative

Hilltop Water Treatment Plant Improvements

Palo Pinto County Municipal Water District No. 1

City of Mineral Wells
December 1, 2025

FINAL

HDR Engineering, Inc.
Texas Registered Firm No. F-754

Contents

Tables

Figures

1 Introduction

The Hilltop Water Treatment Plant (WTP) is a surface water plant located south of the City of Mineral Wells, Texas. The Hilltop WTP is owned by Palo Pinto County Municipal Water District No. 1 (PPCMWD No. 1) and operated by the City of Mineral Wells (City). The primary source water for the Hilltop WTP is Lake Palo Pinto. During periods of drought or increased water use, additional water from the brackish Brazos River is blended with the lake water to extend the raw water supply. PPCMWD No. 1 is currently moving forward with a water supply project, Turkey Peak Reservoir, to improve future storage and resiliency during periods of drought. Treated water from the Hilltop WTP is the sole drinking water source for the City and seven (7) other wholesale water suppliers in Palo Pinto and Parker Counties.

The Hilltop WTP was constructed in 1962 and has a design rated production capacity of 12.0 million gallons per day (MGD). Modifications and replacements of various components have been made to the treatment plant over the years. The WTP consists of the following facilities and treatment processes: presedimentation basin (375 million gallon reservoir), presedimentation pump station, clarification, filtration, clearwells, high service pumping, and wastewater recycling system.

2 Project Description and Objectives

The objective of the Hilltop WTP Improvements project is to develop a strategic plan for improvements to the water treatment facilities. Alternative approaches considered will be upgrading existing facilities and/or constructing new treatment facilities. The overarching goals for the project are to provide:

- More reliable and resilient drinking water production
- Reduced operation and maintenance
- Continued compliance with current and pending drinking water regulations
- Improved safety for operating staff
- A firm treatment capacity of 16 MGD

This TM, No.2 Alternatives Summary, evaluates the existing WTP, treatment technologies, and develops three alternatives for the future water treatment expansion at Hilltop WTP.

The objective of TM 2 is to determine the recommended alternative to move forward with piloting.

2.1 Key Terms

In the assessment of the water system needs, the key terms that need to be considered include:

- **Action Level (AL).** The AL is a concentration of a contaminant that triggers a public water system to take certain actions, such as public notification or corrective action.

- **Average Day Demand (ADD).** The ADD is the total water used during the year divided by 365 days per year. The ADD is used primarily to determine whether the water system can deliver the total amount of water needed during the year. This is used to size chemical storage, establish normal pump operating ranges, and residual lagoons.
- **Maximum Day Demand (MDD).** The MDD is the maximum recorded or projected single day demand for a given year. The water supply and treatment plant must be capable of treating enough water to meet the MDD. This is used to size the hydraulic capacity of the WTP and chemical feed systems.
- **Peak Hour Demand (PHD).** This is used to size the finished water clearwell and the high service pumps.
- **Peaking Factor (PF).** The PF is the ratio between the maximum day demand and the average day demand.
- **Maximum Contaminant Levels (MCL).** MCLs are the highest level of contaminant allowed in drinking water. MCLs are mandatory standards set by the United States Environmental Protection Agency (EPA) that are enforced by TCEQ.
- **Maximum Contaminant Level Goal (MCLG).** A MCLG is the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, allowing an adequate margin of safety, regardless of the cost of treatment. MCLG values are advisory and not enforced by TCEQ.
- **Monthly Operating Reports (MOR).** MORs are a monthly report generated by public water utilities. They are federally mandated and submitted to the state. Surface WTPs must submit monitoring data for turbidity, pH, temperature, and disinfectant residual.
- **Secondary Constituent Levels (SCL).** SCLs are established by the EPA as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. TCEQ requires public water systems meet secondary constituent levels unless provided with a waiver from the TCEQ executive director.
- **Texas Commission on Environmental Quality (TCEQ).** TCEQ is the state environmental agency responsible for enforcing regulations on air, water, and waste.
- **Texas Drinking Water Watch (DWW).** The Texas DWW is a database of information about public water systems. This information includes sample results for various contaminants, population served, average daily demand and maximum daily demand, total storage volumes, and service pump capacity.

3 General Improvements to Existing WTP

3.1 Background

3.1.1 Existing WTP

The Hilltop WTP was constructed and 1962 and has a treatment capacity of 12 million gallons per day (MGD). The treatment process is outlined in Figure 3-1 and consists of the following facilities and treatment processes:

- A 375-million gallon (MG) presedimentation reservoir, known as the Hilltop Reservoir, for raw water storage, flow equalization, and settling.
- An intermediate pump station, referred to as the Presedimentation Pump Station, to pump water from Hilltop Reservoir to the pretreatment splitter box.
- Chlorine dioxide is applied in the raw water line immediately after the Presedimentation Pump Station for disinfection credits and to treat taste and odor (T&O) issues.
- A static mixer for applying coagulants is located downstream of the chlorine dioxide injection. Currently, Chemfloc 3315, a blended product of aluminum chlorahydrate (ACH) and cationic polymer, is used as coagulant. In the past aluminum sulfate with polymer has been used as coagulants.
- Two circular sedimentation basin and two rectangular sedimentation basins for pretreatment. Process flow enters a splitter box that distributes flow to each of the on-line sedimentation basins which operate in parallel.
- Settled water from the sedimentation basins are dosed with chlorine for disinfection and powdered activated carbon (PAC) for T&O issues prior to filtration.
- Four rapid sand granular media filters, each rated for up to 5.0 MGD. Filter media consists of 24 inches of anthracite, 12 inches of sand, and Leopold underdrains. All filters have surface washing and air scouring to enhance backwashing. Two backwash pumps and two surface wash pumps are located at the High Service Pump Station. A single centrifugal multi-stage blower for air scour supply is located adjacent to filters.
- After filtration the following chemicals are added
  - Caustic for pH adjustment
  - Chlorine and ammonia to form chloramines
  - A polyphosphate blend for corrosion control in the distribution system
- Three circular clearwells for storage of filtered water. The maximum operating volumes of the clearwells are 0.5, 1.0, and 2.0 MG for a total of 3.5 MG. None of the clearwells have internal baffles.
- A finished water pump station, referred to as the High Service Pump Station, to pump water to the distribution system. There are currently four high service pumps with capacities ranging from 3 to 9 MGD.

- A process wastewater recycling system consisting of a 300,000-gallon basin and a pump station. Filter backwash wastewater, filter surface wash wastewater, and drained water from the sedimentation basins flow to the process wastewater basin, from which the settled supernatant is pumped back into the Hilltop Reservoir. The underflow process wastewater and settled sludge in the wastewater basin is sent to four lagoons. Settled (decant) water from the lagoons can be recycled to Hilltop Reservoir via a small pumping station.

Table 3-1. Existing Treatment Capacity Summary

Facility	TCEQ Min. Required Capacity	Existing Capacity
Brazos Pump Station Pumps	N/A	9.3 MGD (firm)
Pre-sedimentation Pumps	12 MGD	14.4 MGD (firm)
Sedimentation Basins	12 MGD	12.46 MGD (firm)
Filters	12 MGD	15 MGD (firm)
Clearwell Storage	0.6 MG	3.5 MG
High Service Pump Station	12 MGD	18 MGD (firm)
Treatment Plant (Limited by sedimentation basins)	12 MGD	12.46 MGD

Figure 3-1. Hilltop WTP Existing Site Plan

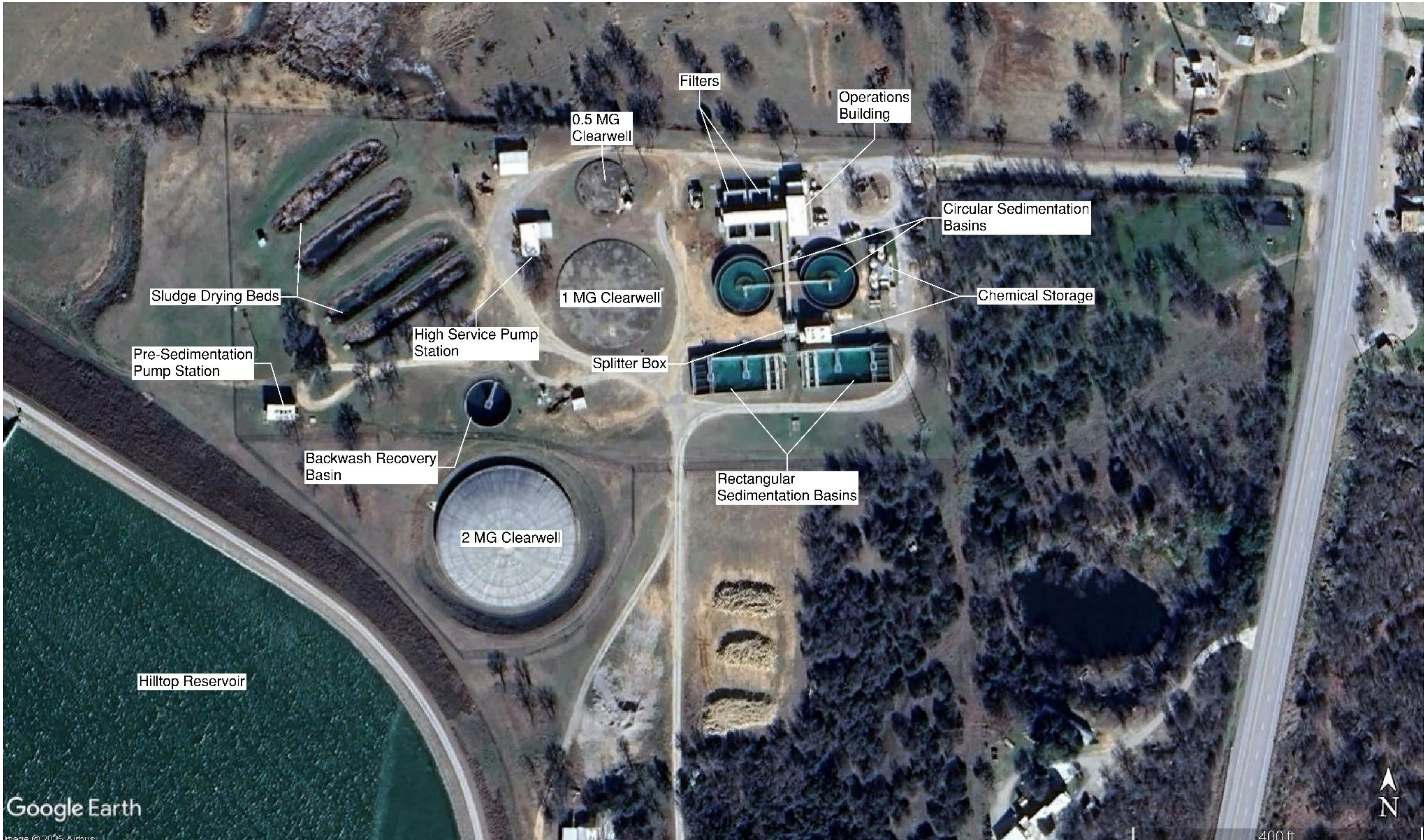
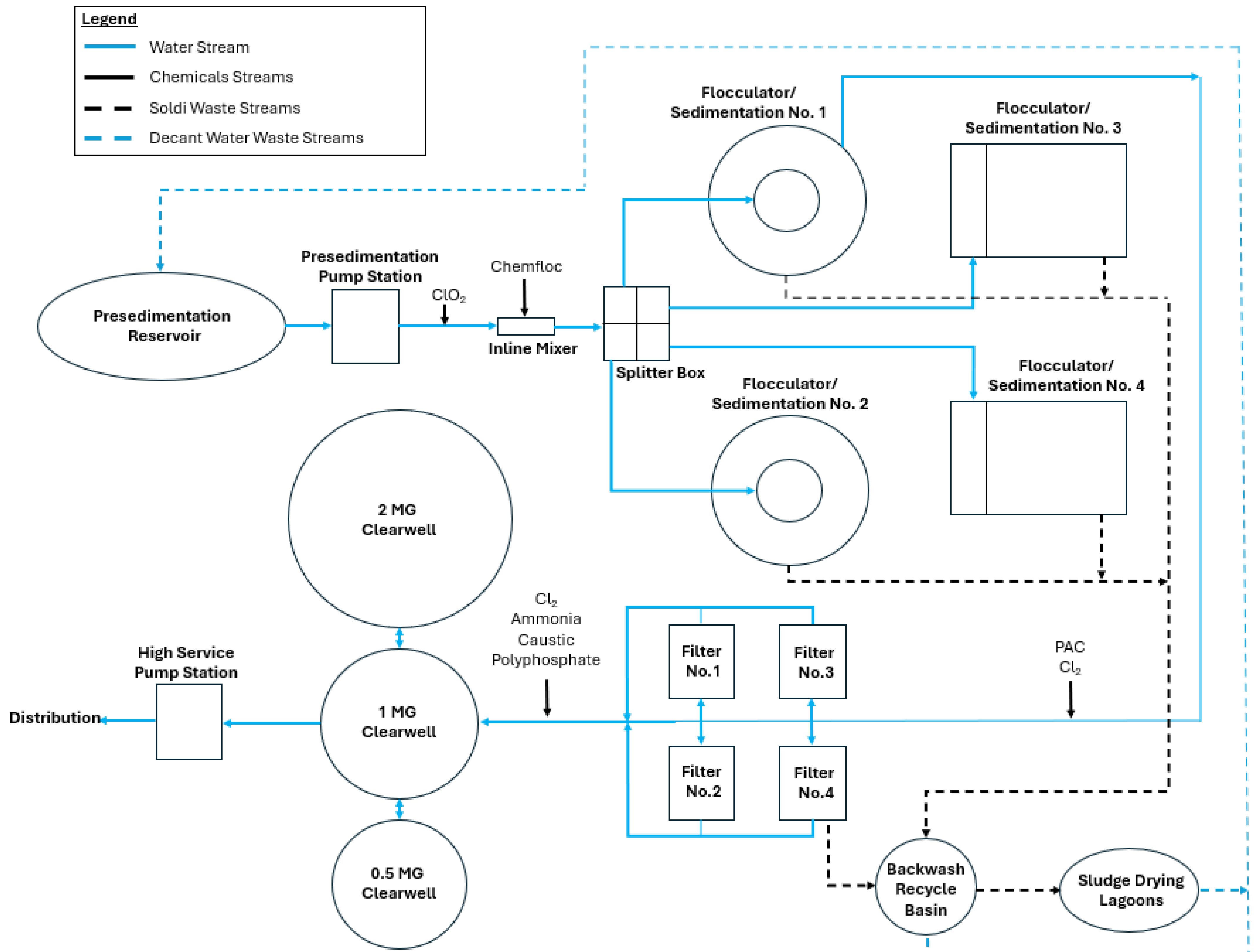


Figure 3-2. Hilltop WTP Process Flow Diagram Including Unit Processes



3.2 Existing WTP Challenges

This section provides an overview of water quality issues and operation and maintenance issues for the various treatment processes and system components at Hilltop WTP.

3.2.1 Water Treatment Challenges

3.2.1.1 Coagulation with Low Raw Water Turbidity

The Hilltop Reservoir is effective at reducing the raw water turbidity at Hilltop WTP to an average of 0.9 NTU; however, this has made pretreatment with coagulation difficult. The low turbidity in the raw water means there is a relatively low number of particles to get entrapped and assist with floc formation during flocculation. To compensate for the low raw water turbidity, high concentrations of coagulants have had to be used so that the flocs that form will settle in the sedimentation basins. The raw water turbidity can get as low as 0.1 NTU and the settled water turbidity can be greater than the raw water turbidity (i.e. coagulation/flocculation/sedimentation is adding particles instead of removing them). When reviewing chemical use data, the Hilltop WTP used aluminum sulfate as a coagulant and a cationic polymer in the past and then switched to Chemfloc 3315, a blended ACH and cationic polymer product, in September 2018. The average aluminum sulfate and cationic polymer doses were 65 mg/L and 6 mg/L while the average Chemfloc 3315 dose has been 25 mg/L. On an aluminum content basis, the Chemfloc 3315 and aluminum sulfate doses are equivalent. Several potential improvements and modifications can be utilized to improve coagulation. The options presented below could be either stand alone or combined in any combination to improve plant performance.

Improvements/Modifications

JAR TESTING FOR OPTIMIZING COAGULANT DOSING

The current coagulant dosing with Chemfloc 3315 is based on the recommendation of the Hilltop WTP chemical supplier following jar testing the supplier performed in 2018. The results of this jar testing were not provided to plant staff so it is unclear how thorough the jar testing was and if the results were interpreted correctly to provide Hilltop WTP with the most effective coagulant from both a performance and cost perspective. Therefore, it is recommended that independent and robust jar testing be performed so that optimum coagulant dose can be determined. HDR would perform the initial jar testing and teach staff on how to conduct subsequent tests, and the District and City would then own the results and know how to interpret them.

The recommended jar testing would examine different common coagulants (aluminum sulfate, aluminum chlorohydrate (ACH), polyaluminum chloride (PACL), and ferric chloride) and if the addition of polymers (cationic, anionic, and nonionic) improves turbidity removal. Jar testing would evaluate each coagulant for total organic carbon (TOC) and turbidity removal, additionally zeta potential will be measured to inform the use of polymer to improve a given coagulants performance. Zeta potential measures the charge of particles in water which is important to coagulation. Particles in water are negatively charged and repel each other. The addition of positively charged coagulants removes TOC and neutralizes the charge of particles helping them stick together and form flocs. Using zeta potential will help to determine the optimum combination of coagulant and polymer dose and type needed to meet TOC removal requirements and achieve turbidity reduction.

Zeta potential analyzers or a similar technology called streaming current detectors could be added to the Hilltop WTP to improve operations by informing real time coagulant dosing. Both are able to measure the particle charge rapidly and can be used to adjust coagulant and polymer dosing to ensure that charge neutralization is occurring with changing influent water quality which can help with reducing settled water turbidity and chemical costs.

BYPASS PRESEDIMENTATION

The turbidity of the influent water to Hilltop WTP could be increased and help improve pretreatment by either fully or partially bypassing the Hilltop Reservoir. Water from Palo Pinto Creek is pumped from the Brazos Pump Station to the Hilltop Reservoir which was constructed in the 1990s. Prior to that, water from Palo Pinto Creek was treated directly at Hilltop WTP without presedimentation. The piping still exists to directly treat water from Palo Pinto Creek but the valve controlling that flow and the empty portion of pipe has been unused since the 1990s. Palo Pinto Creek water (bypass) or blending that water with water from the Hilltop Reservoir (partial bypass) could be used to increase influent turbidity and improve floc formation. These options would present operational challenges because it would require repair/modification of the unused portion of the raw water line and either continuous or variable flow coming from the Brazos Pump Station. Currently the Brazos Pump Station is run intermittently to refill the Hilltop Reservoir so the new operational strategy with partial or full bypass would be a significant change that decreases the operational redundancy the Hilltop Reservoir provides if the Brazos Pump Station has to go offline or the pipeline to the Hilltop Reservoir is damaged.

RECYCLE SOLIDS

Another option to increase the turbidity of the influent water to pretreatment is to recycle solids. Solids could either be recycled from the sedimentation basin waste (only the rectangular sedimentation basins) or recycle basin to ahead of the inline mixer where Chemfloc 3315 is currently applied. This would seed additional solids to help with floc formation. This option would require additional piping from either the rectangular basins or recycle basin as well an evaluation of the effectiveness of the inline mixer to break up the recycled solids.

3.2.1.2 DBP Formation

The formation of disinfection byproducts, specifically total trihalomethanes (TTHMs) has been a regulatory concern for the Hilltop WTP. The water system has had a history of TTHM violations (most recently back in 2017) while HAA5 locational running are consistently below 30 µg/L. Individual TTHM sample concentrations in the warm months can exceed the 80 µg/L while in the winter can be as low as 25 µg/L so it is uncommon for the locational running annual averages (LRAA) to exceed the TTHM MCL.

TTHMs are formed when some disinfectants react with TOC. The Hilltop WTP applies chlorine dioxide to the raw water to meet concentration time (CT) requirements, chlorine before the filters, and additional chlorine and ammonia after filtration to form chloramines which are the residual disinfectants. Free chlorine rapidly reacts with TOC to form TTHMs, chloramines form TTHMs at a much slower rate than free chlorine, and chlorine dioxide does not react with TOC to form TTHMs. The Hilltop WTP staff has done periodic TTHM testing to evaluate the formation of TTHMs through the plant's treatment process. These results show that the majority of TTHMs are formed in the filter which is not surprising because free chlorine is applied at that location. Surprisingly, the TTHM concentration continues to increase significantly in the clearwells after chloramines have been formed but not in the distribution system. Potential ways to reduce TTHM formation are listed below:

Improvements/Modifications

IMPROVE MIXING FOR CHLOARMINE FORMATION

After filtration, additional chlorine and ammonia are applied to form chloramines using injection quills that are located directly next to each other (caustic and polyphosphate are also added at this location) in the pipe galley below the filters. This chemical injection point is not ideal from an operational and maintenance standpoint because of how difficult it is to access the injection quills, but also likely results in poor mixing of the chemicals. Poor mixing of the free chlorine and ammonia may result in free chlorine persisting and forming additional TTHMs post filtration which is supported by the significant amounts of additional TTHMs forming in the clearwell. Potential solutions to improve mixing are listed below:

1. Applying the ammonia in the filter galley and relocating the chlorine injection further downstream before the clearwells
2. Adding a static mixer with integral injection ports to improve chemical mixing.
3. Cutting in a propeller mixer to blend the water after chemicals
4. Adding tank mixers by the clearwell inlets

CLEARWELL AERATION

One of the TTHM species, chloroform, is highly volatile and can be removed after formation via aeration. Aerators in clearwells are widely used to remove chloroform and reduce TTHM concentrations before water is pumped into the distribution system. The existing clearwells could be retrofitted or a new clearwell added with aeration to reduce the TTHM concentration.

3.2.1.3 Disinfectant Stability and Filter Biological Growth

Periodically the Hilltop WTP experiences issues with excessive disinfectant decay in the clearwells and increased TTHM formation. Plant staff believe this is due to biological growth in the filters and to address it they perform quarterly "chlorine burns" where they take a filter offline and soak it with water that has been dosed with a high chlorine concentration. This process has reduced their issues and during HDR's February 2025 site visit one of these chlorine burns was occurring and white chunks we rising to the tops of the filters which are believed to be oxidized biomass.

Review of the disinfectant residuals across the filters (free and total chlorine) provides additional insight about causes of the loss of the disinfectant residual. Both the Hach Free Chlorine and Total Chlorine DPD methods are used to measure the post filtration disinfectant residuals. Free chlorine is applied across the filters so the free and total chlorine concentrations should be approximately the same. The plants daily log sheets shows that total chlorine is greater than the free chlorine concentrations. Typically, the total chlorine concentration is 0.4 mg/L while the free chlorine concentrations is 0.1 mg/L and there are some periods where the total chlorine concentrations can get as high as 1 mg/L while the free chlorine concentrations ranges from 0.1-0.5 mg/L. The discrepancy between the total and free chlorine measurements is likely due to the presence of ammonia and/or organic ammonia in the raw water which leads to the formation of species that contribute to total chlorine but not free chlorine. The species that could be forming are chloramines, organic chloramines, and bromamines (brominated analogues to chloramines which could be forming due to the elevated bromide concentrations in the source waters). It is possible that a mix of these species could be what is providing the measured disinfectant residuals instead of free chlorine because bromamines directly interfere with the Free Chlorine DPD method while chloramines can slightly interfere with the method.

Improvements/Modifications

STUDY THE DISCREPANCY BETWEEN FREE AND TOTAL CHLORING RESIDUALS

Additional testing using Hach methods or external lab testing can be used to understand the source of the discrepancy of free and total chlorine residuals observed and inform process changes that could mitigate the observed issues with disinfectant stability and biological growth. In addition to the filter effluent free and total chlorine sampling, settled water ammonia (Hach or external lab) and filter effluent monochloramine using Monochlor F (Hach method). These additional samples should be collected when there are differences in the free and total chlorine residuals as noted above. These additional data points would help to determine if chloramines, organic chloramines, or bromamines are forming.

CEASE OR RELOCATE PAC DOSING

PAC is currently dosed in the settled water ahead of the filters, but it was originally located at the Presedimentation Pump Station for mitigating taste and odor (T&O) issues and was relocated in the 1990s. The PAC is applied at a low dose. The average dose is 1.9 mg/L and accumulates in the filters between backwashes. Activated carbon destroys disinfectants and its porous structure provides an environment for bacteria to grow. These two properties could be contributing to the issues with biological growth in the filters.

Since the relocation of the PAC system, a chlorine dioxide system was added to Hilltop WTP which also provides a barrier to T&O issues. It is unclear if both PAC and chlorine dioxide are needed and if the low PAC dose currently applied is providing any other treatment benefits like TOC removal. Ceasing the PAC dosing could help to mitigate biological growth issues in the filters, reduce O&M costs, and get rid of the operational hassle of maintaining the PAC slurry that is currently dosed, which plant staff have noted is challenging. If the PAC dosing is stopped, the impact on the total and free chlorine residuals should be monitored as well.

Alternatively, the PAC system could be relocated prior to the sedimentation basin and after the ClO2 residual sampling point. At this location the PAC would provide the current treatment benefits like T&O and TOC removal as well as potentially help with floc formation and settling.

3.2.2 Operation and Maintenance Challenges

3.2.2.1 Splitter Box

The existing splitter box flows directly to the four sedimentation basins. The treatment processes at the plant (coagulation, filtration, etc.) are rated for 12 MGD but the splitter box can only handle flows up to 10 MGD. If flow exceeds 10 MGD , the splitter box will overflow. Additionally, the splitter box results in uneven flow between the sedimentation basins.

Improvements/Modifications

Modifications have already been made to the existing splitter box structure to increase the flow by raising the walls in a previous project but the modifications were not sufficient and the splitter box overflows at 12 MGD. It is recommended that a new splitter box structure be constructed that is able to handle 16 MGD.

3.2.2.2 Sedimentation Basins

3.2.2.3 Circular Sedimentation Basins

The Hilltop WTP has two circular sedimentation basins that were part of the original 1962 plant construction and had tube settlers installed in 2002 to improve solid settling. The round sedimentation basins require considerable maintenance because they have no sludge removal mechanism and installation of sludge rakes is not be feasible because the central flocculation zone is a solid concrete wall to the floor of the sedimentation basin. Due to the sludge handling issues, it is recommended these sedimentation basins be taken out of service. The issues with operating and maintaining the round sedimentation basins are:

- No sludge removal mechanism
- UV degradation of tube settlers
- Algae growth on sedimentation basin wall and tube settlers that require physical removal by plant staff

KEEP CIRCULAR SEDIMENTATION BASINS IN SERVICE UNTIL REPLACEMENT UNITS CAN BE CONSTRUCTED

The improvements required to add sludge removal to the existing round sedimentation basins would be substantial and not feasible. Long term, these units should be replaced. Improvements such as flow modifications and replacing the tube settlers should be evaluated for cost and consider the remaining operational life of these units.

3.2.2.4 Rectangular Sedimentation Basins

The Hilltop WTP has two rectangular sedimentation basins that were added in the 1982 plant expansion and had tube settlers installed in 2002. The issues with operating and maintaining the rectangular sedimentation basins are:

- Sludge blanket reaches 5-6 feet deep at corners beyond the reach of the rakes
- Manually have to open a valve to drain basins of sludge
- Motor and gear boxes are not accessible
- Current rakes are falling apart
- UV degradation of tube settles
- Algae growth on sedimentation basin wall and tube settlers that require physical removal by plant staff

Improvements/Modifications

ADD ALGAE MITIGATION

The buildup of algae in the sedimentation basins presents significant O&M challenges for the Hilltop WTP. The following modifications to the sedimentation basins or treatment options could be explored:

- Add covers over the walls and tube settlers to inhibit algae growth by depriving it of sunlight (could cover entire sedimentation basins). The covers would need to be rated to withstand tornado-level wind speeds during the summer and accumulated snow and ice in the winter.
- Dose raw water with an algaecide (copper sulfate, potassium permanganate, hydrogen peroxide, or a proprietary chemical) prior to the sedimentation basins.

REPLACE TUBE SETTLERS

The tube settlers were installed back in 2002 to help with floc removal. They are in poor condition due to exposure to sunlight. Replacing the tube settlers and putting a cover over them will extend the new tube settler lifespan. Additionally, the cover will provide benefits for preventing algae growth on the tube settlers as mentioned above. The downside is that visual inspection of the settlers becomes a labor intensive exercise since the covers would have to be carefully removed and put back for each inspection.

REPLACE RECTANGULAR SEDIMENTATION BASIN EQUIPMENT

The sludge rakes and associated equipment are in poor condition in the rectangular sedimentation basins. They should be replaced and the new rakes should be stainless steel to increase their operational life.

3.2.2.5 Filters

There are four dual media filters with 12” sand and 24” anthracite at Hilltop WTP. Filters 1 and 2 were constructed in 1962 and Filters 3 and 4 were constructed in 1981; all were rehabilitated in 2000 – 2002 which included new underdrains and media replacement.

The filters achieve long runtimes and are backwashed every 100 hours. The filters utilize an air scour backwash which lacks redundancy and the existing filter to waste system does not work.

The filter pipe gallery has limited space. The filter influent pipe runs along the top of the gallery, creating a low “ceiling” shown in Figure 3 3. The grated walkway is elevated above the floor of the gallery, limiting space on the floor and making it difficult to place ladders and other equipment needed for repairs. The filter pipe gallery also has drainage issues and has flooded in the past.

Ultimately, due to the limited space, accessibility for maintenance of equipment, and drainage issues, HDR recommends replacing the filters and pipe gallery.

The recommended improvements to the filters to improve O&M in the near-term are listed below, long-term the filters and pipe gallery need replaced:

Improvements/Modifications

FIX FILTER TO WASTE

Evaluate the issues with the existing filter to waste system and repair/bring it back online.

Figure 3-3. Pipe Gallery

3.2.2.6 Chemical Storage and Systems

The Hilltop WTP feeds chlorine dioxide, Chemfloc 3315 for coagulation, gaseous chlorine, liquid ammonia sulfate (LAS), PAC, caustic, and a polyphosphate blend. The Chemfloc 3315, caustic, PAC, and polyphosphate are stored in the two chemical buildings while 1-ton chlorine gas cylinders, chlorite tank, and LAS tank are located around the Hilltop WTP. The floor of one of the chemical buildings has been significantly corroded due to leaking caustic over the years. After review of the facilities, the following improvement modifications are recommended for the chemical storage and systems:

Improvements/Modifications

REPAIR CHEMICAL BUILDING FLOOR AND PROVIDE CAUSTIC RESISTANT CONTAINMENT

The floor of the chemical building has experienced significant corrosion due to caustic leaks, shown in **Figure 3-4**. There are currently two pairs of transfer pumps for transferring Chemfloc and caustic to day tanks in the second chemical building. The corroded floor in this building should be repaired and chemically resistant containment around the caustic pumps and associated piping should be provided.

Figure 3-4. Chemical Storage Building Floor

INSTALL BARRIER AROUND CHLORINE TANKS

The gas chlorine tanks are delivered and stored next to the Control Building under an awning, shown in **Figure 3-5**. Chemical deliveries and other trucks drive by the chlorine tanks and there currently is no physical barrier protecting them. Install traffic bollards to protect tanks from vehicles driving into the tanks.

Figure 3-5. Chlorine Tanks

3.2.3 Structural Integrity

3.2.3.1 Sedimentation Basins

The existing sedimentation basins are original to the plant, and before recommending continued use of either the circular or rectangular sedimentation basins, a structural inspection and assessment was needed. In March of 2025, HDR performed a structural inspection of the existing sedimentation basins. The following details our findings and recommendations.

The existing circular sedimentation basins were built in the 1960's based on as-built drawings available. The sedimentation basins showed some minor cracking throughout the exterior tank walls. Additionally, the inside face of the outer most concrete walls and trough showed signs of wear due to the age of the sedimentation basin, the processes of the building and wall maintenance/cleaning. Overall, the circular sedimentation basins appear to be structurally sound, but need some retrofit to replace the wearing of the exterior walls. The repair could be achieved by using a fabric-reinforced cementitious matrix by Simpson Strong-Tie, Sika or other reputable manufacturers.

Figure 3-6. Sedimentation Basin

The existing rectangular sedimentation basins were built later-on in the 1980's. The sedimentation basins appear to be structurally sound, with some minor concrete areas needed repair at the filters. The exterior walls show significant amounts of temperature shrinkage vertical cracking caused by seasonal changes in temperature and the detailing of the horizontal reinforcement of the walls. The cracks will lead to leaking and corrosion of rebar if not properly maintained or repaired, recommendations are below. Even though the amount of temperature shrinkage cracking is significant, the sedimentation basins are currently structurally sound and the risk of leaking and corrosion is for future.

Figure 3-7. Cracks on Exterior Walls

Maintenance and repair of the cracks by different methods can be used to seal the cracks, but this will be a constant issue because the structures do not have enough horizontal temperature shrinkage reinforcement. A long-term solution is to provide FRP reinforced fibers around the structure to act as temperature shrinkage steel, this would prolong their life expectancy by more than 20 years. Our recommendation, if the rectangular sedimentation basins are planned to be in-use with the plant expansion, is the vertical cracks need to be controlled or repaired to prevent future structural issues with the walls due to degradation and potential corrosion of the reinforcement. The best value solution is to install FRP reinforced fibers around the structure. This will extend the life expectancy of the sedimentation basins to ___

3.2.3.2 Filters

There are two parallel filter trains housed in one building structure with a pipe gallery between them. The original set, constructed with the original plant in the 1960’s, appears to be showing signs of wear where the concrete face is in contact with the water. The cause is the age of the building, the processes of the building and cleaning. The set of filters constructed in the 1980s appears to be structurally sound with only minor cracking. There appears to be settling issues with the 1980s filters. Overall, all the structures appear to be structurally sound with some concrete wear that needs to be replaced. The settling issues would require further analysis and input from geotechnical engineers for possible solutions and mitigation.

3.2.3.3 Chemical Buildings

The caustic building has had a chemical spill and significant cracking on the exterior walls. It is recommended to performed additional testing and analysis to verify if the concrete and building are structurally sound and to verify there is no more chemical corrosion happening.

Figure 3-8. Chemical Buildings

3.2.4 Instrumentation and Controls

3.2.4.1 Chemical Handling Automatic Control Improvements

The plant currently adds all of their chemicals manually based on process control sampling results and the flowrate through the plant. There is no plan to add instrumentation or analyzers at this time to allow for online chemical injection. The new treatment plant will include more automation of chemical handling systems.

3.2.4.2 Existing Instrumentation

The plant instrumentation mainly consists of flow meters and level transmitters. Plant personnel are able to maintain and calibrate existing instruments.

3.2.4.3 Existing Control Panels

The local plant PLCs utilize Siemens S7-1200 controllers, which are standard, off-the-shelf PLCs available to any qualified systems integrator. The current S7-1200 PLCs are scheduled to be End of Life by October 2027. This means the manufacturer (Siemens) will no longer manufacture components so new parts may be difficult to obtain. There will also be limited support from Siemens, and support will be discontinued at a future date. It is recommended that the current Siemens PLCs be replaced as part of the plant expansion project.

Although the original installer informed the plant that these PLCs were proprietary, this is not accurate. The programs can be uploaded directly from the PLCs by anyone with the appropriate software and access.

However, if a programmer other than the original vendor modifies the PLC code, the original company may consider the warranty void. This is a valid position and consistent with typical industry practices.

Separately, the plant is currently upgrading the sedimentation basin PLCs from Modicon Compact units to Schneider Electric PLCs. This work is being performed by the sedimentation basin manufacturer. The sedimentation basins are not currently integrated into the plant's SCADA or HMI system and are operated independently from local control stations.

3.2.4.4 Existing SCADA System

The plant SCADA system is based on InduSoft Web Studio HMI software. Communication to remote sites is handled via GE MDS radios. These radios have been the primary source of issues within the SCADA system, as they intermittently lose connection. When this occurs, plant personnel must cycle power on the radios to restore communication.

In the event of a radio failure, the plant must rely on the supplier for replacement units. These radios often have long lead times for availability, configuration, and shipment to the site. To mitigate potential downtime, it was recommended that the district purchase spare radios and store them with the supplier. This approach would allow for faster configuration and shipment in the event of a failure, minimizing operational disruptions.

4 WTP Design Criteria

4.1 Water Treatment Regulatory Requirements and Goals

4.1.1 Primary Drinking Water Standards

The National Primary Drinking Water Regulations (NPDWR) are from the Code of Federal Regulations 40, Part 141, and are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water. Primary drinking water standards are established for the following:

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals
- Organic Chemicals
- Radionuclides

The primary contaminants that are anticipated to be of greatest concern for the PPCMWD No. 1 are summarized in **Table 4-1**.

Table 4-1. Primary Contaminants of Interest [1]

Contaminant	MCL, mg/L unless noted otherwise	Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term)	Sources of Contaminant in Drinking Water
Cryptosporidium	2-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Giardia	3-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Viruses	4-log removal	Gastrointestinal illness (such as diarrhea, vomiting, and cramps)	Human and animal fecal waste
Total Coliforms	≤5% of monthly Total Coliform samples can be positive in a month	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.
Total Trihalomethanes (Disinfection Byproduct)	0.080	Liver, kidney, or central nervous system problems; increased risk of cancer	Reaction with chlorine to form byproducts of drinking water disinfection
Haloacetic Acids (Disinfection Byproduct)	0.06	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	1.0	Anemia; infants and young children: nervous system effects	Byproduct of chlorine dioxide disinfection

Contaminant	MCL, mg/L unless noted otherwise	Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term)	Sources of Contaminant in Drinking Water
Total Organic Carbon (TOC)	Varies - specific TOC removal requirements (ranging from 15 – 50 percent) determined based on treatment process, and source water TOC and alkalinity	Disinfection byproduct precursor	Decomposition of plant and animal residues
Turbidity	Individual Filter Effluent • ≤1.0 NTU • ≤0.5 NTU at four hours after backwash Combined Filter Effluent • <1.0 for 100 percent of 4-hr observations • ≤0.3 NTU in 95 percent pf samples each month	Higher turbidity levels are often associated with higher levels of disease-causing microorganisms which can cause nausea, cramps, diarrhea, and headaches.	Soil runoff
Total Chlorine Residual, as Cl_2 (Disinfectant)	≤ 4.0 ≥0.5	Eye/nose irritation, stomach discomfort	Water additive used to control microbes
Copper	Action Level 1.3	Short term: Gastrointestinal distress Long term: Liver or kidney damage	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride	4.0	Bone disease, mottled teeth in children	Water additive which promotes strong teeth, erosion of natural deposits, discharge from factories
Lead[2]	Action Level 0.010	Infants and children: Delays in development, learning difficulties Adults: Kidney problems, high blood pressure	Corrosion of household plumbing systems, erosion of natural deposits
PFAS(4)	Hazard Index of less than 1(unitless)[3] PFOA = 4 ng/L PFOS = 4 ng/L HFPO-DA = 10 ng/L PFHxS = 10 ng/L PFNA = 10 ng/L PFBS = 2,000 ng/L	Increased health risks include liver, immune, and thyroid effects. Additionally, developmental and thyroid effects following repeated exposure during pregnancy and/or childhood	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities.
Nitrite	1	Shortness of breath and death in infants	Runoff from fertilizer use, erosion of natural deposits, nitrification of ammonia in water.

Contaminant	MCL, mg/L unless noted otherwise	Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term)	Sources of Contaminant in Drinking Water
Nitrate + Nitrite	10.0	Shortness of breath and death in infants	Runoff from fertilizer use, erosion of natural deposits, nitrification of ammonia in water.
Organic chemicals	Varies per chemical	Varies per chemical	Runoff from herbicide used on row crops; discharge from drug, chemical, and petroleum factories; leaching from linings, piping, gas storage tanks, and landfills

Notes:

(1) EPA.gov National Primary Drinking Water Standards https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

(2) Changes to the Lead and Copper Rule are pending implementation.

(3) To calculate the Hazard Index, a ratio is developed for each PFAS by dividing the measured level of the PFAS in drinking water by the level below which adverse health effects are not likely to occur (i.e., the Health Based Water Concentration).

(4) There is an EPA filing before the US Court of Appeals for the District of Columbia to rescind the Hazard Index and four constituent PFAS (HFPO-DA, PFHxS, PFNA, and PFBS).

4.1.2 Secondary Constituents

EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants. EPA does not enforce these "secondary maximum contaminant levels" (SMCLs). Secondary standards are set to give public water systems guidance on removing these chemicals to levels that are below what most people will find to be noticeable. These contaminants are not considered to present a risk to human health at the SMCL.

There are a wide variety of issues related to secondary contaminants. These issues can be grouped into three categories:

- Aesthetic Effects — undesirable tastes or odors;
- Cosmetic Effects — effects which do not damage the body but are still undesirable;
- Technical Effects — damage to water equipment or reduced effectiveness of treatment for other contaminants.

The TCEQ has established secondary constituent levels which differ slightly from the EPA's SMCLs. All public water systems in Texas are required to comply with the secondary constituent levels established by TCEQ unless a waiver is granted. The secondary contaminants of greatest concern for the PPCMWD No. 1 are summarized in **Table 4-2**. Some contaminants such as fluoride and copper have more stringent standards under the TCEQ secondary constituent levels than the NPDWR.

Table 4-2. Secondary Contaminants of Interest[1]

Contaminant	Secondary MCL	Noticeable Effects Above the Secondary MCL
Fluoride	2.0 mg/L	Tooth discoloration
Copper	1.0 mg/L	Metallic taste; blue-green staining
Corrosivity	Non-corrosive	Discolored water; lead, copper, and iron release from pipe scale
Manganese	0.05 mg/L	Black to brown color; black staining; bitter metallic taste
Iron	0.3 mg/L	Rusty color; sediment; metallic taste; staining
Sulfate	300 mg/L	Salty taste
Chloride	300 mg/L	Salty taste
Odor	3 Total Odor Number (TON)	"Rotten-egg", musty or chemical smell
Total Dissolved Solids	1,000 mg/L	Hardness, deposits, colored water, staining, salty taste

Notes:
(1) TAC Rule §290.118

4.1.3 Hilltop WTP Water Quality Goals

It is important to note that the Hilltop WTP has goals for other water quality parameters for which primary and secondary standards set by the EPA do not exist. It is the intention of Hilltop Water Treatment Facilities to meet the TCEQ and EPA water quality standards as well as their own goals outlined in **Table 4-3**.

In addition to the current treatment goals, the District and City seek to ensure that the expanded or new treatment plant is designed to accommodate future emerging contaminants and anticipated regulatory requirements including pharmaceuticals, micropollutants, and pesticides.

Table 4-3. Presedimentation Basin Raw Water Quality

Parameter	Point of Measurement	Regulatory Compliance Requirement Treatment Goal	Treatment Goal
		Particle/Microbial Parameters	
Turbidity	Individual Filter Effluent	• The turbidity level must be ≤1.0 NTU. • Turbidities of ≤ 0.5 NTU at four hours after the individual filter is returned to service after backwash or shutdown.	• Suggested goal of ≤ 0.15 NTU in at least 95 percent of samples each month in each filter and is never ≥0.3 NTU in two consecutive measurements in any filter to obtain an additional 0.5-log *Cryptosporidium* credit.
Turbidity	Combined Filter Effluent	• < 1.0 NTU for 100 percent of 4-hr observations. • Turbidities of ≤ 0.3 NTU in 95 percent of samples each month.	• Suggested goal of ≤ 0.15 NTU for at least 95 percent of 4-hr observations in any month to obtain an additional 0.5-log *Cryptosporidium* credit.
Turbidity	Settled Water	• No MCL	• ≤ 1 NTU
Cryptosporidium, *Giardia*, and Viruses	Finished Water	• 2-log removal for *Cryptosporidium* • 3-log removal for *Giardia* • 4-log removal for viruses	• 2-log removal for *Cryptosporidium* • 3-log removal for *Giardia* • Viruses – Inactivation ratio > 1
Chlorine Residual	Finished Water	• ≤4 mg/L	• ≤ 4 mg/L
Chlorine Residual	Distribution System	• ≥0.5 mg/L at all points in the distribution system • ≤4 mg/L	• ≥ 1 mg/L at all points in the distribution system
		Inorganic/Corrosion Parameters	
pH	Finished Water	• ≥ 7	• 7.8-8.2 • Coordinate with alkalinity and calcium hardness to get an LSI of 0-1
Alkalinity	Finished water	• No MCL	• Coordinate with pH and calcium hardness to get an LSI of 0-1
Calcium Hardness	Finished Water	• No MCL	• Coordinate with pH and alkalinity to get an LSI of 0-1
Langelier Saturation Index (LSI)	Finished Water	• No MCL	• 0-1 to promote calcium carbonate scale formation
		DBP Parameters	
TOC Removal[1]	Settled Water	• No MCL	• Meet Step 1 TOC Removal (typically 25 percent)
TOC Removal[1]	Finished Water	• Meet Step 1 TOC Removal	• 10 percent greater TOC removal than Step 1 TOC Removal requirements
Total Trihalomethanes (TTHM)	Distribution System Water	• ≤ 80 µg/L based on locational running annual average	• ≤ 64 µg/L • ≤ 80 µg/L when blending Brazos River water
Haloacetic Acid (HAA5)	Distribution System Water	• ≤ 60 µg/L based on locational running annual average	• ≤ 48 µg/L • ≤ 60 µg/L when blending Brazos River water
Chlorite	Finished Water	• < 1 mg/L	• < 0.8 mg/L
		Secondary Constituents	
Chloride	Finished Water	• < 300 mg/L	• < 250 mg/L when blending with Brazos River Water
Iron	Finished Water	• < 0.3 mg/L	• < 0.24 mg/L
Manganese	Finished Water	• < 0.05 mg/L	• < 0.04 mg/L
Sulfate	Finished Water	• < 300 mg/L	• < 250 mg/L when blending with Brazos River Water
Total Dissolved Solids	Finished Water	• < 1,000 mg/L	• < 900 mg/L when blending with Brazos River Water

Notes:
1. In accordance with the Stage 1 Disinfection and Disinfection Byproduct Rule (DBP1R) TOC Removal, TOC removal requirements in 30 TAC Section 290.112(b), and historical data of raw alkalinity and TOC.
2. Stage 2 Disinfection and Disinfection Byproduct Rule MCLGs vary for different DBP compounds.
3. DBP treatment goals are based on target concentrations at all times, not based on locational running annual averages.

4.2 Treatment Technology Evaluation

4.2.1 Granular Activated Carbon Adsorption

Granular activated carbon (GAC) is an effective treatment for removal of organics and other charged compounds that adsorb to the media like taste, odor and color causing compounds, TOC, disinfection byproducts, PFAS, pharmaceuticals, micropollutants, and pesticides. The treatment efficacy depends on the type of carbon used, contact time, the adsorptive capacity for a given target contaminant, and the presence of contaminants that may compete with a target contaminant for adsorption sites. GAC contactors are post filtration, polishing treatment processes that can be small pressure vessels or large gravity beds. GAC pressure vessels are shown in **Figure 4-1**.

The primary challenge with GAC is that over time the adsorption capacity is exhausted (i.e., when maximum allowable contaminant breakthrough is reached). Once exhaustion is reached, the GAC media must be replaced. The frequency of replacement depends on the targeted contaminant(s), competition with other contaminants, water quality characteristics, and design criteria. Regeneration of GAC is possible (i.e., restoring the adsorption capacity), which reduces the operating costs.

Bench-scale or pilot-scale studies are recommended and typically conducted to evaluate the exhaustion rate of different GAC media types. During testing the media type, size, and contact time should be considered to maximize performance.

Figure 4-1. GAC Vessels

4.2.2 Ballasted Flocculation

Ballasted flocculation is a technique to improve turbidity and TOC removal by adding a ballast, such as microsand, together with a coagulant and polymer. The ballast helps create larger and denser flocs, which leads to faster settling times. Following sedimentation, the microsand can be separated from the settled flocs and recycled. An additional advantage of the higher settling rates is a more compact system. There are several proprietary systems available on the market, such as RapiSand by WesTech and Actiflo Turbo by Veolia, that are sold as packages. A comparison between RapiSand, Actiflo, and conventional flocculation/sedimentation is shown in **Table 4-4** to highlight the increased solid loading and decreased footprints of the ballasted processes. The RapiSand configuration is shown in Dissolved Air Flotation and Suspended Air Flotation.

Figure 4-2. Ballasted Flocculation

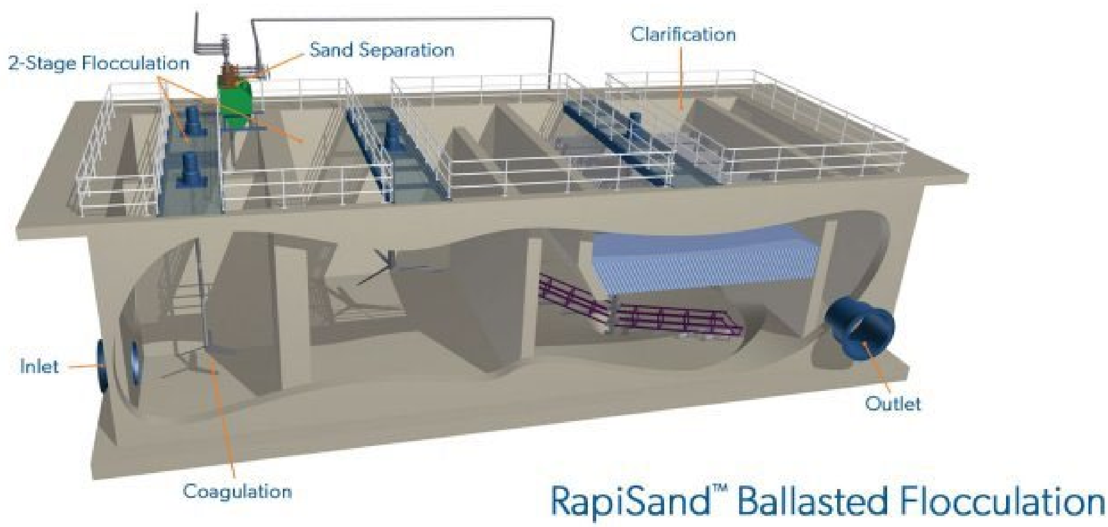


Table 4-4. Brazos River Raw Water Quality

Process	Flocculation Time (minutes)	Hydraulic Retention Time (minutes)	Space Reduction
Conventional Flocculation/ Sedimentation	30	240	Not Applicable
Actiflo Turbo	3	6-8	95-98%
RapiSand	8	12	90%

4.2.3 Dissolved Air Flotation and Suspended Air Flotation

Dissolved Air Flotation (DAF) is a water treatment process used to remove suspended solids, organic matter, and other fine particles that are difficult to settle through conventional sedimentation. In a DAF system, air is dissolved into water under pressure and then released into a flotation tank at atmospheric pressure. The release forms microscopic air bubbles that attach to suspended particles, reducing their density and causing them to float to the surface. The floating layer of solids, known as the scum, is then mechanically skimmed off, while clarified water is collected from below. **Figure 4-3** is an image of a DAF system.

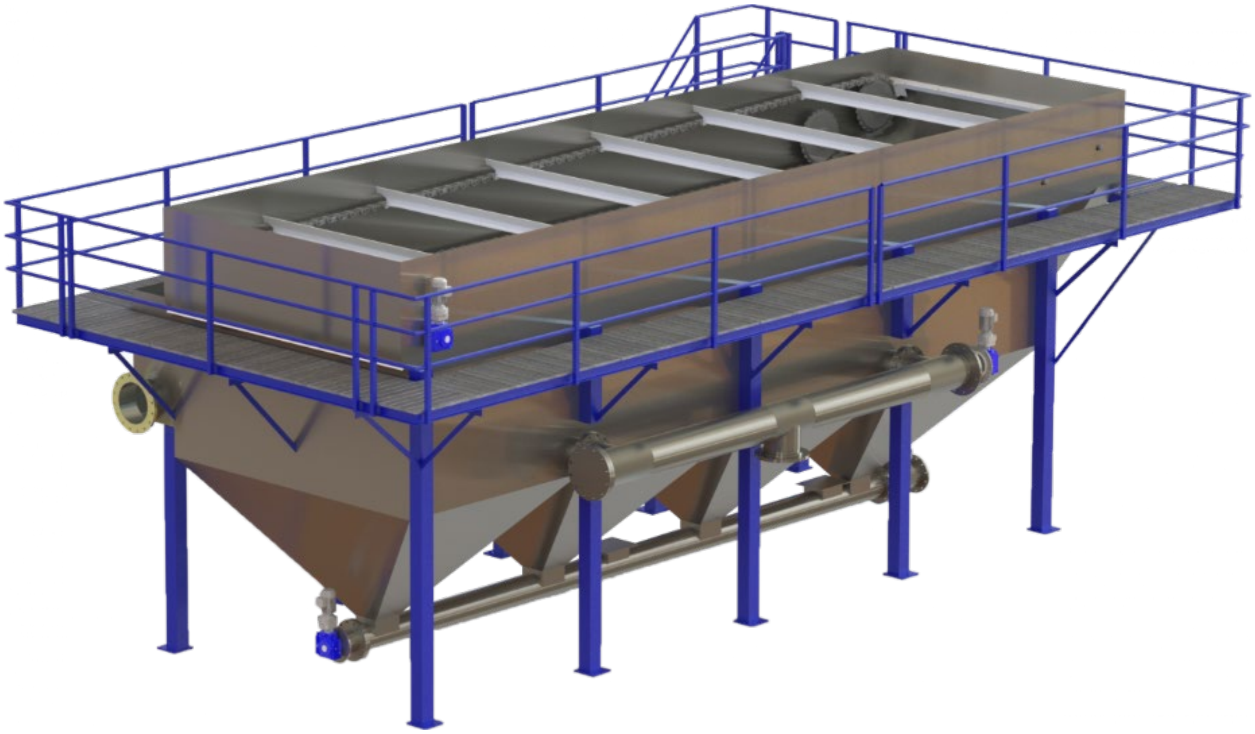
DAF is often used in drinking water treatment when the raw water has a lot of color, algae, or other light materials that are hard to settle out. It helps produce clearer water before it goes to filters and disinfection. DAF systems are efficient, take up less space than traditional settling tanks, and work well even when water quality changes.

Figure 4-3. Dissolved Air Flotation Tank

Suspended air flotation (SAF) is a process that combines a surfactant with air bubbles to create stable micro-bubbles. The micro-bubbles bind to particles and float to the surface where they are skimmed off the top. SAF is effective at removing algae and suspended solids. This technology improves upon traditional dissolved air flotation (DAF) by generating smaller bubbles without pressurizing the system, allowing for increased bubble surface area and power savings. The SAF system is manufactured by Heron Innovators and includes a SAF generator and flotation cell, shown in **Figure 4-4**. Water travels through a mixer where SAF froth contacts solids prior to entering the flotation cell. Solids are then separated through flotation and removed via skimming.

The manufacturer, Heron, has only installed SAF units for wastewater systems but currently has a pilot for drinking water being run in Texas. This treatment process will require piloting with significant coordination with TCEQ because it will be considered a novel treatment technology.

Figure 4-4. Suspended Air Flotation Tank



4.2.4 Reverse Osmosis Membranes

Reverse osmosis (RO), is a filtration technology used to remove dissolved contaminants. RO removes almost all contaminants in water including organics and dissolved ions. High-pressure RO membranes are typically installed downstream of low-pressure membranes or more traditional filtration technologies such as granular media filters to protect the RO system and increase throughput. An RO skid is shown in **Figure 4-5**.

RO is an expensive and energy-intensive technology since it requires a pumping system to supply adequate pressure to pass water through the membranes. Unless a contaminant (e.g., sodium or PFAS) is present at significant concentration, membranes are commonly installed in drinking water applications as a “partial stream” technology, where only a portion of the filtered water is treated with RO. Permeate, or water treated by the membranes, is blended with the filtered water that bypasses the RO system to achieve the desired water quality and stability while minimizing post-RO chemical addition.

Another challenge with RO membranes is the resulting concentrate stream, or the stream containing contaminants that are rejected by the membrane. These streams can be disposed of using various methods including surface water discharge, deep well injection, and evaporation ponds. Coordination with TCEQ will be required to get a permitted method for discharging the RO concentrate stream.

Pilot-testing would be required for application of high-pressure membranes. Piloting provides insight regarding design criteria such as the potential recovery rate of the system (i.e., how much water the membrane system will treat and how much is rejected in the concentrate system), and any pre- and post-treatment optimization required to maximize membrane performance. Piloting would also provide the opportunity to evaluate treatment options for the resulting concentrate stream.

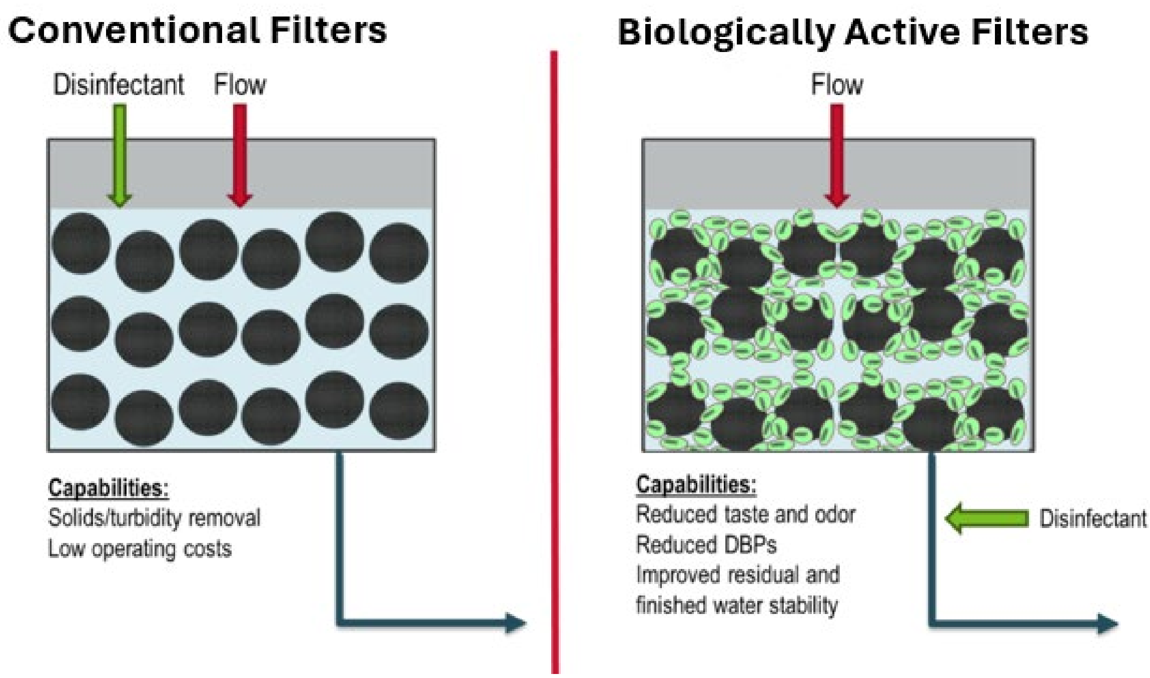
Figure 4-5. Reverse Osmosis Membranes

4.2.5 Oxone and Biologically Active Filtration

Ozone is a strong oxidant that can be used to provide disinfection credits and effectively oxidizes a wide range of contaminants like TOC, DBP precursors, taste and odor compounds, pharmaceuticals, and metals. Ozone can be applied as a pre-oxidant to raw water or at an intermediate stage to settled water. When ozone reacts with organic contaminants it breaks down chemical bonds and forms smaller compounds that are biodegradable. Ozone can be coupled with biologically active filtration (BAF) to improve contaminant removal.

BAF is the process of allowing biological growth in filter media by not maintaining a disinfectant residual across a WTP's filters. This will cause a biofilm to be established on the filter media, creating a biofilter, which can remove and/or transform inorganic and organic contaminants. Biofilters provide enhanced organics removal, as the microorganisms consume the biodegradable carbon that is formed when ozone reacts with TOC. Biofilters can typically provide an additional 10-20% TOC removal and are also able to remove taste and odor compounds and metals. A comparison between conventional filters and biofilters is shown in **Figure 4-6**. Either anthracite or GAC can be used as biofilter media. GAC's porous structure supports more biomass and achieves higher contaminant removal than anthracite. GAC is also more costly than anthracite, though the cost of the media is only a small fraction of the overall BAF. The GAC media in biofilters does not get replaced regularly like GAC used in adsorbers (refer to **Section 4.2.1**), but will last years like anthracite.

Figure 4-6. Comparison of Conventional Filters and Biologically Active Filters



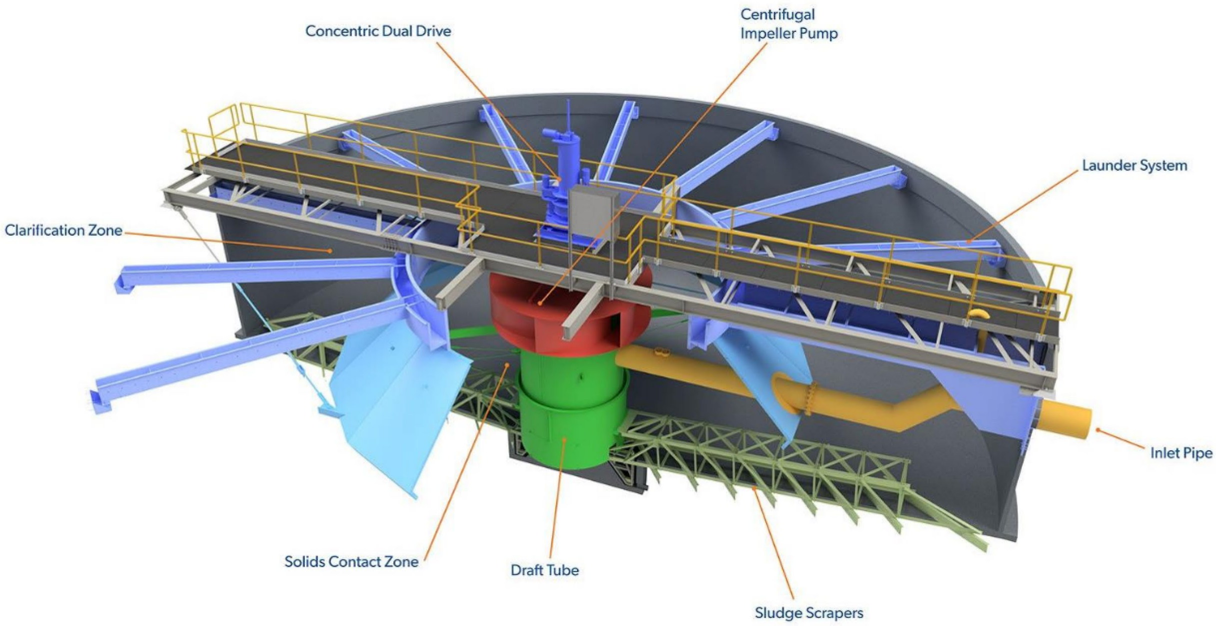
When considering full-scale ozone implementation, it is important to understand the formation of bromate, a regulated DBP. Bromate formation results from a reaction between ozone and bromide. Several process design and water quality parameters, including ozone dose, contact time with ozone, bromide concentration, temperature, and pH, can impact bromate formation in the treated water. Bromate formation generally increases as each of these factors increase. The U.S. Environmental Protection Agency (EPA) has established a regulated maximum contaminant level (MCL) of 10 µg/L (ug/L) for bromate in drinking water. The Brazos River has elevated bromide concentrations that can exceed 1 mg/L so when Brazos River water is blended with Palo Pinto water, it could increase the risk for bromate formation. If ozone is considered as a treatment technology, bench scale testing should be performed to see the extent of bromate formation and evaluate potential bromate mitigation strategies.

4.2.6 Solids Contact Units (SCUs)

SCUs provide enhanced turbidity removal of low solids concentration feed water by utilizing a sludge blanket to increase particle concentration and improve coagulation efficacy. Highly concentrated solids are mixed with feed water through a pumping impeller that minimizes shearing of flocs. Water then enters the slow mix zone for flocculation. As solids settle, clarified water rises to the clarification zone. Clarified water is removed through a launder system that collects water uniformly over the entire clarification area. Sludge rakes gather settled solids for removal at the bottom of the basin. **Figure 4-7** shows the components of a SCU.

Recirculating settled solids enhances particle collisions, floc growth, and the efficiency of particle removal. Because SCUs re-circulate settled solids, less chemical input is required. SCUs are also able to operate at a higher loading rate (1.0 gpm/sq ft) than conventional clarifiers (0.6 gpm/sq ft) due to their accelerated flocculation and sedimentation process.

Figure 4-7. WesTech SCU



4.2.7 Optimized Conventional Treatment Basins

This subsection discusses optimized conventional coagulation, flocculation, and sedimentation basins for improved performance and operational efficiency. Coagulation is achieved similarly through the controlled addition of coagulants (e.g., alum or ferric salts) in a rapid mix tank and then to destabilize suspended particles passed through a serpentine pathway. This is followed by gentle mixing in flocculation basins to promote the formation of larger, settleable flocs.

The major difference between the existing treatment process is the enhanced sedimentation stage using inclined plate settlers (also known as lamella plates). The plate settlers are incorporated within the sedimentation basins in place of the tube settlers. These UV resistant stainless steel plate settlers significantly increase the effective settling surface area, allowing for higher loading rates, improved particle removal efficiency, and an overall smaller footprint.

The optimized design includes:

- Enhanced mixing and retention times to improve floc formation and settling efficiency
- Improved basin hydraulics to minimize short-circuiting and dead zones
- Automated chemical dosing control based on raw water quality fluctuations
- Refined sludge removal systems to reduce solids carryover and improve maintenance intervals

These optimizations result in more consistent turbidity removal, reduced chemical usage, and greater resilience to changes in raw water quality. The system maintains compliance with drinking water treatment standards while improving operational reliability and cost-effectiveness.

JMS provides several pieces of equipment that decrease the footprint and increase the performance of conventional treatment using baffling systems, flocculators, inclined plate settlers, and a sludge removal system with orifices. These are shown in **Figure 4-8**. Note that several styles of flocculators are available, for the planned expansion and future sizing of Hilltop WTP, vertical flocculators are recommended.

Figure 4-8. JMS's Optimized Conventional Treatment Equipment

5 Alternatives Development and Evaluation

Three alternatives with sub alternatives were considered for expanding the treatment capacity from 12 to 16 MGD and meet the water treatment goals outlined in Section 4.1.3. The alternatives were based on the following buckets:

Alternative 1: Expansion of Existing Treatment Process

- Approach: Maintain the current treatment process with the least amount of new infrastructure.
- Actions:
  - Add additional treatment units to increase capacity.
  - Replace or repair aging and degraded infrastructure.
- Goal: Improve capacity while minimizing changes to the current process.

Alternative 2: Hybrid Approach – Combine Existing Infrastructure with New Technologies

- Approach: Enhance and supplement existing systems with advanced treatment technologies.
- Sub-Alternatives:
  - Ballasted Flocculation – Uses microsand to speed up sedimentation and reduce footprint.
  - Suspended Air Flotation (SAF) – Replaces traditional sedimentation with air-assisted clarification.
  - Reverse Osmosis (RO) – Provides high-level removal of contaminants, particularly for TDS or specific chemical concerns.
  - Granular Activated Carbon (GAC) – Targets removal of organics, taste and odor compounds, and emerging contaminants.
  - Ozone and Biologically Active Filtration (BAF) – Add settled water ozone – a high-powered oxidant followed by biologically active filters with GAC targeting removal of organic and taste and odor compounds.

Alternative 3: Construction of a New WTP

- Approach: Build a new plant to meet future capacity and regulatory requirements with flexibility for future expansions or other treatment additions.
- Conventional Treatment was selected for this alternative – or the use of standard but optimized methods like coagulation, flocculation, sedimentation, filtration, and disinfection.

The three alternatives can be compared to the existing process flow diagram shown in **Section 3.1.1** and shown in **Table 3-1** with the capacity of each process shown.

The following Opinion of Probable Construction Costs (OPCCs) presented for each alternative in the following sections represent an Association for the Advancement of Cost Engineer (AACE) 18R-97 Class V estimate, maturity level 0-10%, concept screening level of detail, and expected accuracy range of -20% to -50% on the low end and +30% to +100% on the high end. The OPCCs are estimated based on the September 2025 costs escalated to 2029 as a projected mid-point of construction but will need to be adjusted prior to construction for the final capital cost. The cost is based on information available to HDR Engineering, Inc. However, HDR Engineering, Inc. has no control over the cost of labor, materials, equipment, real estate, or services furnished by others, or over the contractor's methods of determining prices, or over competitive bidding or market conditions. HDR Engineering, Inc. does not guarantee that proposals, bids or actual project or construction cost will not vary from OPCC estimates prepared by HDR Engineering, Inc. Further, given the industry acknowledged range in accuracy for a Class V estimates and the criticality of budgeting projects, HDR recommends that the upper range be utilized when requesting funding allocations from stakeholders and until a more refined level of estimation can be completed.

5.1 Alternative 1: Expand Existing Hilltop WTP

Alternative 1 maximizes the use of existing treatment processes at the Hilltop Water Treatment Plant and was selected as a cost-saving option.

5.1.1 General Description and Process Components

The general process for Alternative 1 does not change from the existing water treatment process described in **Section 3.1.1**. However, several process components will be modified due to their function or structure.

Alternative 1 includes the construction of additional rectangular sedimentation basins, new dual-media filters, and a new clearwell to enhance the overall treatment process.

All alternatives, including Alternative 1, will reuse the following existing infrastructure:

- The 375 MG presedimentation reservoir, known as the Hilltop Reservoir, for raw water storage, flow equalization, and settling.
- The intermediate pump station (the Presedimentation Pump Station) to convey water from Hilltop Reservoir to the pretreatment splitter box.
- The existing 2.0 MG circular clearwell.
- The finished water pump station (the High Service Pump Station) to deliver treated water to the distribution system.

Alternative 1 will also reuse the following process components:

- The rectangular sedimentation basin structure, which will be upgraded with new internal mechanisms. The existing circular sedimentation basins will be abandoned.
- Existing chemical storage and feed systems for coagulant, caustic, chlorine, chlorine dioxide, ammonia, and polyphosphate. Powdered activated carbon (PAC) will no longer be used.
- The process wastewater recycling system, which includes a 300,000-gallon basin and a pump station.
    - Optimization of solids recycling to the head of the sedimentation basin is included as part of Alternative 1. If this alternative is selected, this should be evaluated during preliminary design.

Alternative 1 will replace the following components:

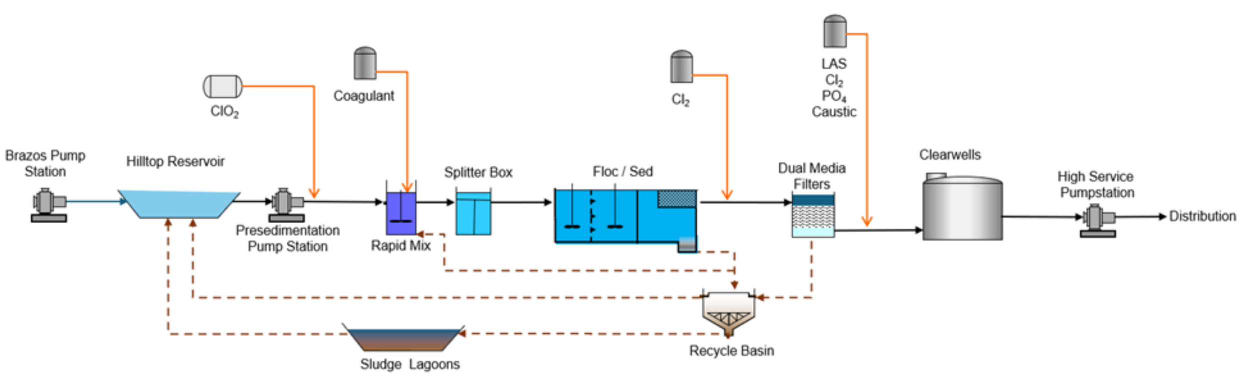
- The static mixer will be replaced with a rapid mix tank.
- The existing pretreatment splitter box will be replaced to better handle increased flows.
- The two existing rectangular sedimentation basins will be upgraded with new stainless steel rakes, vertical flocculators, and tube settlers. If this alternative is selected, plate settlers should be evaluated in lieu of tube settlers.
- Three additional rectangular sedimentation basins will be added for capacity with internal equipment to match the existing sedimentation basin.

- The west circular sedimentation basins will be demolished and the filters in that location.
- A new comprehensive SCADA system will be added.
- The existing filters and pipe gallery will be replaced.
- The 1.0 MG and 0.5 MG clearwells will be partially demolished and replaced with a new 2.0 MG clearwell.
- The administration building will be replaced.
- A new septic system will be installed.
- Containment will be added for the existing caustic building. This alternative assumes that the extensive cracking of the building walls noted in Section 3.2.3.3 are not compromising the structural integrity of the structure and the cracks and the floor can be cost-effectively repaired or replaced.

This Alternative would include repairs to existing sludge wasting valves and other necessary repairs identified in **Section 3.0**. The administration building includes over 5,000 square feet with space for mechanical, electrical rooms, laboratory, locker rooms, office space, breakroom and a control room.

A process flow diagram is shown in **Figure 5-1**.

Figure 5-1. Alternative 1 – Process Flow Diagram



Alternative 1 includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to install sloped roofs. The existing filters, operations building, splitter box and eastern circular sedimentation basin will be abandoned in place.

5.1.2 Advantages and Disadvantages

Advantages

The main advantage of Alternative 1 is the cost savings and familiarity with the treatment process. The improvements address Hilltop WTP's main treatment challenges without adding new treatment processes. Adding recycling of solids in the sedimentation basins may also contribute to cost savings by reducing coagulant dosing. This alternative provides an advantage to the WTP staff as they are familiar with the conventional treatment processes.

Disadvantages

- The existing process may not be capable of meeting future or more stringent regulatory requirements. It is also less adaptable to treat emerging contaminants (e.g., PFAS, pharmaceuticals, microplastics).
- Older facilities may require extensive repairs or retrofitting, which can be costly and time-consuming. There may be hidden degradation or structural limitations that are not easily addressed by expansion alone.
- May require temporary shutdowns or staged construction, impacting current operations.
- Continuing with older technologies may result in less efficient operations, higher chemical and energy usage, and increased maintenance.

5.1.3 Treatment Process Sizing and Configuration

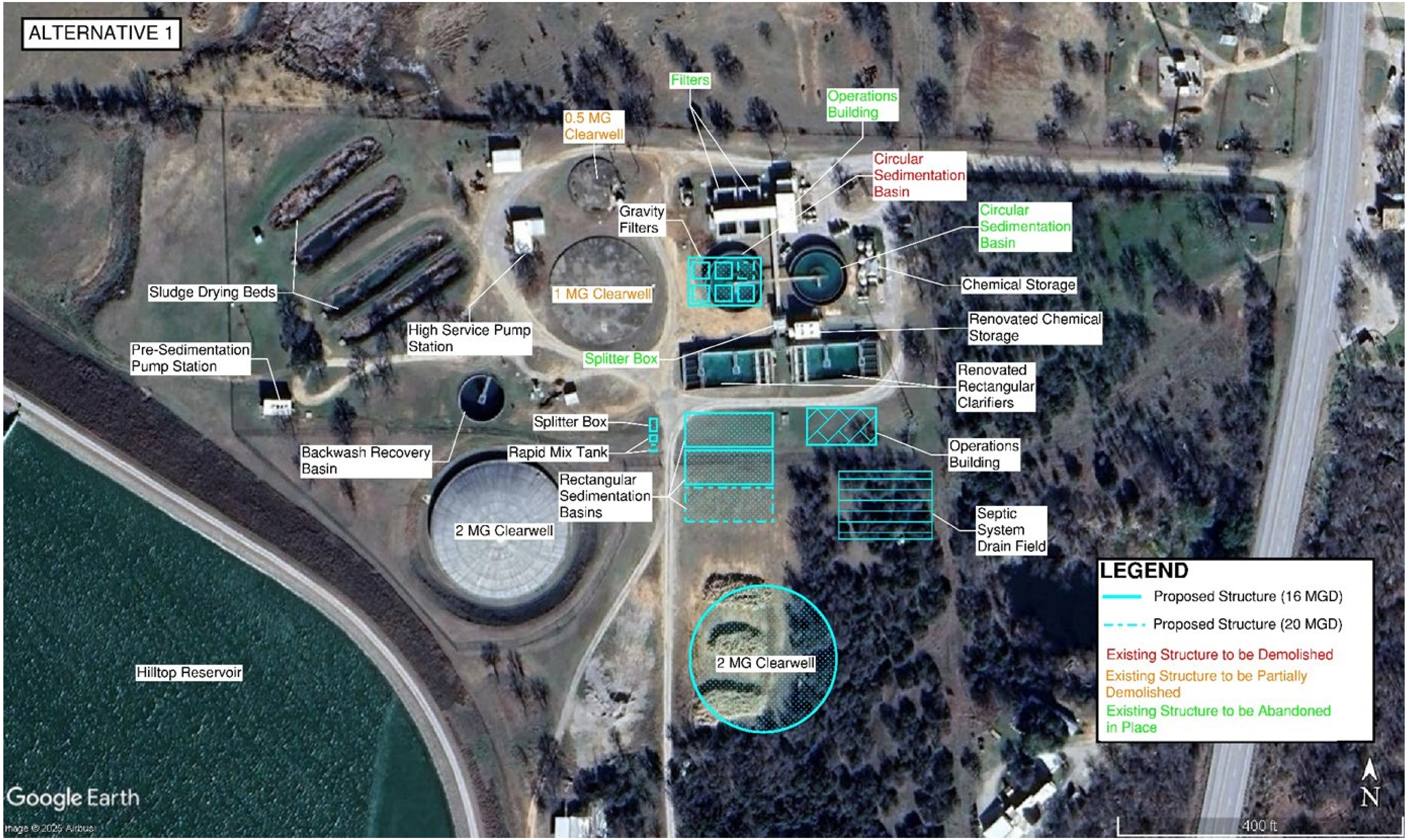
Three (3) new rectangular sedimentation basins will be added to match the existing rectangular sedimentation basins, in-kind, with a capacity of 4.3 MGD each. Five (5) new filters will be constructed to accommodate 4 MGD each, putting the firm filter capacity at 16 MGD or a total of 20 MGD capacity. A summary of the sizing and capacities of the different treatment units is shown in **Table 5-1**. The Alternative 1 site layout is shown in **Figure 5-2**.

Table 5-1. Alternative 1 Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Splitter Box	1	10’ W x 20’ L	NA	16	NA	16
Rectangular Sedimentation Basins	5[2]	125’L x 50’W	SOR = 0.6 gpm/sf	4.3	17.2	21.5
Gravity filters	5	25’ L x 25’ W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H	NA	2	-	-

[1]SOR represents surface overflow rate.
[2]Two basins are existing of the five listed in this table.

Figure 5-2. Alternative 1 – Site Layout



CONCENTRATION TIME STUDY FOR NEW PLANT

A Concentration Time (CT) Study was developed for this alternative to evaluate if the treatment recommendations could be implemented and meet the regulatory requirement for 2-log virus and 0.5-log giardia removal. The CT Study considered a build out for 2060 flows up to 20 MGD, a finished water pH of 8, and 10ºC temperature to make sure that increased flows and winter temperatures (when disinfectants are less effective) would not require significant process modifications or increasing free chlorine doses across the filters. The sizing of three disinfection zones, disinfectant residuals, and corresponding pathogen removal are shown in **Table 5-2**. It was assumed that the new and old 2 MG clearwells would be operated at 50% capacity. The results show that maintaining moderate residuals of ClO2 in the raw water line, a low free chlorine residual though the filters, and a moderate chloramine residual in the clearwells to meet disinfection requirements.

Table 5-2. CT Study and Pathogen Inactivation for Alternative 1 at 20 MGD and 10ºC

Disinfection Zone	Volume (gal)	Baffle Factor	Flow (MGD)	T_{10} (min)	Disinfectant Residual	Log Removal viruses	Log Removal Giardia
D1 Raw Water Line	39,000	1	20	2.8	0.3 mg/L (ClO_2)	0.42	0.11
D2 Filters	445,300	0.7	20	112	0.2 mg/L as Cl2 (Free Chlorine)	16.56	0.48
D3 Clearwells	2,000,000	0.5	20	90	2 mg/L as Cl2 (Chloramines)	0.47	0.24
Total	-	-	-	-	-	17.45	0.83

5.1.4 Water Treatment Residuals

Alternative 1 will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP. A preliminary evaluation was performed, and the existing volume appears to be sufficient but this should be re-evaluated during preliminary design especially if solids recycle is included.

EXISTING LAGOON SIZING

The backwash recycle basin receives flow from the filter backwashes as well as solids generated from sedimentation. The solids are sent to the sludge lagoons while decant liquid is recycled to the Hilltop Reservoir.

Three sludge lagoons are existing at the WTP with approximate depths of 6.5 feet. Two sludge drying beds are approximately 200’ by 25’. The third bed is approximately 170’ by 30’. The total combined volume of the lagoons is approximately 734,000 gallons, which is sufficient to manage solids generated by a 16 MGD flowrate based on a coagulant dose of 30 mg/L and solids generation rate of 2,635 lb/day.

Table 5-3. Alternative 1 Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Rapid Mix Tank	2	EA	$37,756	$100,000
2	Splitter Box	1	LS	$189,926	$200,000
3	Rectangular Sedimentation basin	3	EA	$1,252,000	$3,800,000
4	Gravity Filters	1	LS	$5,209,877	$5,200,000
5	Admin Building	5,640	SF	$450	$2,500,000
6	Upgraded Existing Sedimentation basins	1	LS	$596,000	$1,200,000
7	Sunshades	2	EA	$220,000	$400,000
8	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
9	Septic system	1	LS	$50,000	$100,000
10	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
11	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
12	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$21,700,000**
B	Sitework + Soil Conditions			10%	$2,200,000
C	Site Piping, Valves, Manholes			15%	$3,300,000
D	Interior Process Piping & Valves			35%	$7,600,000
E	Mechanical			12%	$2,700,000
F	Electrical			20%	$4,400,000
G	Instrumentation and Controls			20%	$4,400,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$46,300,000**
I	Contingency			30%	$13,900,000
J	**Construction Subtotal 3 = H+I**				**$60,200,000**
K	General Conditions, Mobilization, Demobilization			10%	$6,100,000
L	**Construction Subtotal 4 = J+K**				**$66,300,000**
M	General Contractor Overhead + Profit			10%	$6,700,000
N	**Construction Subtotal 5 = L+M**				**$73,000,000**
O	Bonds + Insurance			2%	$1,500,000
P	**Construction Price Today = N+O**				**$74,500,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$85,500,000
R	Engineering, Legal, Fiscal, Administration			20%	$14,900,000
S	**TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R**				**$100,400,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					$6.28

5.2 Alternative 2

Alternative 2 utilizes a combination of existing infrastructure with the incorporation of new treatment technologies:

a. Ballasted Flocculation
b. Suspended Air Flotation
c. Reverse Osmosis
d. Granular Activated Carbon
e. Ozone and Biologically Active Filtration

Alternative 2 will reuse the following process components:

- The rectangular sedimentation basin structure, which will be upgraded with new internal mechanisms. The existing circular sedimentation basins will be abandoned.
- Existing chemical storage and feed systems for coagulant, caustic, chlorine, ammonia, and polyphosphate. Powdered activated carbon (PAC) will no longer be used.
- The process wastewater recycling system, which includes a 300,000-gallon basin and a pump station. This system captures filter backwash, surface wash water, and sedimentation basin drain water. Settled water is recycled to the Hilltop Reservoir, while underflow and sludge are sent to four lagoons. Decant water from the lagoons may also be pumped back to the Hilltop Reservoir.

Alternative 2 will replace the following components:

- The static mixer will be replaced with a rapid mix tank.
- The existing pretreatment splitter box will be replaced to better handle increased flows.
- The existing rectangular sedimentation basins will be upgraded with new stainless steel rakes, vertical flocculators, and tube settlers for all of the sub-alternatives except for the ballasted flocculation.
- The circular sedimentation basins will be replaced with additional treatment capacity; process units will vary depending on the sub-alternative.
- The existing filters and pipe gallery will be replaced.
- The 1.0 MG and 0.5 MG clearwells will be replaced with a new 2.0 MG clearwell.
- The administration building will be replaced, as proposed in Alternative 1.
- A new septic system will be installed.
- Containment will be added for the existing caustic building.

5.2.1 Alternative 2A: Ballasted Flocculation

Alternative 2A, which incorporates ballasted flocculation, was selected to enhance the settling of fine colloidal particles. It also includes retrofitting the existing sedimentation basins with a high-rate system to increase the capacity, providing a cost-saving approach by leveraging existing infrastructure.

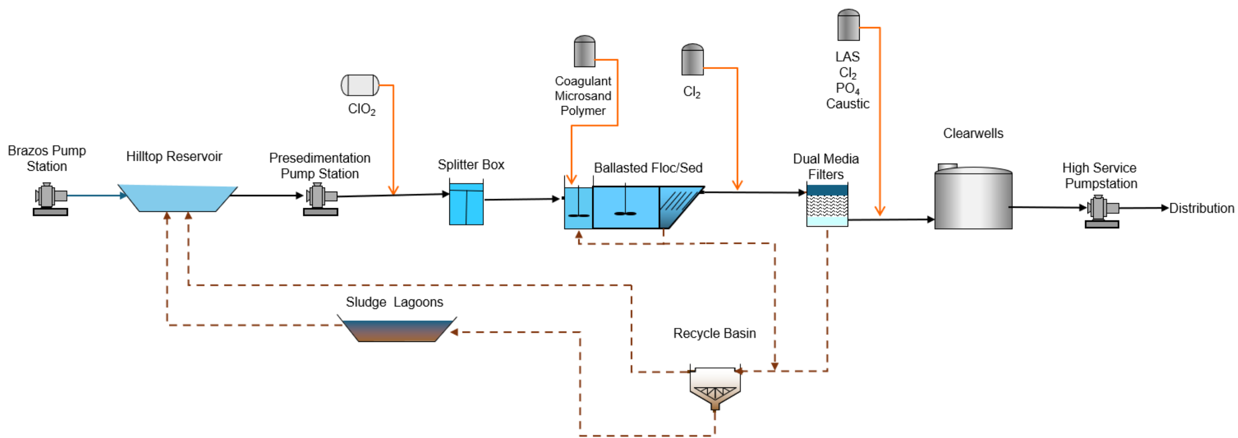
5.2.1.1 General Description and Process Components

Alternative 2A involves retrofitting the existing rectangular sedimentation basins with a ballasted flocculation system. These systems provide the advantage of high throughput within a compact footprint. Additionally, the ballasting media enhances the settling of poorly settling flocs, such as the colloidal fine floc that currently tends to float in the Hilltop WTP sedimentation basins. There is more discussion on the treatment technology in **Section 4.2**.

The existing filters will be replaced with larger dual media filters, and the pipe gallery will be upgraded to a more operator-friendly design that simplifies maintenance—eliminating water infiltration and issues with the equipment located in the pipe gallery.

A process flow diagram is shown in **Figure 5-4**.

Figure 5-4. Alternative 2A – Process Flow Diagram



Alternative 2A includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to install sloped roofs. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place. The existing rectangular sedimentation basins will be retrofit with the ballasted flocculation system.

5.2.1.2 Advantages and Disadvantages

Advantages

Ballasted flocculation and sedimentation offer significant advantages over conventional coagulation, flocculation, and sedimentation systems due to faster settling times and a reduced footprint. This system is highly effective at removing suspended solids and algae. Additionally, its modular design allows for straightforward future expansions.

Disadvantages

One disadvantage of this alternative is the additional operation and maintenance required for managing the recycled sand. Sand is abrasive and necessitates specialized equipment for handling and maintenance. Additionally, ballasted flocculation systems typically rely on proprietary technology supplied by a specific vendor. Another potential drawback is that, due to its high-throughput nature, wide variations of influent water quality or operational challenges could adversely impact overall effluent water quality. With this alternative the treatment goal of <1 NTU in settled water turbidity will need to be changed to < 4 NTU. This alternative also has a lower ability to meet future regulations for emerging contaminants. An option could be to allocate space for future GAC vessels or RO membranes and include tie-in locations into process piping.

5.2.1.3 Treatment Process Sizing and Configuration

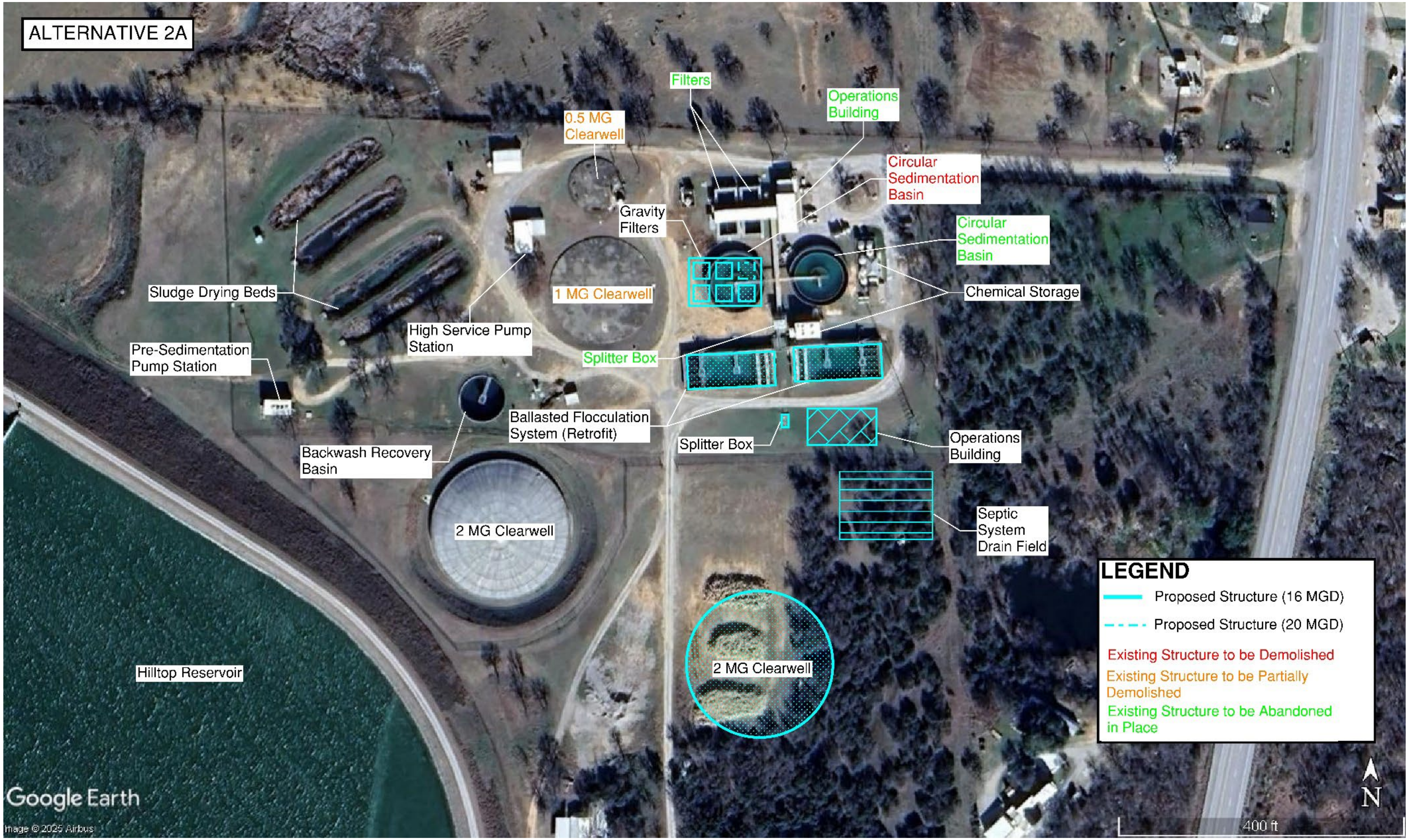
Each of the five (5) ballasted flocculation treatment unit has dimensions of 33.5'L x 12.5'W x 12.5'H and can accommodate 4 MGD. The Alternative 2A site layout is shown in **Figure 5-5**.

The Veolia Actiflo system was selected as the basis of design for this alternative because it has a longer track record, more installations, and wider usage compared to WesTech RapiSand.

Table 5-4. Alternative 2A Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Splitter Box	1	10' W x 20' L	NA	16	NA	16
Ballasted Flocculation System (retrofit)	2	57' L x 24' W x 24' H	NA	4	16	20
Gravity filters	5	25' L x 25' W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116'-9" D x 25' H	NA	-	-	-

Figure 5-5. Alternative 2A – Site Layout



5.2.1.4 Water Treatment Residuals

Alternative 2A will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP.

5.2.1.5 Opinion of Probable Cost

Table 5-5. Alternative 2A Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Splitter Box	1	LS	$189,926	$200,000
2	Actiflo Equipment	5	EA	$650,000	$3,300,000
3	200-Micron Strainer	1	LS	$120,000	$100,000
4	Structural Modifications to Existing Basins	1	LS	$880,000	$900,000
5	Gravity Filters	1	LS	$5,209,877	$5,200,000
6	Admin Building	5,640	SF	$450	$2,500,000
7	Septic System	1	LS	$50,000	$100,000
8	Sunshades	2	EA	$220,000	$400,000
9	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
10	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
11	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
12	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$20,900,000**
B	Sitework + Soil Conditions			10%	$2,100,000
C	Site Piping, Valves, Manholes			15%	$3,200,000
D	Interior Process Piping & Valves			35%	$7,400,000
E	Mechanical			12%	$2,600,000
F	Electrical			20%	$4,200,000
G	Instrumentation and Controls			20%	$4,200,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$44,600,000**
I	Contingency			30%	$13,400,000
J	**Construction Subtotal 3 = H+I**				**$58,000,000**
K	General Conditions, Mobilization, Demobilization			10%	$5,800,000
L	**Construction Subtotal 4 = J+K**				**$63,800,000**
M	General Contractor Overhead + Profit			10%	$6,400,000
N	**Construction Subtotal 5 = L+M**				**$70,200,000**
O	Bonds + Insurance			2%	$1,500,000
P	**Construction Price Today = N+O**				**$71,700,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	**$82,300,000**
R	Engineering, Legal, Fiscal, Administration			20%	$14,400,000
S	**TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R**				**$96,700,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$6.04**

5.2.2 Alternative 2B: Suspended or Dissolved Air Flotation

Alternative 2B, which replaces conventional settling with air flotation, was selected to improve the removal of fine colloidal materials. It also includes a high-rate system to increase the capacity, offering cost-savings by reducing concrete costs.

5.2.2.1 General Description and Process Components

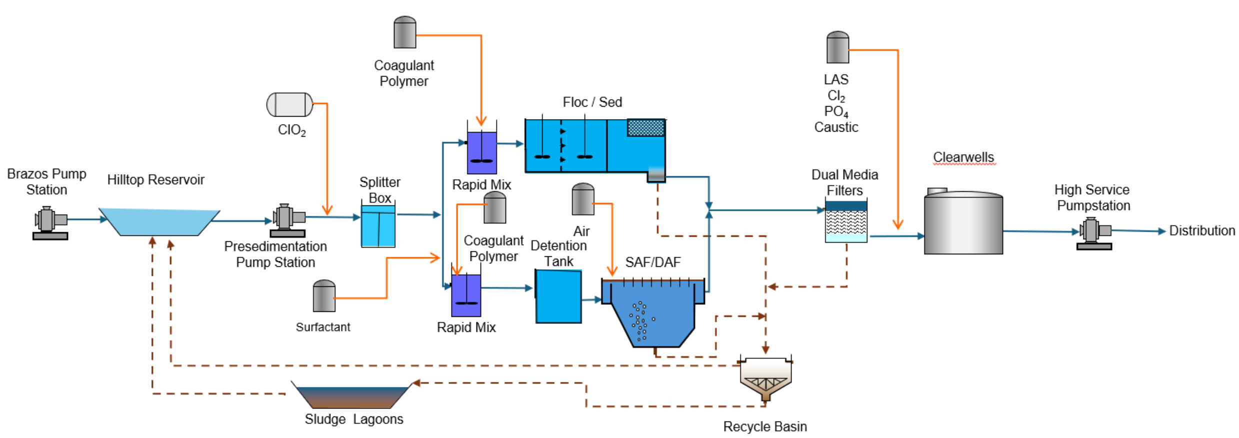
Alternative 2B modifies the existing treatment process by incorporating Suspended Air Flotation (SAF) or Dissolved Air Flotation (DAF) in place of the existing circular sedimentation basins. The existing rectangular sedimentation basins will remain. Both SAF and DAF operate as reverse sedimentation processes—large floc particles are formed and then carried to the surface by microbubbles introduced at the bottom of the basin. Additional discussion of these treatment technologies can be found in **Section 4.2**.

SAF is the primary basis of design for this alternative, though DAF was also considered during preliminary evaluations. While DAF is more commonly used in water treatment applications, it typically requires large compressor systems, along with high-capacity pumps and extensive piping infrastructure. In contrast, SAF offers a more compact design and has begun to replace DAF systems in some applications. However, SAF remains a relatively novel technology and would require close coordination with TCEQ. Piloting would be mandatory for SAF implementation and would also be required if DAF were selected.

As with Alternative 2A, the existing filters would be replaced with larger dual media filters.

A process flow diagram is shown in **Figure 5-6**.

Figure 5-6. Alternative 2B – Process Flow Diagram



Alternative 2B includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place.

5.2.2.2 Advantages and Disadvantages

Advantages

SAF and DAF systems provide high removal efficiencies for suspended solids that may not be effectively captured through conventional or ballasted coagulation and sedimentation processes. These technologies are particularly beneficial for removing algae and fine colloidal material, such as those currently observed floating on the surface of the existing sedimentation basins. Compared to DAF, SAF requires less energy and utilizes smaller pumps and piping, offering operational and infrastructure advantages.

Disadvantages

SAF/DAF will increase the operation and maintenance cost of the WTP. Similar to ballasted flocculation, SAF/DAF will have specialty equipment provided by a vendor. SAF/DAF will require a large detention or flocculation basin upstream of the process tank.

SAF is a novel technology for drinking water application. The manufacturer, Heron, has only installed SAF units for wastewater systems but currently has a pilot for drinking water being run in Texas. This treatment process will require piloting with significant coordination with TCEQ because it will be considered a novel treatment technology. The addition of a new treatment process will require training and education of the Hilltop WTP staff.

5.2.2.3 Treatment Process Sizing and Configuration

The SAF/DAF system generally consists of a detention tank and a contact chamber. This alternative approach divides the coagulation, flocculation, and sedimentation steps between two parallel treatment trains: the first is the conventional treatment using the existing rectangular basins and detention tank;, the second is treatment through a DAF/SAF system. The combined firm capacity of the coagulation, flocculation, and sedimentation processes is 16 MGD. A redundant DAF/SAF process unit is included to provide additional reliability. The Alternative 2B site layout is shown in **Figure 5-7**.

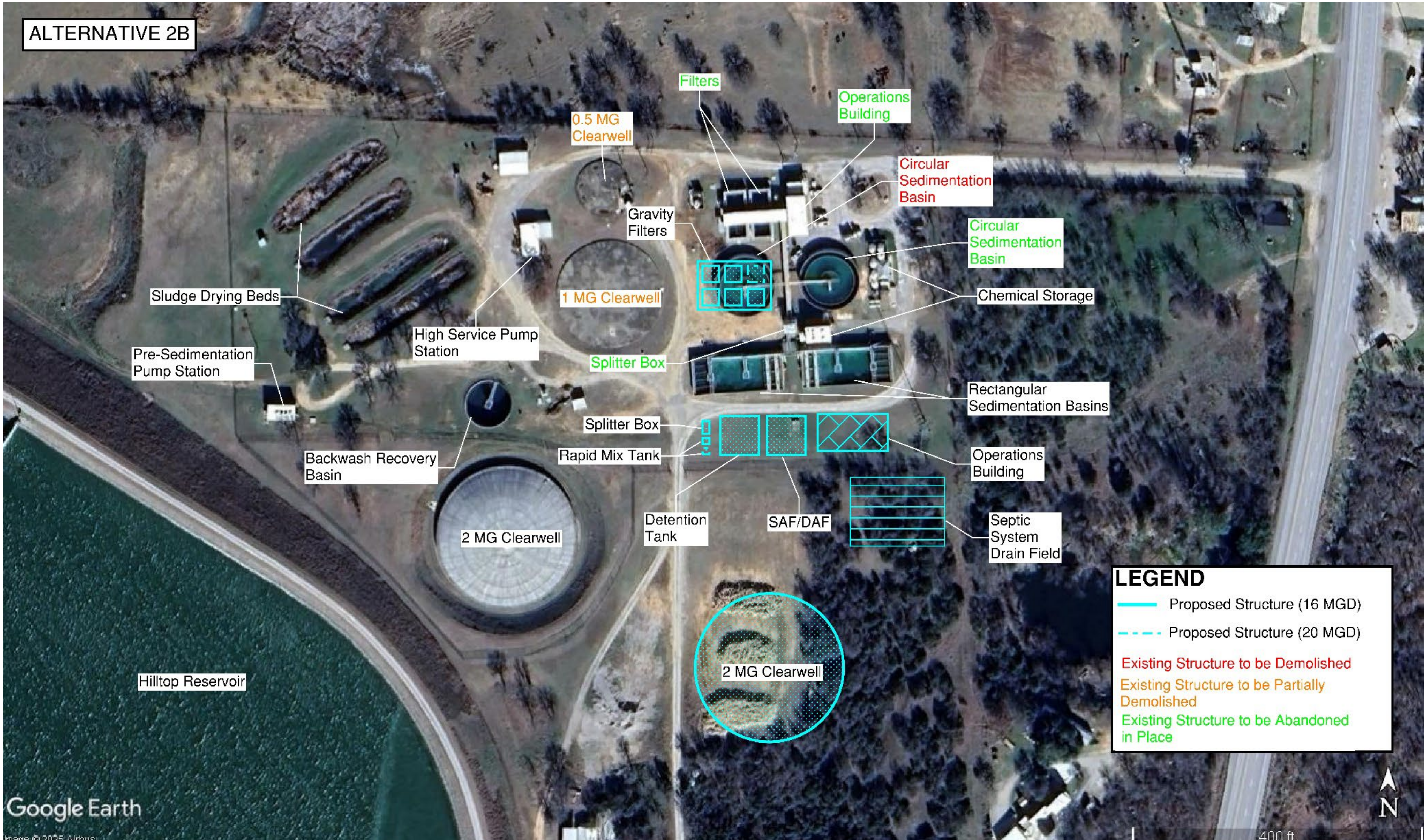
Table 5-6. Alternative 2B Treatment Process Additions

<table>
<tr><th colspan="2">Item</th><th>Quantity</th><th>Dimensions</th><th>TCEQ Design Requirement</th><th>Flow per Unit (MGD)</th><th>Firm Capacity (MGD)</th><th>Total Capacity (MGD)</th></tr>
<tr><td colspan="2">Rapid Mix Tank</td><td>2</td><td>10’ W x 10’ L</td><td>NA</td><td>16</td><td>16</td><td>32</td></tr>
<tr><td colspan="2">Splitter Box</td><td>1</td><td>10’ W x 20’ L</td><td>NA</td><td>16</td><td>32</td><td>16</td></tr>
<tr><td rowspan="2">Coagulation/ Floc/Sed Process</td><td>Suspended /Dissolved Air Flotation</td><td>3</td><td>10’W x 16’L</td><td>TBD</td><td>4</td><td rowspan="2">16[1]</td><td rowspan="2">20</td></tr>
<tr><td>Rectangular Sedimentation Basins</td><td>2[2]</td><td>50’W x 125’L</td><td>SOR = 0.6 gpm/sf</td><td>4.3</td></tr>
<tr><td colspan="2">Detention Tank</td><td>1</td><td>46’W x 50’L x 15’ H</td><td></td><td>20</td><td>NA</td><td>20</td></tr>
</table>

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Firm Capacity (MGD)	Total Capacity (MGD)
Gravity filters	5	25' L x 25' W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116'-9" D x 25' H		2	-	

[1]Redundant unit is a DAF/SAF treatment train.
[2]Existing with upgraded internal equipment.

Figure 5-7. Alternative 2B – Site Layout



5.2.2.4 Water Treatment Residuals

Alternative 2B will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP for the conventional treatment process.

The DAF and SAF processes will also generate treatment residuals primarily consisting of concentrated solids, including suspended solids, organics, and associated contaminants removed. These residuals will be characterized as relatively high moisture content. To manage these residuals, a new dedicated residual basin may need to be constructed to temporarily store and condition the sludge generated from the DAF/SAF system. This would need to be evaluated after piloting to determine the percent solids, solids loading, and required dewatering of the residual stream.

5.2.2.5 Opinion of Probable Cost

Table 5-7. Alternative 2B Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Rapid Mix Tank	2	EA	$37,756	$100,000
2	Splitter Box	1	LS	$189,926	$200,000
3	Detention Tank	1	LS	$218,074	$200,000
4	DAF/SAF System	1	LS	$3,060,582	$3,100,000
5	DAF/SAF Solids Handling	1	LS	$612,116	$600,000
6	Gravity Filters	1	LS	$5,209,877	$5,200,000
7	Admin Building	5,640	SF	$450	$2,500,000
8	Septic System	1	LS	$50,000	$100,000
9	Sunshades	2	EA	$220,000	$400,000
10	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
11	Upgraded Existing Sedimentation basins	2	EA	$596,000	$1,200,000
12	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
13	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
14	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$21,800,000**
B	Sitework + Soil Conditions			10%	$2,200,000
C	Site Piping, Valves, Manholes			15%	$3,300,000
D	Interior Process Piping & Valves			35%	$7,700,000
E	Mechanical			12%	$2,700,000
F	Electrical			20%	$4,400,000
G	Instrumentation and Controls			20%	$4,400,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$46,500,000**
I	Contingency			30%	$14,000,000
J	**Construction Subtotal 3 = H+I**				**$60,500,000**
K	General Conditions, Mobilization, Demobilization			10%	$6,100,000

Item	Component	Quantity	Unit	Unit Cost	Total
L	**Construction Subtotal 4 = J+K**				**$66,600,000**
M	General Contractor Overhead + Profit			10%	$6,700,000
N	**Construction Subtotal 5 = L+M**				**$73,300,000**
O	Bonds + Insurance			2%	$1,500,000
P	**Construction Price Today = N+O**				**$74,800,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	**$85,800,000**
R	Engineering, Legal, Fiscal, Administration			20%	$15,000,000
S	**$100,400,000**				**$100,800,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$6.30**

5.2.3 Alternative 2C: Partial Flow Reverse Osmosis

Alternative 2C was selected to maintain the conventional treatment approach familiar to staff, with the added benefit of removing TOC/DBP and addressing future regulated contaminants or potential issues that may arise from contaminants not currently present in the water source. This is a similar approach to 2D.

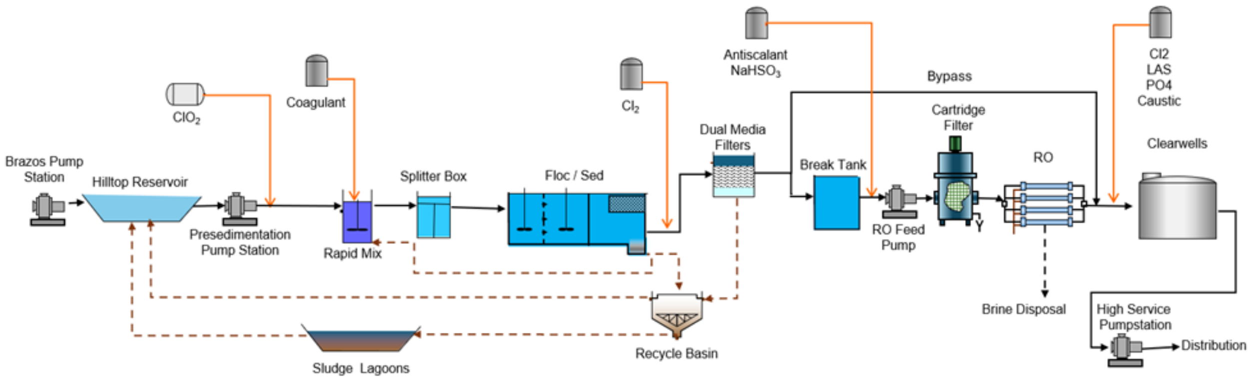
5.2.3.1 General Description and Process Components

Alternative 2C is very similar to Alternative 1 in that it involves replacing the essential conventional process units that have reached the end of their useful life. However, Alternative 2C also introduces a key modification to the existing treatment process by incorporating partial flow treatment using reverse osmosis (RO) membranes following the dual-media filters. The addition of RO membranes serves as a “belt and suspenders” approach to total organic carbon (TOC) removal, enhancing the reliability and performance of the treatment system. Furthermore, the RO system provides added flexibility to address potential future concerns related to emerging contaminants. The membrane treatment trains are modular and could be easily expanded to meet future water quality goals, if necessary.

One important consideration with RO membrane filtration is the generation of a concentrated brine stream as a byproduct. This brine requires appropriate disposal, which adds a level of operational complexity and potential cost to the overall treatment strategy. Processes upstream of the RO membranes are detailed in **Section 3.1.1**.

A process flow diagram is shown in **Figure 5-8**.

Figure 5-8. Alternative 2C – Process Flow Diagram



Alternative 2C includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place.

5.2.3.2 Advantages and Disadvantages

Advantages

RO membranes provide resiliency against changes in source water quality that may result from drought conditions or significant rainfall events. They are highly effective at removing total organic carbon (TOC) and suspended solids, offering enhanced water quality under varying conditions. In addition, RO membranes are capable of removing emerging contaminants such as per- and polyfluoroalkyl substances (PFAS) and other unregulated chemicals that may become future regulatory concerns.

A key advantage of this alternative is that it retains the existing conventional treatment approach, which the operations and maintenance staff are already familiar with. This reduces the need for extensive retraining or operational changes while adding an additional layer of protection to improve long-term water quality and system resilience.

Disadvantages

Membrane filtration is an energy-intensive process with high capital, operational, and maintenance costs. Implementing this technology would require significant training and education for the Hilltop WTP (WTP) staff, as it introduces a new and more complex treatment process.

RO membranes require CIPs every 60 to 90 days and the neutralized CIP waste must go to a dedicated evaporation pond.

RO processes are extremely effective removing all constituents in water. Besides TOC, PFAS, and other undesired contaminants, it unfortunately also removes desired constituents like alkalinity and hardness. Water immediately after RO treatment is so pure that it is extremely corrosive to cement mortar linings in water mains, unlined cast iron and steel mains, copper plumbing, galvanized service lines, and most bronze and brass appurtenances. Counteracting this corrosion potential requires the addition of lime, soda ash, carbon dioxide, or combination of these chemicals.

Additionally, the handling and disposal of the brine concentrate generated by the RO system presents a major challenge. Brine disposal requires proper permitting and could necessitate land acquisition for the construction of evaporation ponds or infrastructure for discharge to the Brazos River, both of which add to the overall cost and complexity of the project.

The Texas Commission on Environmental Quality (TCEQ) also requires pilot-scale demonstrations for unconventional technologies such as membrane filtration. This regulatory requirement adds further time, effort, and cost to the implementation of this alternative compared to more conventional approaches.

Furthermore, this alternative would occupy the largest physical footprint of all the options under consideration and involves the greatest number of treatment units, which may complicate plant layout.

5.2.3.3 Treatment Process Sizing and Configuration

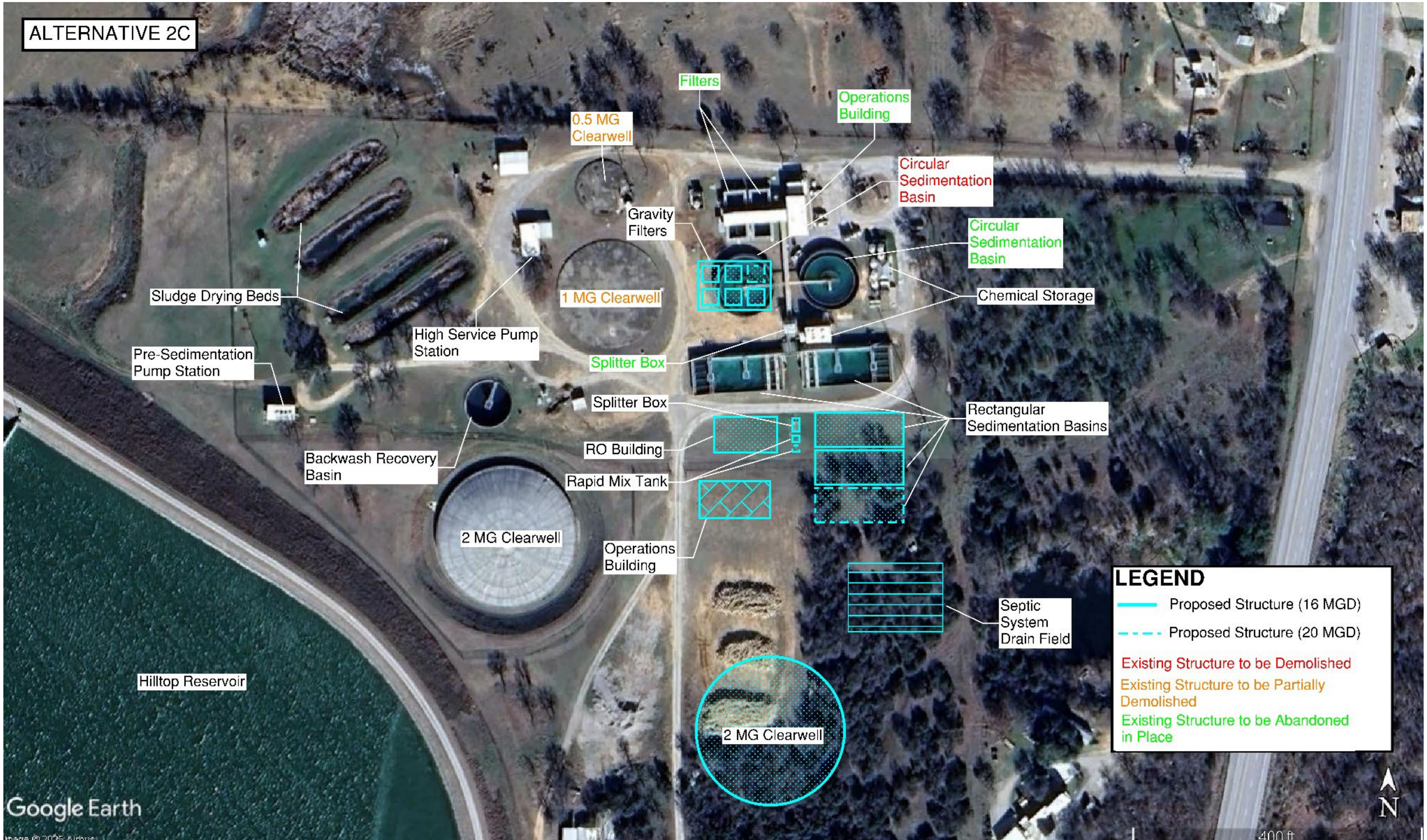
RO membranes will be sized to produce 4 MGD of treated water with a 12 MGD bypass. Based on a recovery of 75%, 5.3 MGD of RO feed water is required. The brine concentrate waste stream will be 1.3 MGD. The Alternative 2B site layout is shown in **Figure 5-9**.

Table 5-8. Alternative 2C Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Splitter Box	1	10’ W x 20’ L	NA	16	NA	16
RO Membrane Skid	1	29’ L x 11’ W x 12’ H	75% recovery	4	NA[1]	4
Rectangular Sedimentation Basins	5[2]	125’L x 50’W	SOR = 0.6 gpm/sf	4.3	17.2	21.5
Gravity filters	5	25’ L x 25’ W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H		2	-	-

[1]RO membrane treatment train is not to meet treatment capacity or SDWA water quality standards.
[2]Two (2) units are existing with upgraded internal equipment.

Figure 5-9. Alternative 2C – Site Layout



5.2.3.4 Water Treatment Residuals

Alternative 2C will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP for the conventional treatment wasted solids and backwash.

The brine waste stream produced by the RO membranes will require disposal via discharge, injection, or evaporation ponds. CIP waste will be sent to an evaporation pond. Discharging brine to the Brazos River will require a Texas Pollutant Discharge Elimination System (TPDES) permit. Injection well disposal will require an Underground Injection Control (UIC) Class I or Class II permit. Evaporation ponds require ample space and TCEQ approval. Further coordination with TCEQ is required to evaluate the feasibility of brine disposal options.

5.2.3.5 Opinion of Probable Cost

Table 5-9. Alternative 2C Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	RO Building	3,250	SF	$400	$1,300,000
2	Admin Building	5,640	SF	$450	$2,500,000
3	Gravity filters	1	LS	$3,125,926	$3,100,000
4	RO Membrane Skids	1	LS	$2,109,250	$2,100,000
5	Liquid Chemical Feeds	4	EA	$250,000	$1,000,000
6	Break Tank	1	EA	$125,926	$100,000
7	RO Feed Pumps	3	EA	$78,000	$200,000
8	Rapid Mix Tank	2	EA	$37,756	$100,000
9	Splitter Box	1	LS	$189,926	$200,000
10	Rectangular Sedimentation basin	3	EA	$1,252,000	$3,800,000
11	Gravity Filters	1	LS	$5,209,877	$5,200,000
12	Residuals Pumps & Force Main	1	LS	$130,000	$100,000
13	Septic System	1	LS	$50,000	$100,000
14	Sunshades	2	EA	$220,000	$400,000
15	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
16	Upgraded Existing Sedimentation basins	2	EA	$596,000	$1,200,000
17	CIP Waste Evaporation Pond	1	EA	$571,667	$600,000
18	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
19	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
20	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	Unit Processes + Buildings + Demolition = Subtotal 1*				**$30,200,000**
B	Sitework + Soil Conditions			10%	$3,100,000
C	Site Piping, Valves, Manholes			15%	$4,600,000
D	Interior Process Piping & Valves			35%	$10,600,000

Item	Component	Quantity	Unit	Unit Cost	Total
E	Mechanical			12%	$3,700,000
F	Electrical			20%	$6,100,000
G	Instrumentation and Controls			20%	$6,100,000
H	Construction Subtotal 2 = A+B+C+D+E+F+G				**$64,400,000**
I	Contingency			30%	$19,400,000
J	Construction Subtotal 3 = H+I				**$83,800,000**
K	General Conditions, Mobilization, Demobilization			10%	$8,400,000
L	Construction Subtotal 4 = J+K				**$92,200,000**
M	General Contractor Overhead + Profit			10%	$9,300,000
N	Construction Subtotal 5 = L+M				**$101,500,000**
O	Bonds + Insurance			2%	$2,100,000
P	Construction Price Today = N+O				**$103,600,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	**$118,900,000**
R	Engineering, Legal, Fiscal, Administration			20%	$20,800,000
S	TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R				**$139,700,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$8.73**

*Does not include cost for RO concentrate disposal strategy.

5.2.4 Alternative 2C-1: Ultrafiltration and Reverse Osmosis

Alternative 2C-1 was selected as a full membrane plant to provide high-quality, consistent water purification within a compact footprint, both now and in anticipation of future regulated substances. Membranes effectively remove a wide range of contaminants, including bacteria, viruses, and dissolved solids. As noted in Section 4, membrane treatment is a more robust process that can better prepare the utility for future changes in source water such as reuse from a wastewater treatment plant or the Brazos River.

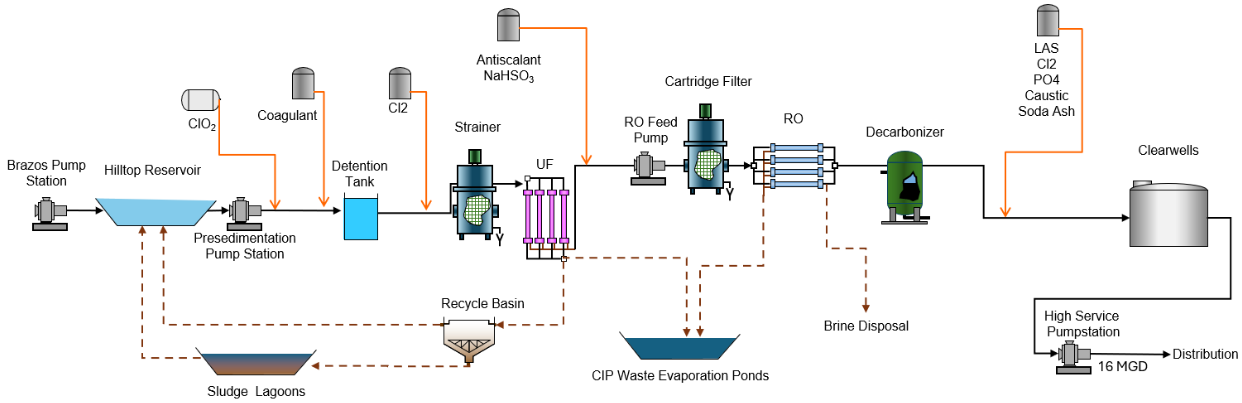
5.2.4.1 General Description and Process Components

Alternative 2C-1 includes adding a detention tank, UF membranes, RO membranes, and a decarbonizer. The UF membranes require pretreatment with 150 µm strainers, while the RO membranes need feed pumps and cartridge filters. Several chemical feed systems are necessary, including antiscalant, sodium bisulfite, coagulant, and post-filtration caustic dosing.

Similar to Alternative 2C, the concentrated brine stream and CIP waste will require disposal.

A process flow diagram is shown in **Figure 5-10**.

Figure 5-10. Alternative 2C-1 – Process Flow Diagram



Alternative 2C-1 includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place.

5.2.4.2 Advantages and Disadvantages

Advantages

RO membranes provide resiliency against changes in source water or rainfall events. UF provides additional resiliency to the system. Membranes are highly effective at removing TOC and suspended solids. Additionally, RO membranes can remove emerging contaminants like per- and poly-fluoroalkyl substances (PFAS) and other chemicals that are not currently regulated. A membrane only facility will also take up a small footprint on the site.

Disadvantages

Membrane filtration is an energy-intensive process that has a high capital cost and operation and maintenance cost. The addition of a new treatment process will require training and education of the Hilltop WTP staff. Handling of brine disposal is an additional process that requires permitting and may lead to land acquisition for evaporation ponds or discharge to the Brazos River. In addition, TCEQ requires a pilot-scale demonstration of unconventional technologies, like membrane filtration, which makes this alternative more time- and energy-intensive to implement than other alternatives.

Also, RO membranes require CIPs every 60 to 90 days and the neutralized CIP waste must go to a dedicated evaporation pond.

This alternative includes both UF and RO membranes, both of which would require likely year-long piloting to identify cleaning frequency and fouling potentials during seasonal changes.

5.2.4.3 Treatment Process Sizing and Configuration

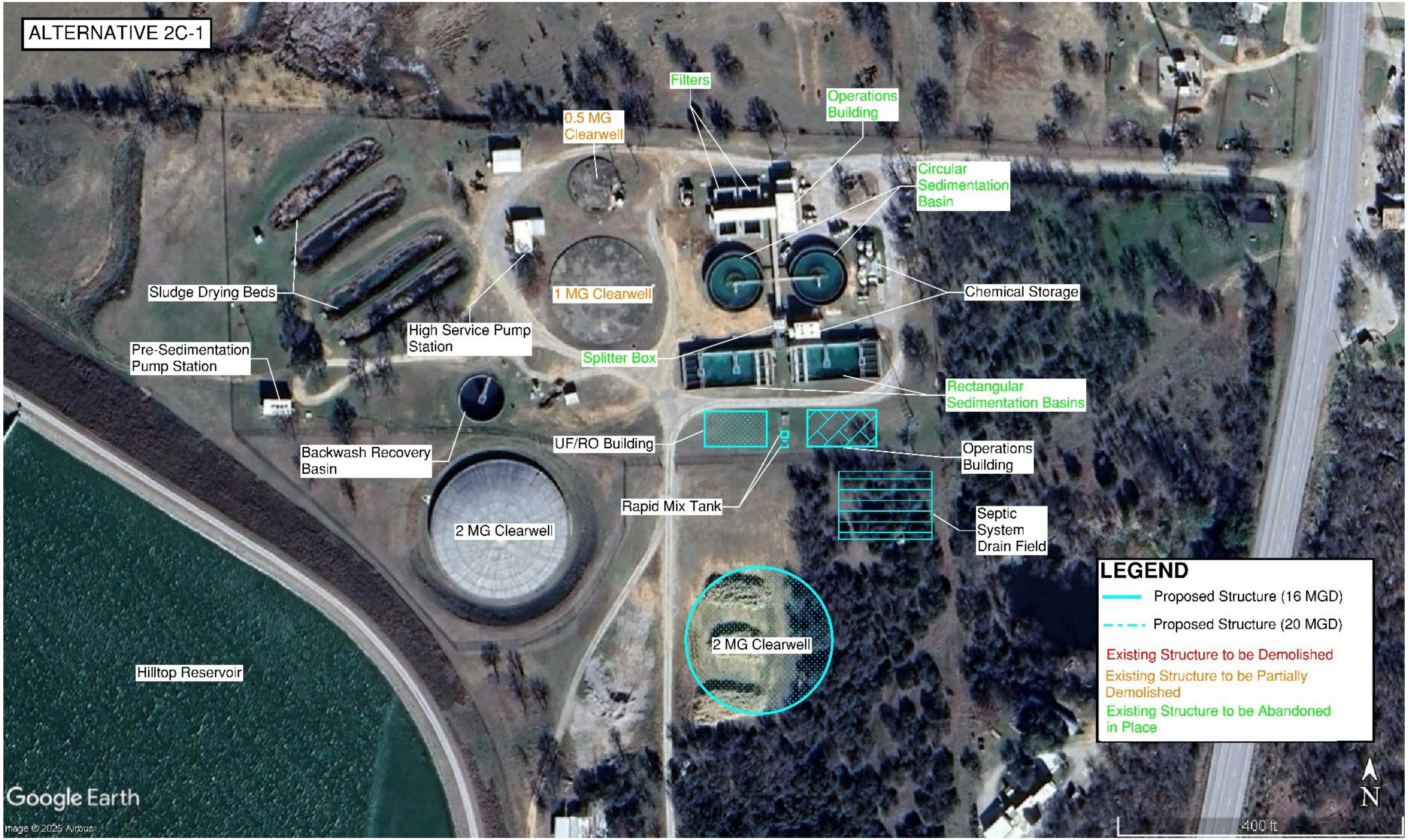
RO membranes will be sized to produce 16 MGD of firm capacity. Based on a recovery of 75%, 21.33 MGD of RO feed water is required. Based on a UF recovery of 90%, 23.7

MGD of raw water is required. The brine concentrate waste stream will be 2.37 MGD of UF residuals and 5.33 MGD of RO residuals. The Alternative 2C-1 site layout is shown in **Figure 5-11**.

Table 5-10. Alternative 2C-1 Treatment Process Additions

Item	Quantity	Dimensions	TCEQ or Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)
Detention Tank	1	10' W x 20' L	NA	16	NA
Pre-Treatment Strainer	2		150 um	16	16
UF Membrane Skid	5	35' L x 8'11" W x 14'9" H	Avg flux < 50 gfd	4	20
Cartridge Filter	5	2.5IN OD, 40 IN long element	Avg flux < 50 gfd	4	20
RO Membrane Skid	5	29' L x 11' W x 12' H	Avg flux < 15 gfd	4	20
Clearwell	1	116'-9" D x 25' H		2	-

Figure 5-11. Alternative 2C-1 – Site Layout



5.2.4.4 Water Treatment Residuals

Alternative 2C-1 will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP.

The brine waste stream produced by the RO membranes will require disposal via discharge, injection, or evaporation ponds. Discharging brine to the Brazos River will require a TPDES permit. Injection well disposal will require an UIC Class I or Class II permit. Evaporation ponds require ample space and TCEQ approval. Further coordination with TCEQ is required to evaluate the feasibility of brine disposal options.

5.2.4.5 Opinion of Probable Cost

Table 5-11. Alternative 2C-1 Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	RO Building	4,500	SF	$400	$1,800,000
2	Admin Building	5,640	SF	$450	$2,500,000
3	UF Membrane Skids	1	LS	$5,000,000	$5,000,000
4	RO Membrane Skids	1	LS	$4,218,500	$4,200,000
5	Liquid Chemical Feeds	4	EA	$350,000	$1,400,000
6	Rapid Mix Tank	2	LS	$37,756	$100,000
7	Detention Basin	1	LS	$189,926	$200,000
8	Decarbonizer	2	EA	$828,000	$800,000
9	Residuals Pumps & Force Main	1	LS	$130,000	$100,000
10	Septic System	1	LS	$50,000	$100,000
11	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
12	150-Micron strainer	2	EA	$571,667	$2,300,000
13	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
14	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
15	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1***				**$26,700,000**
B	Sitework + Soil Conditions			10%	$2,700,000
C	Site Piping, Valves, Manholes			15%	$4,100,000
D	Interior Process Piping & Valves			35%	$9,400,000
E	Mechanical			12%	$3,300,000
F	Electrical			20%	$5,400,000
G	Instrumentation and Controls			20%	$5,400,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$57,000,000**
I	Contingency			30%	$17,100,000
J	**Construction Subtotal 3 = H+I**				**$74,100,000**
K	General Conditions, Mobilization, Demobilization			10%	$7,500,000

Item	Component	Quantity	Unit	Unit Cost	Total
L	**Construction Subtotal 4 = J+K**				**$81,600,000**
M	General Contractor Overhead + Profit			10%	$8,200,000
N	**Construction Subtotal 5 = L+M**				**$89,800,000**
O	Bonds + Insurance			2%	$1,800,000
P	**Construction Price Today = N+O**				**$91,600,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$105,100,000
R	Engineering, Legal, Fiscal, Administration			20%	$18,400,000
S	**TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R**				**$123,500,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$7.72**

*Does not include cost for RO brine disposal strategy

5.2.5 Alternative 2D: Granular Activated Carbon

Alternative 2D was selected to maintain the conventional treatment approach familiar to staff, with the added benefit of removing TOC/DBP and addressing future regulated contaminants or potential issues that may arise from contaminants not currently present in the water source. This is a similar approach to 2C.

5.2.5.1 General Description and Process Components

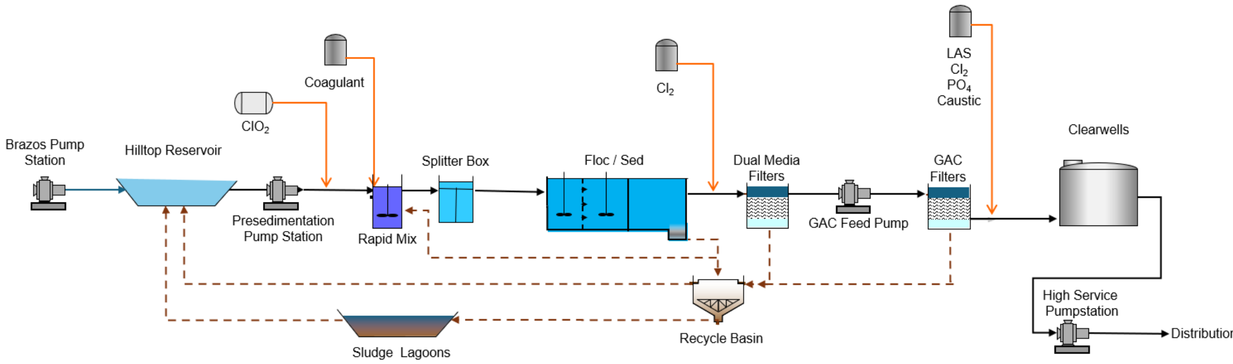
Alternative 2D alters the existing treatment processes by including granular activated carbon (GAC) filters as a polishing step.

Alternative 2D is very similar to Alternative 1 and Alternative 2C in that it involves replacing the essential conventional process units that have reached the end of their useful life. However, Alternative 2D also introduces a key modification to the existing treatment process by incorporating polishing treatment using granular activated carbon (GAC) following the dual-media filters. Similar to Alternative 2C, the addition of GAC filters serves as a “belt and suspenders” approach to total organic carbon (TOC) removal, enhancing the reliability and performance of the treatment system. And similar to Alternative 2C, Alternative 2D provides added flexibility to address potential future concerns related to emerging contaminants and the vessel units are modular and could be easily expanded to meet future water quality goals, if necessary.

One important consideration with GAC filtration is the operation and maintenance associated with media replacement or recharging as the carbon becomes saturated with contaminants.

Processes upstream of the GAC filters are detailed in **Section 3.1.1**. A process flow diagram is shown in **Figure 5-12**.

Figure 5-12. Alternative 2D – Process Flow Diagram



Alternative 2D includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place.

If this alternative is selected, a hydraulic evaluation will be necessary to determine if booster pumps are necessary before the GAC filters.

5.2.5.2 Advantages and Disadvantages

Advantages

Alternative 2D builds upon proven conventional treatment processes, ensuring familiarity and ease of operation for existing plant staff, which minimizes training requirements and operational risks. The addition of granular activated carbon (GAC) filtration provides enhanced removal of total organic carbon (TOC), disinfection byproducts, pharmaceuticals, micropollutants, pesticides, and emerging contaminants, increasing system reliability and water quality. The modular design of both the GAC vessels and membrane treatment trains allows for flexible expansion to accommodate future water quality goals or regulatory changes. This approach combines effective contaminant removal with operational flexibility, while maintaining compatibility with current treatment infrastructure.

Disadvantages

The primary challenge with this alternative is GAC requires replacement of media which increases the maintenance cost of the plant. The addition of a new treatment process will also require training and education of the Hilltop WTP staff.

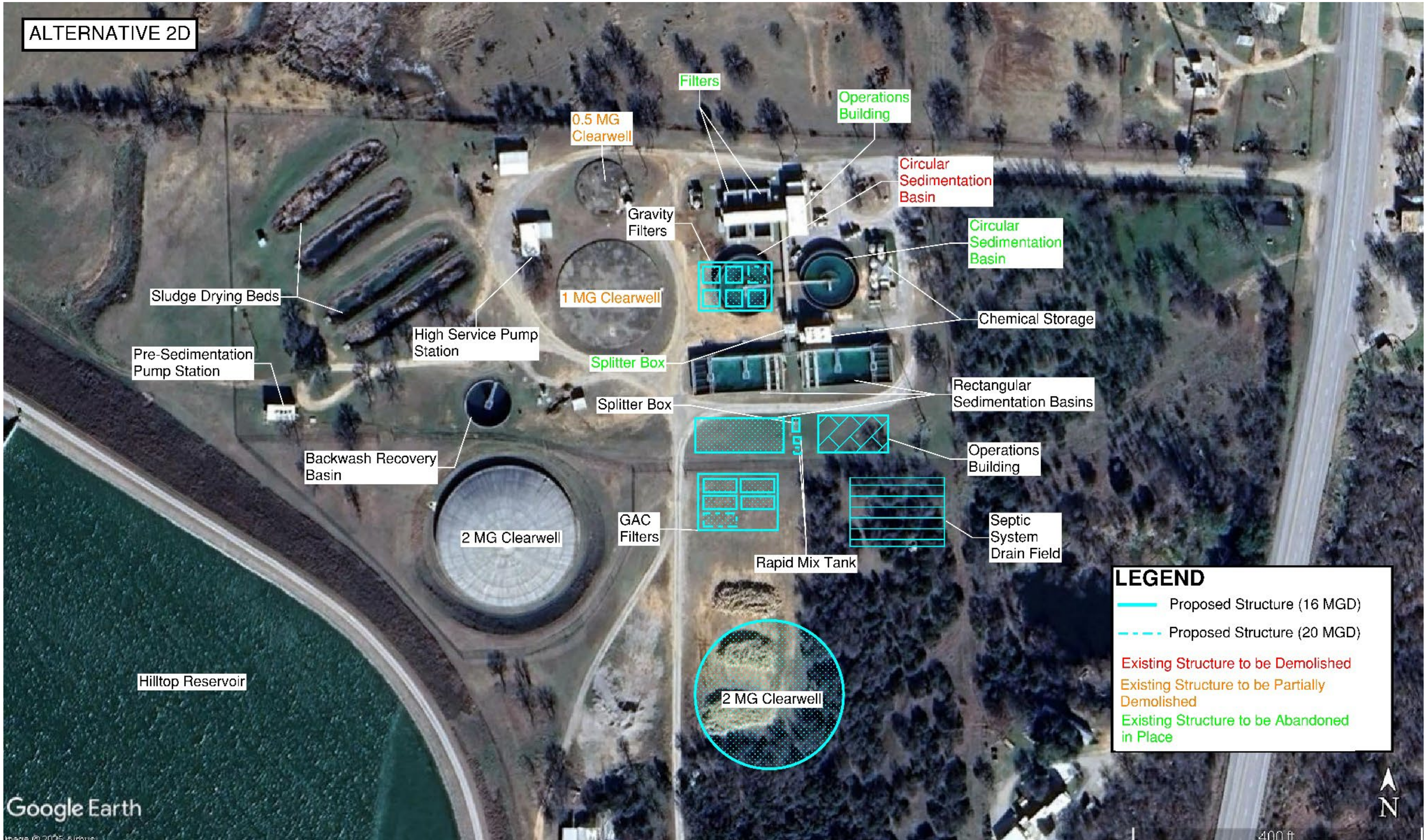
5.2.5.3 Treatment Process Sizing and Configuration

The GAC filters will be sized for 16 MGD. If this alternative is selected, GAS vessels should be evaluated. The Alternative 2D site layout is shown in **Figure 5-13**.

Table 5-12. Alternative 2D Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Splitter Box	2	10’ W x 20’ L	NA	16	16	32
GAC Filters	5	48’L x 20’W x 8’H		4	16	20
Rectangular Sedimentation Basins	3	125’L x 50’W	SOR = 0.6 gpm/sf	4.3	8.6	12.9
Gravity filters	5	25’ L x 25’ W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H	-	-	-	-

Figure 5-13. Alternative 2D – Site Layout



5.2.5.4 Water Treatment Residuals

Alternative 2D will utilize the existing backwash recycle basin and sludge lagoons located west of the WTP for disposal of sludge generated from the treatment processes, including residuals from GAC backwashing. These lagoons are designed to accommodate sludge storage and dewatering as part of current facility operations; however, their capacity and performance may need to be reevaluated depending on the backwashing frequency determined during piloting.

5.2.5.5 Opinion of Probable Cost

Table 5-13. Alternative 2D Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Admin Building	5,640	SF	$450	$2,500,000
2	Rapid Mix Tank	2	EA	$37,756	$100,000
3	Splitter Box	1	LS	$189,926	$200,000
4	Rectangular Sedimentation basin	2	EA	$1,252,000	$2,500,000
5	GAC Filters	1	LS	$4,200,000	$4,200,000
6	Gravity Filters	1	LS	$5,209,877	$5,200,000
7	Septic System	1	LS	$50,000	$100,000
8	Sunshades	2	EA	$220,000	$400,000
9	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
10	Upgraded Existing Sedimentation basins	2	EA	$596,000	$1,200,000
11	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
12	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
13	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$24,600,000**
B	Sitework + Soil Conditions			10%	$2,500,000
C	Site Piping, Valves, Manholes			15%	$3,700,000
D	Interior Process Piping & Valves			35%	$8,700,000
E	Mechanical			12%	$3,000,000
F	Electrical			20%	$5,000,000
G	Instrumentation and Controls			20%	$5,000,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$52,500,000**
I	Contingency			30%	$15,800,000
J	**Construction Subtotal 3 = H+I**				**$68,300,000**
K	General Conditions, Mobilization, Demobilization			10%	$6,900,000
L	**Construction Subtotal 4 = J+K**				**$75,200,000**
M	General Contractor Overhead + Profit			10%	$7,600,000
N	**Construction Subtotal 5 = L+M**				**$82,800,000**

Item	Component	Quantity	Unit	Unit Cost	Total
O	Bonds + Insurance			2%	$1,700,000
P	Construction Price Today = N+O				**$84,500,000**
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$97,000,000
R	Engineering, Legal, Fiscal, Administration			20%	$16,900,000
S	$113,900,000				**$113,900,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$7.12**

5.2.6 Alternative 2E: Ozone and Biologically Active Filtration

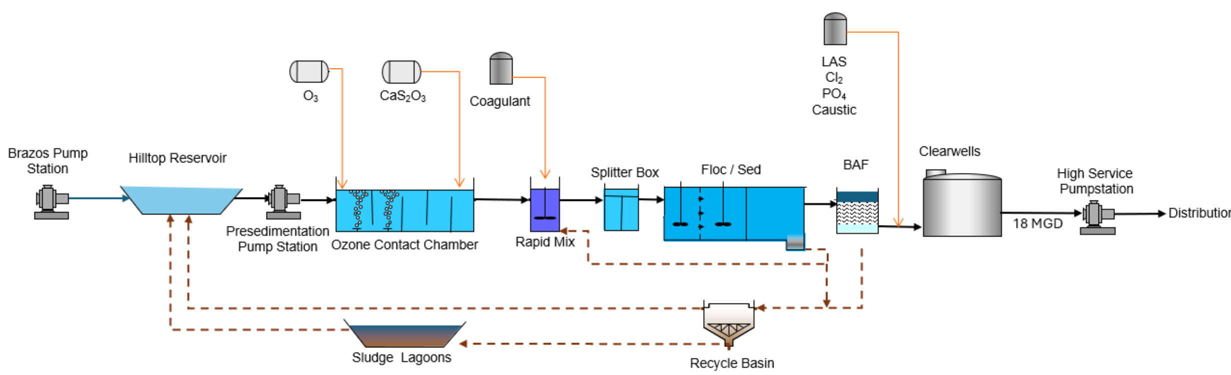
Alternative 2E was selected because ozone and BAF are effective methods for the removal of TOC, control of taste and odor compounds, reducing micropollutants, and minimizing the formation of harmful disinfection byproducts. Ozone and BAF is widely used by utilities in Texas.

5.2.6.1 General Description and Process Components

Alternative 2E alters the existing treatment processes by including raw water ozone and BAF with anthracite media and removing the chlorine dioxide system. The upstream processes are detailed in **Section 3.1.1**.

A process flow diagram is shown in **Figure 5-14**.

Figure 5-14. Alternative 2E – Process Flow Diagram



Alternative 2E includes demolition of the western circular sedimentation basin and partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, splitter box, and eastern circular sedimentation basin will be abandoned in place.

If this alternative is selected, a hydraulic evaluation will be necessary to determine if booster pumps are necessary after the ozone contactor or if the pre-sedimentation pumps should be replaced with larger pumps.

5.2.6.2 Advantages and Disadvantages

Advantages

Ozone and BAF are effective treatment processes when used together that remove a variety of contaminants and improves finished water quality. Ozone and BAF oxidizes and removes TOC, metals, taste and odor compounds, pharmaceuticals, pesticides, and DBP precursors.

Disadvantages

The use of ozone in waters with elevated bromide can lead to the formation of bromate which is a regulated DBP. The blending of Brazos River water with Palo Pinto water will result in the raw water to the Hilltop WTP having bromide concentrations potentially as high as 0.5 mg/L. Following construction of the Turkey Peak Reservoir the use of Brazos River water may decrease and decrease bromide concentrations in the raw water entering Hilltop WTP. Bromate mitigation strategies will likely need to be explored if Brazos River blending continues at the Hilltop WTP.

BAF can have reduced filter runtimes due to the growth of biolfilm on the filter media. Operational strategies like nutrient or hydrogen peroxide and help reduce filter clogging due to biofilm growth and increase filter runtimes.

Piloting of ozone and BAF will be needed to determine operational parameters and optimize the treatment process before design work can be done. Parameters that will be developed from piloting include: ozone dose, ozone contact time, bromate mitigation strategies, filter loading rate, BAF media type, empty bed contact time, and chemical augmentation to BAF.

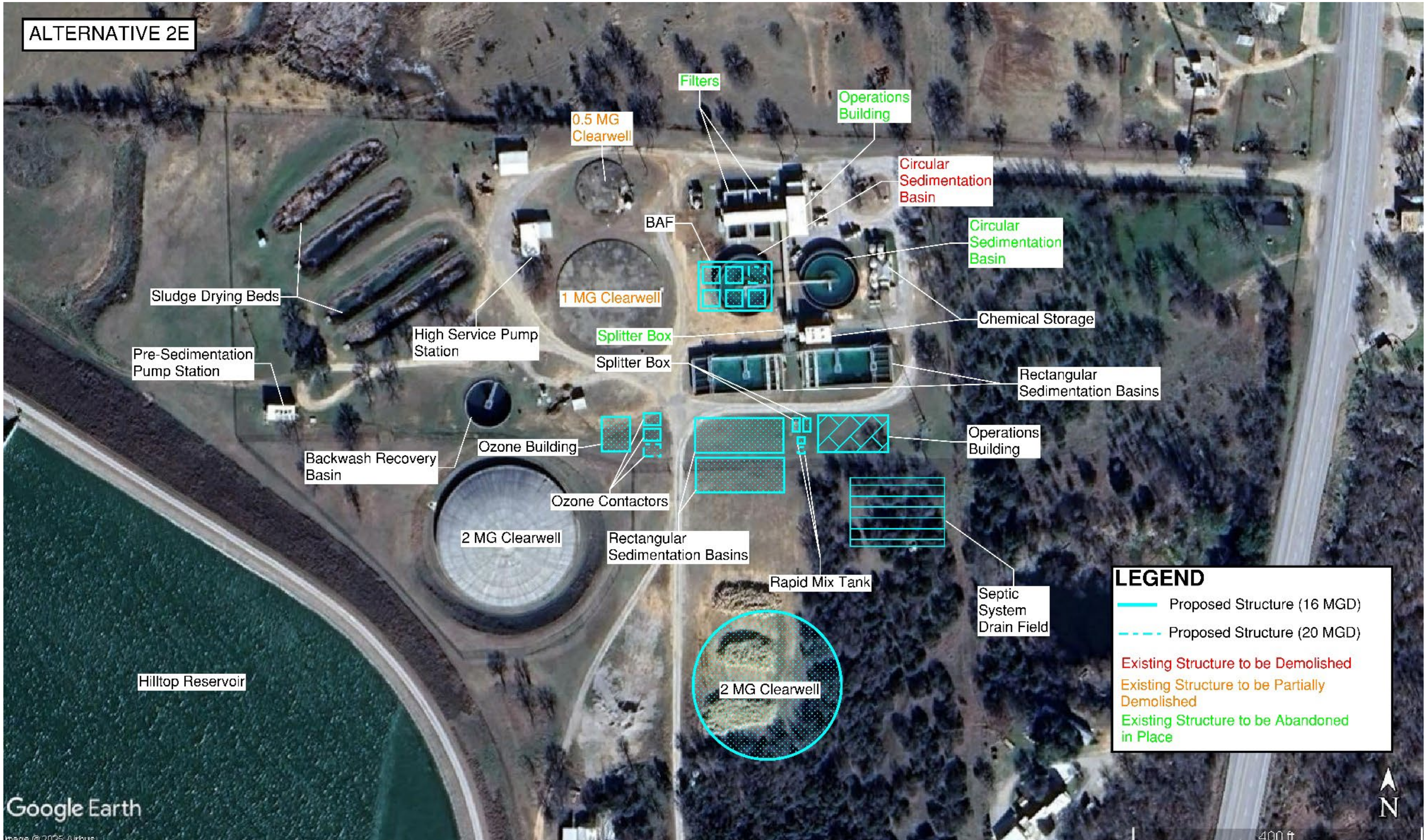
5.2.6.3 Treatment Process Sizing and Configuration

The ozone and BAFs will be sized for 16 MGD. The Alternative 2E site layout is shown in **Figure 5-15**.

Table 5-14. Alternative 2E Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Raw Water Ozone Contactor	3	20’ W x 25’ L x 20’ H	NA	8	16	24
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Splitter Box	2	10’ W x 20’ L	NA	16	16	32
Rectangular Sedimentation Basins	4	125’L x 50’W	SOR = 0.6 gpm/sf	4.3	12.9	17.2
Biologically Active Filters	5	25’ L x 25’ W	HLR = 5 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H	NA	-	-	-

Figure 5-15. Alternative 2E – Site Layout



5.2.6.4 Water Treatment Residuals

Alternative 2E will reuse the existing backwash recycle basin and sludge lagoons located west of the WTP.

5.2.6.5 Opinion of Probable Cost

Table 5-15. Alternative 2E Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Admin Building	5,640	SF	$450	$2,500,000
2	Ozone Building	3,460	SF	$400	$1,400,000
3	Rapid Mix Tank	1	LS	$37,756	$40,000
4	Splitter Box	1	LS	$149,926	$100,000
5	Rectangular Sedimentation basin	2	EA	$1,252,000	$2,500,000
6	Ozone System	1	LS	$4,950,000	$5,000,000
7	Ozone Contact Basin	1	LS	$1,630,000	$1,600,000
8	BAF	1	LS	$10,000,000	$10,000,000
9	Septic System	1	LS	$50,000	$100,000
10	Sunshades	2	EA	$220,000	$400,000
11	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
12	Upgraded Existing Sedimentation basins	2	EA	$596,000	$1,200,000
13	Demo - 0.5 MG Clearwell	1	LS	$1,525,262	$1,500,000
14	Demo - 1 MG Clearwell	1	LS	$3,108,494	$3,100,000
15	Demo - West Circular Sedimentation basin	1	LS	$979,433	$1,000,000
A	**Unit Processes + Buildings + Demolition = Subtotal 1**				**$33,100,000**
B	Sitework + Soil Conditions			10%	$3,400,000
C	Site Piping, Valves, Manholes			15%	$5,000,000
D	Interior Process Piping & Valves			35%	$11,600,000
E	Mechanical			12%	$4,000,000
F	Electrical			20%	$6,700,000
G	Instrumentation and Controls			20%	$6,700,000
H	**Construction Subtotal 2 = A+B+C+D+E+F+G**				**$70,500,000**
I	Contingency			30%	$21,200,000
J	**Construction Subtotal 3 = H+I**				**$91,700,000**
K	General Conditions, Mobilization, Demobilization			10%	$9,200,000
L	**Construction Subtotal 4 = J+K**				**$100,900,000**
M	General Contractor Overhead + Profit			10%	$10,100,000
N	Construction Subtotal 5 = L+M				**$111,000,000**
O	Bonds + Insurance			2%	$2,300,000
P	**Construction Price Today = N+O**				**$113,300,000**

Item	Component	Quantity	Unit	Unit Cost	Total
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$130,000,000
R	Engineering, Legal, Fiscal, Administration			20%	$22,700,000
S	$152,700,000				$152,700,000
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$9.54**

5.3 Alternative 3: New WTP

Alternative 3 is a new WTP constructed south of the existing Hilltop WTP.

Three options were evaluated as new treatment plant options: solids contact units (SCUs), conventional but optimized coagulation, flocculation, sedimentation tanks with plate settlers, and a standalone UF/RO plant.

5.3.1 Alternative 3A: SCUs

Alternative 3A was selected as a new WTP option because of its solids recycling capabilities.

5.3.1.1 General Description and Process Components

Alternative 3 utilizes existing pump stations while constructing new treatment process infrastructure. The alternative includes the construction of new solids contact sedimentation basins, dual-media filters, and a new clearwell to enhance the overall treatment process.

All alternatives, including Alternative 3, will reuse the following existing infrastructure:

- A 375 MG presedimentation reservoir, known as the Hilltop Reservoir, for raw water storage, flow equalization, and settling.
- An intermediate pump station (the Presedimentation Pump Station) to convey water from Hilltop Reservoir to the pretreatment splitter box.
- The existing 2.0 MG circular clearwell.
- A finished water pump station (the High Service Pump Station) to deliver treated water to the distribution system.

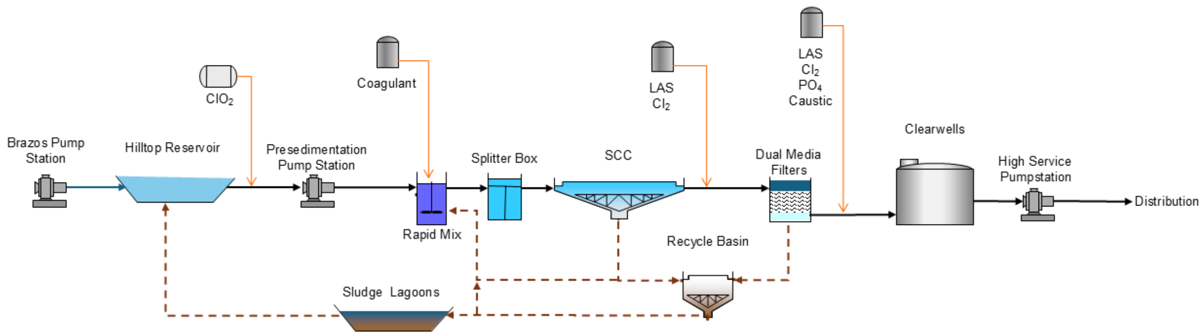
Alternative 3A will replace the following components:

- The static mixer will be replaced with a rapid mix tank.
- The existing pretreatment splitter box will be replaced to better handle updated flows.
- The circular and rectangular sedimentation basins will be replaced with solids contact sedimentation basins to improve process performance.
- The sludge drying lagoons and chemical building will be relocated to a convenient location for the new plant layout.
- The existing filters and pipe gallery will be replaced.
- The 1.0 MG and 0.5 MG clearwells will be replaced with a new 2.0 MG clearwell.

- The administration building will be replaced and relocated near new treatment facilities.
- A new septic system will be installed.

A process flow diagram is shown in **Figure 5-16.**

Figure 5-16. Alternative 3A Process Flow Diagram



Alternative 3A includes partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, circular sedimentation basins, rectangular sedimentation basins, splitter box, chemical buildings, sludge drying beds, and eastern circular sedimentation basin will be abandoned in place.

5.3.1.2 Advantages and Disadvantages

ADVANTAGES

Construction of a new WTP offers several significant advantages despite its higher upfront cost. One of the key benefits is the simplicity of construction phasing, as building a new facility allows the existing Hilltop WTP (WTP) to remain in full operation during the construction period. This approach minimizes service disruptions and operational risks. A new plant also enables optimized infrastructure layout, including the installation of new piping that is easier to access and maintain. By avoiding the need to rehabilitate aging structures, a new facility reduces ongoing maintenance challenges and allows for simpler integration of modern technologies and automation. Additionally, a new plant provides the greatest structural integrity and the longest service life, while allowing for a cohesive design tailored to meet current and future regulatory and treatment goals.

Solids contact units offer built in solids recycle, which makes it an ideal treatment process in low-turbidity waters as the sludge blanket maximizes the use of coagulant and polymer to an extent not achievable in any of the other described technologies. In addition, since the process is recycling within the same treatment step instead of between treatment steps, this type of recycle is readily permitted by TCEQ.

DISADVANTAGES

The main disadvantage with this alternative is the high cost. Solid contact units can be challenging to operate and maintain a sludge blanket if the treatment plant sees frequent and large flowrate changes. This process is ideal when the flowrates change only one or twice a day and the changes are slowly achieved over the course of several hours. Start-up of units, and restarts after inspections and cleanings take a long time as it takes days for the sludge blanket to rebuild. Turbidity removal during the rebuilding period is poor and erratic, which why many SCCs often discharge all treated water directly back to the raw water reservoir during this time.

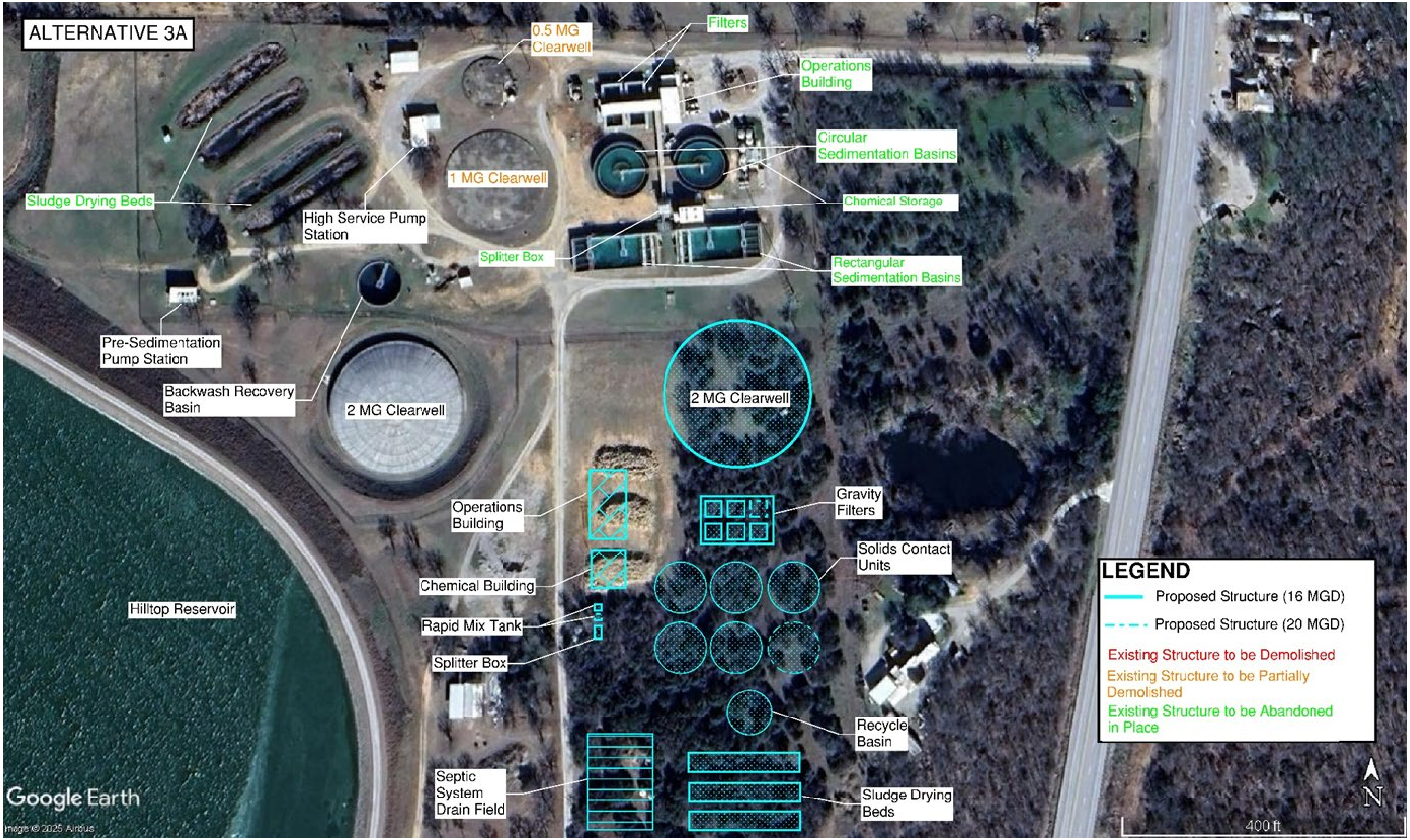
5.3.1.3 Treatment Process Sizing and Configuration

Five (5) solids contact sedimentation basins were sized for a design flow rate of 4 MGD per unit for a total capacity of 20 MGD and firm capacity of 16 MGD. Five (5) new filters will be constructed to accommodate 4 MGD each for a total capacity of 20 MGD and a firm capacity of 16 MGD. The Alternative 3A site layout is shown in **Figure 5-17**.

Table 5-16. Alternative 3 Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Splitter Box	1	10’ W x 20’ L	NA	16	NA	16
Solids Contact Units	5	75’ Dia x 18’ H	SOR = 1.0 gpm/sf	4	16	20
Gravity filters	5	25’ L x 25’ W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H		2	-	-
Sludge Drying Lagoons	3	160’ L x 30’ W x 6.5’ H		-	-	-

Figure 5-17. Alternative 3A – Site Layout



5.3.1.4 Water Treatment Residuals

Alternative 3 will use new sludge drying lagoons located south of the new WTP. A sludge blowdown tank will be utilized prior to sending sludge to the lagoons, which will be evaluated in the pre-design phase.

5.3.1.5 Opinion of Probable Cost

Table 5-17. Alternative 3 Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Raw Water Piping	1	LS	$1,620,000	$1,600,000
2	Admin Building	5,640	SF	$450	$2,500,000
3	Chemical Building	8,400	SF	$400	$3,400,000
4	Solids Contact Units	5	EA	$1,942,000	$9,700,000
5	Liquid Chemical Feed Systems	11	EA	$250,000	$2,800,000
6	Rapid Mix Tank	1	LS	$37,756	$40,000
7	Splitter Box	1	LS	$149,926	$100,000
8	Gravity Filters	1	LS	$5,209,877	$5,200,000
9	Residuals Pumps & Force Main	1	LS	$130,000	$100,000
10	Lagoon Earthwork	1	LS	$1,715,000	$1,700,000
11	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
12	High Service Pumps	5	EA	$226,000	$1,100,000
13	Septic System	1	LS	$50,000	$100,000
14	Recycle Basin	1	LS	$2,237,000	$2,200,000
A	Unit Processes + Buildings + Demolition = Subtotal 1				**$33,200,000**
B	Sitework + Soil Conditions			15%	$5,000,000
C	Site Piping, Valves, Manholes			15%	$5,000,000
D	Interior Process Piping & Valves			35%	$11,700,000
E	Mechanical			12%	$4,000,000
F	Electrical			20%	$6,700,000
G	Instrumentation and Controls			20%	$6,700,000
H	Construction Subtotal 2 = A+B+C+D+E+F+G				**$72,300,000**
I	Contingency			30%	$21,700,000
J	Construction Subtotal 3 = H+I				**$94,000,000**
K	General Conditions, Mobilization, Demobilization			10%	$9,400,000
L	Construction Subtotal 4 = J+K				**$103,400,000**
M	General Contractor Overhead + Profit			10%	$10,400,000
N	Construction Subtotal 5 = L+M				**$113,800,000**
O	Bonds + Insurance			2%	$2,300,000
P	Construction Price Today = N+O				**$116,100,000**

Item	Component	Quantity	Unit	Unit Cost	Total
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$133,200,000
R	Engineering, Legal, Fiscal, Administration			20%	$23,300,000
S	$156,500,000				**$156,500,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$9.78**

5.3.2 Alternative 3B: Optimized Conventional Treatment

Alternative 3B was selected because it is a refresh of the conventional treatment approach already used and functioning at Hilltop WTP.

5.3.2.1 General Description and Process Components

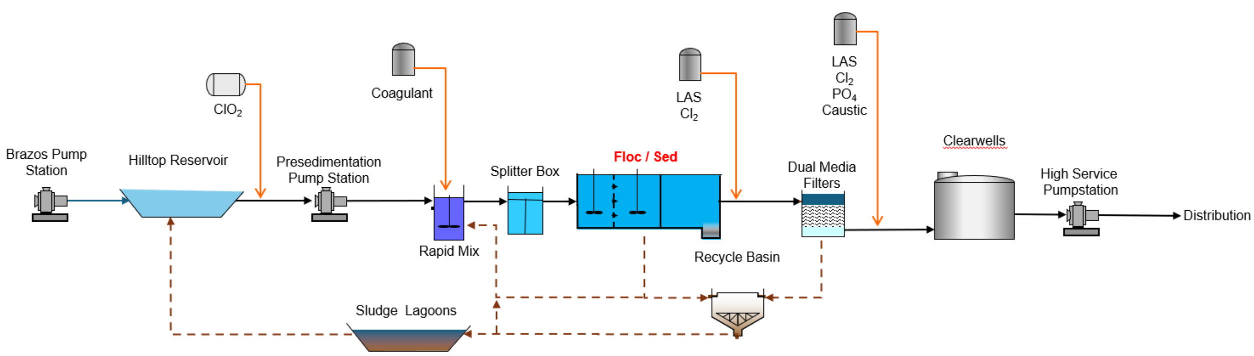
Alternative 3 utilizes existing raw and high servies pump stations and the 2.0 MG clearwell while constructing all new treatment process infrastructure. The alternative includes the construction of a new rapid mix tank, coagulation / flocculation / sedimentation basins, dual-media filters, and a new clearwell to enhance the overall treatment process.

The difference in Alternative 3B from 3A is that Alternative 3B will replace the following components:

- The circular and rectangular sedimentation basins will be replaced with improved coagulation flocculation sedimentation basin design with plate settlers to improve process performance.

A process flow diagram is shown in **Figure 5-18**.

Figure 5-18. Alternative 3B Process Flow Diagram



Alternative 3B includes partial demolition of the 0.5 and 1 MG clearwells to below grade. The existing filters, operations building, circular sedimentation basins, rectangular sedimentation basins, splitter box, chemical buildings, sludge drying beds, and eastern circular sedimentation basin will be abandoned in place.

5.3.2.2 Advantages and Disadvantages

ADVANTAGES

Construction of a new WTP offers several significant advantages despite its higher upfront cost. One of the key benefits is the simplicity of construction phasing, as building a new facility allows the existing Hilltop WTP (WTP) to remain in full operation during the construction period. This approach minimizes service disruptions and operational risks. A new plant also enables optimized infrastructure layout, including the installation of new piping that is easier to access and maintain. By avoiding the need to rehabilitate aging structures, a new facility reduces ongoing maintenance challenges and allows for simpler integration of modern technologies and automation. Additionally, a new plant provides the greatest structural integrity and the longest service life, while allowing for a cohesive design tailored to meet current and future regulatory and treatment goals.

Using a conventional treatment approach will have a shorter start-up time and provide more operator flexibility. This alternative also has smaller 4 MGD basins that would allow for the increase in demand to be easily adapted to overtime.

DISADVANTAGES

The main disadvantage with this alternative is the high cost.

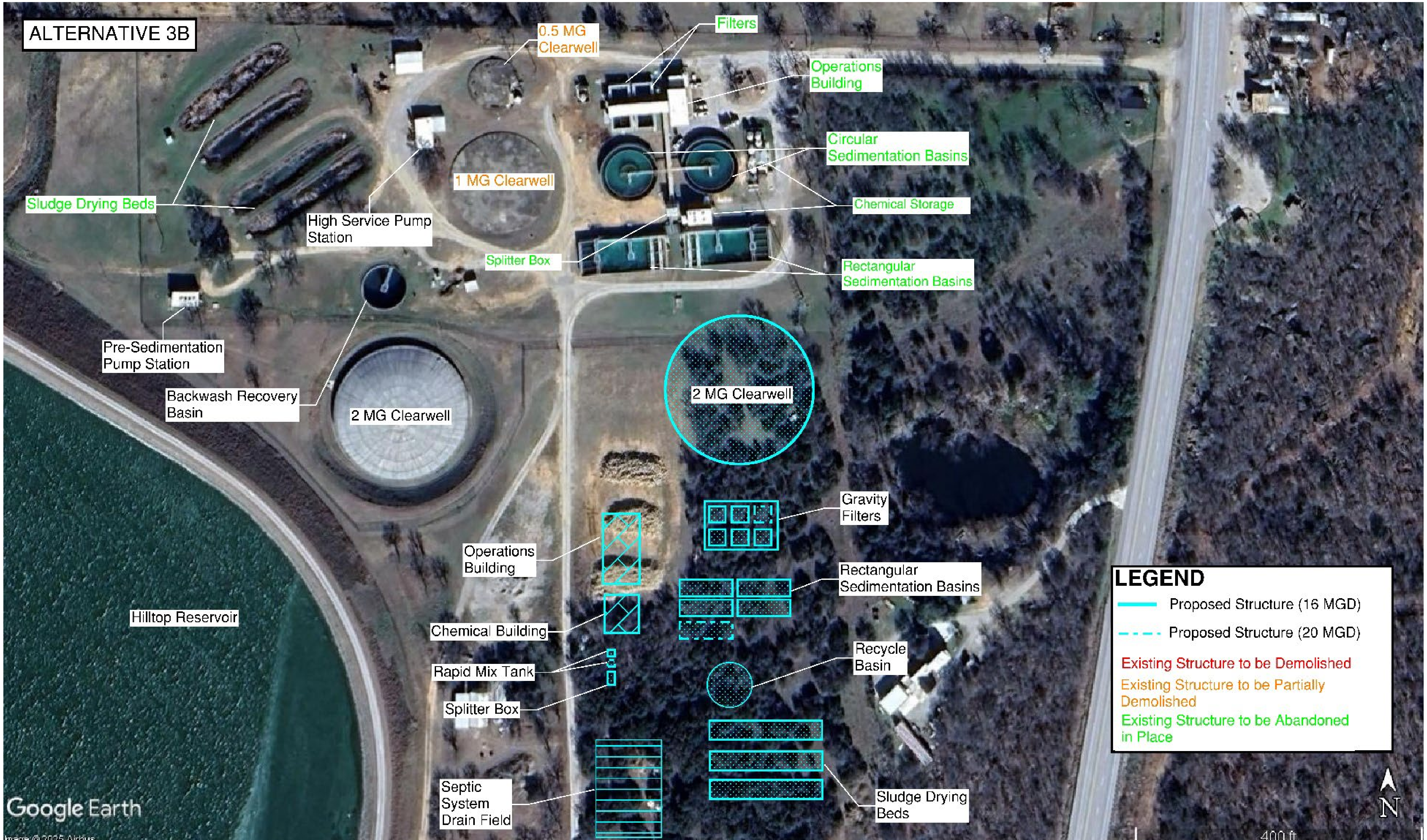
5.3.2.3 Treatment Process Sizing and Configuration

Two (2) redundant rapid mix tanks will feed into five (5) coagulation flocculation sedimentation basins with plate settlers. The rapid mix tanks were each sized for 16 MGD. Each coagulation flocculation sedimentation basins were sized for a design flow rate of 4 MGD per unit for a total capacity of 20 MGD and firm capacity of 16 MGD. Five (5) new filters will be constructed to accommodate 4 MGD each for a total capacity of 20 MGD and a firm capacity of 16 MGD. The Alternative 3B site layout is shown in **Figure 5-19**.

Table 5-18. Alternative 3B Treatment Process Additions

Item	Quantity	Dimensions	TCEQ Design Requirement	Flow per Unit (MGD)	Plant Firm Capacity (MGD)	Plant Total Capacity (MGD)
Rapid Mix Tank	2	10’ W x 10’ L	NA	16	16	32
Coagulation Flocculation Sedimentation Basins	5	25’ W x 75’ L x 18’ H	SOR = 1.0 gpm/sf	4	16	20
Gravity filters	5	25’ L x 25’ W	SOR = 5.0 gpm/sf	4	16	20
Clearwell	1	116’-9” D x 25’ H	BF = 0.5	2	-	-
Sludge Drying Lagoons	3	160’ L x 30’ W x 6.5’ H		-	-	-

Figure 5-19. Alternative 3B – Site Layout



5.3.2.4 Water Treatment Residuals

Alternative 3 will use new sludge drying lagoons located south of the new WTP. A sludge blowdown tank will be utilized prior to sending sludge to the lagoons, which will be evaluated in the pre-design phase.

5.3.2.5 Opinion of Probable Cost

Table 5-19. Alternative 3B Cost Summary

Item	Component	Quantity	Unit	Unit Cost	Total
1	Raw Water Piping	1	LS	$1,620,000	$1,600,000
2	Admin Building	5,640	SF	$450	$2,500,000
3	Chemical Building	8,400	SF	$400	$3,400,000
4	Coag / Floc/ Sed Treatment Basins	5	LS	$1,165,667	$5,800,000
5	Liquid Chemical Feed Systems	11	EA	$250,000	$2,800,000
6	Rapid Mix Tank	2	EA	$15,000	$30,000
7	Splitter Box	1	LS	$149,926	$100,000
8	Gravity Filters	1	LS	$5,209,877	$5,200,000
9	Residuals Pumps & Force Main	1	LS	$130,000	$100,000
10	Lagoon Earthwork	1	LS	$1,715,000	$1,700,000
11	Clearwell, 2 MG	1	LS	$2,630,000	$2,600,000
12	High Service Pumps	5	EA	$226,000	$1,100,000
13	Septic System	1	LS	$50,000	$100,000
14	Recycle Basin	1	LS	$2,237,000	$2,200,000
A	Unit Processes + Buildings + Demolition = Subtotal 1				**$29,300,000**
B	Sitework + Soil Conditions			15%	$4,400,000
C	Site Piping, Valves, Manholes			15%	$4,400,000
D	Interior Process Piping & Valves			35%	$10,300,000
E	Mechanical			12%	$3,600,000
F	Electrical			20%	$5,900,000
G	Instrumentation and Controls			20%	$5,900,000
H	Construction Subtotal 2 = A+B+C+D+E+F+G				**$63,800,000**
I	Contingency			30%	$19,200,000
J	Construction Subtotal 3 = H+I				**$83,000,000**
K	General Conditions, Mobilization, Demobilization			10%	$8,300,000
L	Construction Subtotal 4 = J+K				**$91,300,000**
M	General Contractor Overhead + Profit			10%	$9,200,000
N	Construction Subtotal 5 = L+M				**$100,500,000**
O	Bonds + Insurance			2%	$2,100,000
P	Construction Price Today = N+O				**$102,600,000**

Item	Component	Quantity	Unit	Unit Cost	Total
Q	Projection to Mid-point of Construction (2029)			3.5%/year	$117,700,000
R	Engineering, Legal, Fiscal, Administration			20%	$20,600,000
S	TOTAL PROJECT OPINION OF PROBABLE CONSTRUCTION COST = Q+R				**$138,300,000**
Total Project OPCC Cost per gallon/day at 16 MGD Firm Capacity					**$8.64**

5.4 Alternatives Comparison

5.4.1 Cost Comparison

As mentioned at the beginning of Section 5, the OPCCs presented for each alternative represent an Association for the Advancement of Cost Engineer (AACE) 18R-97 Class V estimate, maturity level 0-10%, concept screening level of detail, and expected accuracy range of -20% to -50% on the low end and +30% to +100% on the high end. The OPCCs are estimated based on the September 2025 costs escalated to 2029 as a projected mid-point of construction but will need to be adjusted prior to construction for the final capital cost.

A summary of the cost opinions is shown in **Table 5-20**. Alternative 2A with the ballasted flocculation retrofit was the lowest cost. The highest OPCC is for Alternative 3A or building a new treatment plant with SCUs.

Table 5-20. Alternative Cost Comparison

	Description	Capital Cost	Cost / MG Firm Capacity
Alt 1	Matching Existing Treatment Processes	$ 100,400,000	$ 6.3
Alt 2A	Ballasted Flocculation	$ 96,700,000	$ 6.0
Alt 2B	DAF/SAF	$ 100,800,000	$ 6.3
Alt 2C	Partial Flow RO Polishing	$ 139,700,000	$ 8.7
Alt 2C-1	UF/RO	$ 123,500,000	$ 7.7
Alt 2D	GAC Vessels	$ 113,900,000	$ 7.1
Alt 2E	Ozone/BAF	$ 152,700,000	$ 9.5
Alt 3A	New plant - SCUs	$ 156,500,000	$ 9.8
Alt 3B	New plant - Optimized Conventional Treatment	$ 138,300,000	$ 8.6

5.4.2 Non-Economic Evaluation Comparison

Non-economic criteria are applied to capture the value of key decision criteria that are important to PPCMWD but are difficult to monetize. Each alternative was given a score from 1 to 3 for each of the non-economic considerations, with 1 being the worst and 3 being the best. Criteria weighting was determined based on feedback from PPCMWD No. 1. The non-economic factors for the alternatives were compared and summarized in **Table 5-21**. For the non-economic evaluation, the following criteria will be used:

- Land Acquisition: Requires land acquisition or easements.
- Water Quality: Ability to deliver high quality and great tasting drinking water.
- Reliability: Ability to continuously process water given chemical/materials availability, weather conditions; performance when a major piece of equipment is out of service,
- Expandability: Capability for future expansion of facilities as the community grows and as industrial/commercial demand for water increases beyond the design capacity of the treatment plant.
- Flexibility: Ability to be adapted to changing process conditions, external factors, and future regulations.
- Ease of Operation and Maintenance: Ease of access/serviceability, complexity and intensity of the process, frequency of maintenance, time required for most common repair; standardized parts, multiple sources of parts supply, more than one who can repair or ability to be repaired by Owner.
- Staffing/Training: Quantity of resources needed, skillset of resources required.
- Constructability: Difficulty to construct, leaves adequate space for other processes.
- Ease of Implementation: Need for pilot demonstration of non-conventional technologies and permitting requirements.

The highest non-economic score possible was 15. Alternative 3B scored the highest (13.25 out of 15), followed by Alternative 2A (11.75 out of 15) and Alternative 1 and 2C (10.75 out of 15).

Table 5-21. Non-Monetary Alternative Comparison

Criteria	Criteria	Land Acquisition	Water Quality	Reliability	Expandability	Flexibility	Ease of Operation and Maintenance	Staffing/Training	Constructability	Ease of Implementation	Total Score Non-Economic
Weighting Factor	**Description of Scores**	0.25	0.75	0.75	0.25	0.25	1	1	0.25	0.5	
Alt 1	Utilizing the existing site for the water treatment plant offers the advantage of avoiding land acquisition, which reduces both costs and the legal complexities associated with purchasing new property. However, relying on the same treatment technology means that some of the current water quality concerns, as well as potential future emerging contaminant issues, will remain unresolved. Additionally, the existing site imposes limitations on the expandability of process units, making it difficult to increase capacity or incorporate new treatment processes in the future.	3	1	1	1	1	3	3	2	3	**10.75**
Alt 2A	Retrofitting the existing sedimentation basins avoids the need for land acquisition. However, expanding capacity could be challenging due to space constraints. Introducing this new treatment process would require substantial staff training and pilot testing. From a water quality perspective, this alternative would enhance the current settling performance.	3	3	2	1	2	3	2	2	2	**11.75**
Alt 2B	This alternative requires no land acquisition and offers high water quality, with improved settling of fine colloidal materials. Reliability would depend on system performance, but expandability is limited due to the split-treatment design. Operation and maintenance would be more challenging and costly because of additional equipment and potential high-pressure systems, such as DAF. Substantial staff training would also be required to operate the new processes effectively.	3	3	2	1	2	2	2	2	2	**10.75**
Alt 2C	Land acquisition may be necessary for RO residuals or concentrate discharge. While this alternative provides a water quality benefit as a polishing step, only 4 MGD would pass through the membranes. Implementation would require substantial piloting and permitting for residual concentrate management.	1	2	3	1	2	1	2	2	1	**8.75**
Alt 2C-1	Land acquisition may be required for RO residuals or concentrate discharge. A membrane plant would provide significant water quality benefits, but operation and maintenance costs would be high due to membrane replacement, chemical use, and energy consumption. Implementation would also require substantial piloting and permitting for residual concentrate management.	1	3	3	2	3	1	1	2	1	**9**
Alt 2D	This alternative offers water quality benefits as a polishing step, but only for a portion of the flow. Implementation would require substantial piloting, and media replacement would result in high operation and maintenance costs.	3	3	2	1	3	2	1	1	1	**9.25**
Alt 2E	No land acquisition is required, and this alternative offers high effluent water quality benefits. However, biological and ozone systems can be challenging to operate and would require substantial staff training. The HGL is not favorable for the ozone contactor, and additional pumping would result in high energy costs. Implementation would also require piloting.	3	3	3	1	3	2	1	1	1	**10**
Alt 3A	No land acquisition is required, and this alternative offers high water quality based on sludge blanket performance. Start-up of the SCUs can be challenging, requiring staff training, but operation and maintenance costs would be low.	3	2	2	3	2	1	2	3	2	**9.75**
Alt 3B	No land acquisition is required, and this alternative would provide reliable water quality based on plate settler performance. Staff are already familiar with the treatment process, and operation and maintenance costs would be low.	3	2	2	3	2	3	3	3	3	**13.25**

6 Reuse Analysis

6.1 Background

Hilltop WTP's water shortages have prompted the District and City to explore alternative water sources. The Turkey Peak Reservoir is expected to nearly double the source water capacity feeding Palo Pinto Creek. Looking further ahead, the District and City have requested an evaluation of reuse options to enhance long-term water resiliency.

One such strategy involves using effluent from the Pollard Creek WasteWTP (PCWWTP) to supplement supply. A summary of the Hilltop Reservoir indirect potable reuse (IPR) strategy is provided here.

Indirect potable reuse (IPR) utilizes an environmental buffer, such as a lake, river, or aquifer, prior to entering the drinking WTP. Both DPR and IPR are subject to approval from the Texas Commission on Environmental Quality (TCEQ). Additional treatment requirements are determined on a case-by-case basis by TCEQ. TCEQ also regulates non-potable water usage, often for irrigation or industrial purposes, to ensure public safety.

6.2 Indirect Potable Reuse

IPR with discharge into Hilltop Reservoir utilizes Hilltop Reservoir as an environmental buffer, so advanced treatment such as microfiltration and ozone is not required. However, tertiary treatment for additional pollutant removal and a more stringent PCWWTP discharge permit may be required by TCEQ. An IPR plant has been operating in Wichita Falls, Texas since 2018 where TCEQ imposed a more stringent discharge permit which included a phosphorus limit prior to discharge into the environmental buffer (Lake Arrowhead). It is assumed that the discharge into Hilltop Reservoir will be treated to the similar permit standards as the Wichita Falls IPR plant. The anticipated permit standards that align with the Wichita Falls IPR plant, including the initial (same as the current discharge permit for PCWWTP) and stricter discharge limits, are shown in **Table 6-1**.

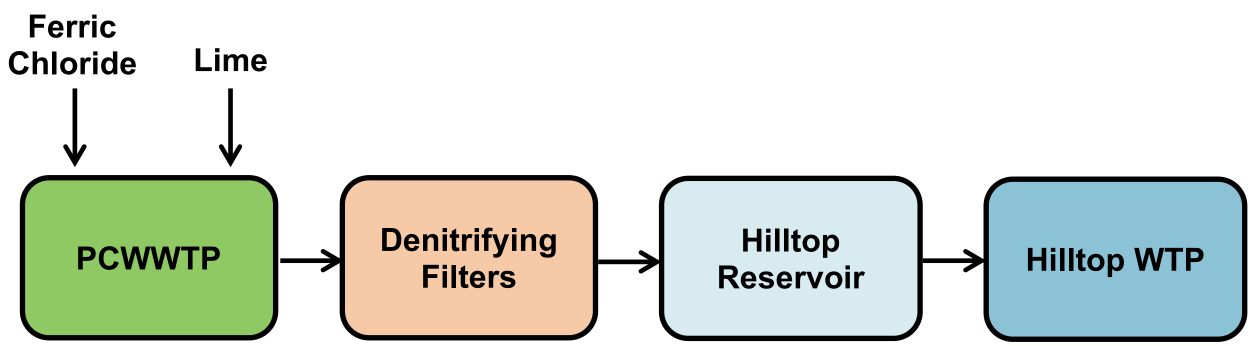
Table 6-1. Current and expected discharge permit for discharge into Hilltop Reservoir

Effluent Characteristic	Current Daily Average Discharge Limit	Expected Daily Average Discharge Limit
$CBOD_5$ (mg/L)	10	5
TSS (mg/L)	15	10
NH_3-N (mg/L)	3	1
Phosphorous (total)	NA	0.5

Additional standards include that effluent pH shall be between 6 and 9 and that the minimum dissolved oxygen shall be greater than 5 mg/L.

Based on the effluent water quality of PCWWTP, additional treatment will be needed to reduce the nitrate and phosphorous concentrations to comply with the potential discharge permit. The concentrations of nitrate and phosphorous in the PCWWTP effluent are as high as 32.5 mg/L and 4.9 mg/L. Additional treatments could be chemical precipitation of phosphorous using ferric chloride and lime and denitrifying filters which will convert nitrate to nitrogen gas and aid in the removal phosphorous and TSS. **Figure 6-1** shows a process flow schematic. PCWWTP effluent with the additional treatment will be conveyed to the Hilltop Reservoir. This alternative will require additional construction of a pipeline (either through new construction or slip-lining), a pump station, ground storage tank, and the additional treatment described above.

Figure 6-1. IPR Hilltop Reservoir flow schematic



Hilltop reservoir has a capacity of 1,153 acre-ft and in order to use a water body as an environmental buffer for IPR, it must be classified as a water body of the State. The Water Rights Permitting group at TCEQ identifies Hilltop Reservoir as a water body of the State (Permit No. 5447), while the Water Quality division does not. Further coordination with TCEQ will be necessary to ultimately determine if the Hilltop Reservoir is considered a Water of the State and the final decision will determine if this option will be IPR or direct potable reuse (DPR).

7 Findings

HILLTOP WTP CHALLENGES

The Hilltop WTP experiences challenges with treatment optimization and operation due to the low turbidity raw water and aging infrastructure at the plant. The main treatment challenges are as follows:

- Difficulty coagulating low turbidity raw water
- DBP formation
- Biological growth and disinfectant decay in the filters

The main operation and maintenance challenges are as follows:

- Undersized splitter box for plant treatment capacity
- No sludge removal mechanism in the circular sedimentation basins, along with algae growth on walls
- Degradation of rectangular sedimentation basin internal mechanisms

- Limited space and water infiltration in the filter pipe gallery
- Chemical building floor corrosion

ALTERNATIVES ANALYSIS

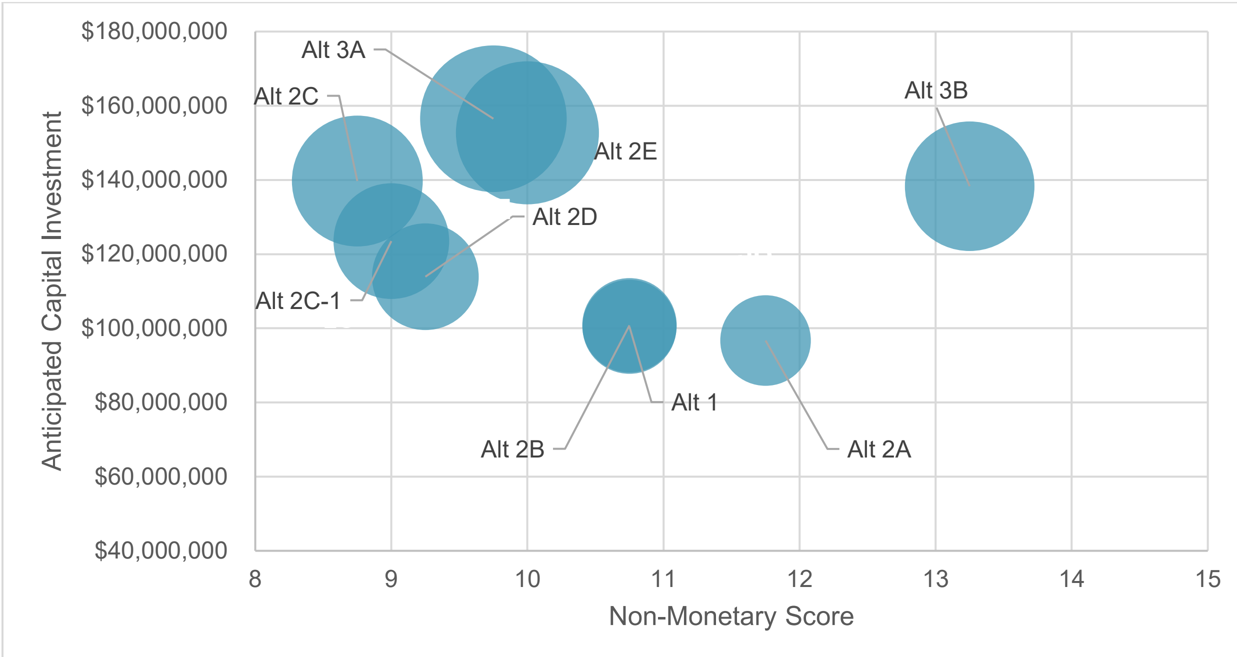
To address Hilltop WTP treatment, operation, and maintenance challenges, three alternatives with sub-alternatives were developed.

- Alternative 1: Expansion of Existing Treatment Process
  - Add additional treatment units to increase capacity.
  - Replace or repair aging and degraded infrastructure.
- Alternative 2: Hybrid Approach – Combine Existing Infrastructure with New Technologies
  - Sub-Alternatives:
    - Ballasted Flocculation
    - Suspended Air Flotation (SAF)
    - Reverse Osmosis (RO)
    - Granular Activated Carbon (GAC)
    - Ozone and Biologically Active Filtration (BAF)
- Alternative 3: Construction of a New WTP
  - Sub-Alternatives:
    - Conventional Treatment with Solids Contact Units (SCUs)
    - Optimized Conventional Treatment

ALTERNATIVES COMPARISON

Economic and non-economic criteria were used to evaluate each alternative. A comparison of alternatives is shown in **Figure 7-1**. The highest ranking non-monetary alternative was 3B, while the most inexpensive option is Alternative 1.

Figure 7-1. Alternatives Comparison



8 Recommendations

HDR will hold a workshop with District and City staff to determine the recommendation moving forward.

9 Next Steps

Following the selection of an alternative, a Preliminary Engineering Report (PER) will be prepared to further develop and refine the proposed process elements. The PER will provide a more detailed evaluation of the selected alternative, incorporating considerations from structural, mechanical, electrical, site civil, and other relevant engineering disciplines to ensure a comprehensive and coordinated design approach.

AGENDA ITEM COMMENTARY

ITEM TITLE

Department Heads to provide the City Council with insight into the additional resources departments are requesting for the 2026-2027 fiscal year budget.

INITIATOR/STAFF INFORMATION SOURCE

BACKGROUND

Department Heads to provide the City Council with insight into the additional resources departments are requesting for the 2026-2027 fiscal year budget. Last year, this item was presented as a Budget Workshop item on August 5, 2025. City staff has been working diligently to prepare the budget sooner than last year. Therefore, staff has prepared the attached supplemental list of items requested in the fiscal year 2026-27 budget. Staff will present to City Council each of their departments' respective items being requested. There is no action necessary on this item.

EXHIBITS

1. FY27 Supplementals
2. Strategic Plan List 060826

ITEM NUMBER 6.
MEETING DATE 6/16/2026

CITY OF MINERAL WELLS
Supplemental Summary Sheet
FY 2026-27

SUPPLEMENTAL ITEMS REQUESTED					
Fund	Department Name	Supplemental Description (Short Name)	One-time Cost	Recurring Cost	Total Cost
General	Non-Departmental	Salary Adjustments, FICA & TMRS	TBD	TBD	-
General	Non-Departmental	Increase TMRS	TBD	TBD	-
General	Technology	Infrastructure Upgrades	250,000	-	250,000
General	Technology	Axcient Backup Appliance	20,000	-	20,000
General	Technology	PC replacements (60)	132,000	-	132,000
General	Technology	E-Rate C2 (Library)	8,494	-	8,494
General	Technology	Migrate Cardinal & Crimes DBs	300,000	-	300,000
General	Technology	Manage Engine IAM	10,000	-	10,000
General	Technology	TimeClockPlus SaaS Flip / Addition	15,000	-	15,000
General	Police	38 Body Cameras	139,160	-	139,160
General	Police	2 Patrol Vehicles & Upfitting	180,000	-	180,000
General	Police	2 Kyocera Printers, 4 Dell Laptops & 5 Dell Desktop Computers	18,755	-	18,755
General	Police	6 Duty Handguns	6,700	-	6,700
General	Police	Motorola GIS Managed Services	-	12,033	12,033
General	Police	4 Ballistic Shields & 7 Breaching Kits	23,500	-	23,500
General	Police	8 Security Cameras	6,000	-	6,000
General	Police	3/4-ton Truck	65,000	-	65,000
General	Animal Services	Animal Transport Unit	30,000	-	30,000
General	Animal Services	Administrative Assistant	-	69,886	69,886
General	Fire/EMS	Handheld radios, mobile radios, & mobile repeaters	87,000	-	87,000
General	Fire/EMS	3 Firefighters/Paramedics	-	227,149	227,149
General	Fire/EMS	(2) half ton trucks to replace squad	160,000	-	160,000
General	Fire/EMS	Command Truck & Equipment	84,000	-	84,000
General	Fire/EMS	Bunker Gear Replacement	-	27,000	27,000
General	Fire/EMS	AFG Grant Match for Tender Tanker	25,000	-	25,000
General	Fire/EMS	SAFER Grant Match for 3 firefighters	22,000	227,149	249,149
General	Fire/EMS	Replacing CAD devices in fire out apparatus	25,200	-	25,200
General	Develop. Services	2 Laptops	2,138	-	2,138
General	Streets	Street Sweeper	400,000	-	400,000
General	Streets	Additional Street Materials	-	100,000	100,000
General	Streets	Pavement Condition Assessment and Road Management	56,000	11,000	67,000
General	Parks & Rec	Restroom Trailer	65,522	-	65,522

CITY OF MINERAL WELLS
Supplemental Summary Sheet
FY 2026-27

SUPPLEMENTAL ITEMS REQUESTED					
Fund	**Department Name**	**Supplemental Description (Short Name)**	**One-time Cost**	**Recurring Cost**	**Total Cost**
General	Parks & Rec	Portable Stage	85,000	-	85,000
General	Parks & Rec	Sports Field Feasibility Study	23,250	-	23,250
General	Parks & Rec	Recreation SUV	60,000	-	60,000
General	Parks Maintenance	Dump Trailer	10,000	-	10,000
General	Parks Maintenance	Truck	70,000	-	70,000
General	Cemetery	Stonework	50,000	-	50,000
General	Library	Part-Time Library Assistant	-	19,102	19,102
General	Library	New Carpet	35,000	-	35,000
		Total General Fund	**2,464,719**	**693,318**	**3,158,037**
Water/Sewer	Non-Departmental	Salary Adjustments, FICA & TMRS	TBD	TBD	-
Water/Sewer	Non-Departmental	Increase TMRS	TBD	TBD	-
Water/Sewer	PW Administration	Ram Water Storage Tank Rehabilitation	-	600,000	600,000
Water/Sewer	PW Administration	Utility Inspection Camera System	150,000	-	150,000
Water/Sewer	PW Administration	Conference/Class Room & Furniture	15,000	-	15,000
Water/Sewer	PW Administration	Fuel Tank Removal	40,000	-	40,000
Water/Sewer	Water Distribution	Valve Maintenance Trailer	100,000	-	100,000
Water/Sewer	Water Distribution	Mini Excavator	45,000	-	45,000
Water/Sewer	Wastewater	Pollard Creek WWTP Roof	25,000	-	25,000
Water/Sewer	Wastewater	Blower for Willow Creek WWTP	76,500	-	76,500
Water/Sewer	Wastewater	Pollard Creek WWTP Assessment	130,000	-	130,000
Water/Sewer	Wastewater	Digester Wier Gate for Pollard Creek WWTP	55,000	-	55,000
Water/Sewer	Wastewater	Mower for Pollard Creek WWTP	10,000	-	10,000
Water/Sewer	Facility Maint.	Air Compressor Trailer	20,000	-	20,000
		Total Water/Sewer Fund	**666,500**	**600,000**	**1,266,500**
Airport	Non-Departmental	Salary Adjustments, FICA & TMRS	TBD	TBD	-
Airport	Non-Departmental	Increase TMRS	TBD	TBD	-
		Total Airport Fund	**-**	**-**	**-**
		CITY-WIDE SUPPLEMENTAL TOTALS	**3,131,219**	**1,293,318**	**4,424,537**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

CITY OF MINERAL WELLS

Department: Non-Departmental

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Non-Departmental	01-1000	General Fund Salary Adjustments, FICA & TMRS		P			
2	Non-Departmental	02-2000	Water/Sewer Fund Salary Adjustments, FICA & TMRS		P			
3	Non-Departmental	20-4000	Airport Fund Salary Adjustments, FICA & TMRS		P			
4	Non-Departmental	01-1000	General Fund - Increase TMRS		P			
5	Non-Departmental	02-2000	Water/Sewer Fund - Increase TMRS		P			
6	Non-Departmental	20-4000	Airport Fund - Increase TMRS		P			
7								
8								
9								
10								
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12								
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14								
15								
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21								
22								
23								
24								
25								
26								
27								

TOTAL: $ -

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: Technology

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Technology	01-1700	Infrastructure Upgrades	$ 250,000				IT
2	Technology	01-1700	Axcient Backup Appliance	$ 20,000				IT
3	Technology	01-1700	PC replacements (60)	$ 132,000				IT
4	Technology	01-1700	E-Rate C2 (Library)	$ 8,494				IT
5	Technology	01-1700	Migrate Cardinal & Crimes DBs	$ 300,000				IT
6	Technology	01-1700	Manage Engine IAM	$ 10,000				IT
7	Technology	01-1700	TimeClockPlus SaaS Flip / Addition	$ 15,000				IT
8								
9								
10								
11								
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13								
14								
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17								
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TOTAL: $ 735,493.95

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

Infrastructure upgrades

SERVICE GOAL:

Upgrade and unify infrastructure across city hall

WHY IS GOAL IMPORTANT?

Modernize and unify aging and disjointed equipment across city hall; this includes the annex, fire department, dispatch, training building, and maintenance. A capital plan is currently being compiled for city hall as well as all other city facilities. City hall is and will be a centralized hub of interconnectivity for all city facilities. Regardless of when the capital plan is completed, approved, and/or funded, this would allow the primary city facility to undergo upgrades for the future benefit of all city facilities.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5706	Equipment - Hardware/Software	$ 250,000		Firewall, switching, cabling, cameras
	SUBTOTAL	**$ 250,000.00**	**$ -**	
	TOTAL		**$ 250,000.00**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

Axcient Backup Appliance

SERVICE GOAL:

Move backup services away from MSP (managed service provider)

WHY IS GOAL IMPORTANT?

The backup appliance would be purchased with an included five-year warranty and in conjunction with ConnectWise backup services. This would allow the city direct control of its on-prem backup appliance and the ability to work directly with the vendor in relation to the cloud backups from that appliance. Once the appliance is in place and backup services are transitioned to ConnectWise, we anticipate a reduction in monthly costs by close to half of current costs during FY27 and beyond.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5224-01	Computer HDWE / Software	$ 20,000		Axcient Backup appliance
	SUBTOTAL	**$ 20,000.00**	**$ -**	
	TOTAL		**$ 20,000.00**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

60 Window Computers

SERVICE GOAL:

Replace aging Windows devices

WHY IS GOAL IMPORTANT?

Estimated that 60 computers have reached a lifecycle point or beyond and need to be replaced to support upcoming operating system and security updates along with meeting compliance requirements.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5224-01	Computer HDWE / Software	$ 132,000		PC replacements (60)
	SUBTOTAL	**$ 132,000.00**	**$ -**	
	TOTAL		**$ 132,000.00**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

Public Library Infrastructure

SERVICE GOAL:

Upgrade the network infrastructure

WHY IS GOAL IMPORTANT?

E-Rate Category 2 funding request has been submitted and is awaiting federal approval for FY27 (July 1, 2026 - June 30, 2027). The public library is the only city entity eligible for E-Rate funding and a new five-year funding cycle began with FY27. Pre-discount budget for the five-year period is $57,015 and the library gets an 85% discount. The bids submitted for approval was a total request of $56,626.30 - 15% of this amount is $8493.95.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5224-01	Computer HDWE / Software	$ 8,494		E-Rate C2 (public library)
	SUBTOTAL	**$ 8,493.95**	**$ -**	
	TOTAL		**$ 8,493.95**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

Database Migration Services

SERVICE GOAL:

Migrate databases into FLEX

WHY IS GOAL IMPORTANT?

Convert and migrate databases from end-of-life systems into the current FLEX system.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5314	Tech Services - Comp	$ 300,000		Conversion and migration of Cardinal & Crimes DBs
	SUBTOTAL	**$ 300,000.00**	**$ -**	
	TOTAL		**$ 300,000.00**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-1700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

ManageEngine Identity and Access Management Software

SERVICE GOAL:

Automate users that are onboarded/offboarded

WHY IS GOAL IMPORTANT?

ManageEngine IAM is a software tool that processes data to automate the creation and management of user accounts in the AD environment. The software would process a file daily that is extracted from the HR system and then create and disable user accounts automatically based on the HR data. It would also process changes related to roles and job titles. This would allow us to automate other downstream applications such as Office 365. The cost for FY27 includes a one-time implementation fee - the estimated recurring cost to begin with FY28 would be $3,000.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5314	Tech Services - Comp	$ 10,000		ManageEngine IAM
	SUBTOTAL	**$ 10,000.00**	**$ -**	
	TOTAL		**$ 10,000.00**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 011700

DEPT TITLE: Technology

ITEM / POSITION REQUESTED:

TimeClockPlus

SERVICE GOAL:

Move TimeClockPlus from an on-prem to cloud-hosted solution. Add Aladtec Pro for police and fire department time keeping.

WHY IS GOAL IMPORTANT?

Migrate and update the current on-prem TimeClockPlus to a cloud-based solution, which would support better integration and management with Incode, and support mechanisms. Aladtec Pro add-in needs to be evaluated for potential use by the police and fire departments, but budgeting now would allow the upgrade if either or both departments find it to be a good fit for timekeeping in relation to their schedules.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-1700-5314	Tech Services - Comp	$ 15,000		TimeClockPlus Aladtec Pro addition (PD/FD)
	SUBTOTAL	$ 15,000.00	$ -	
	TOTAL		$ 15,000.00	(One-Time + Recurring)

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **Police**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Police	01-5100	38 Body Cameras	139,160			E	
2	Police	01-5100	2 Patrol Vehicles & Upfitting	180,000		V		
3	Police	01-5100	2 Kyocera Printers, 4 Dell Laptops & 5 Dell Desktop Computers	18,755				IT
4	Police	01-5100	6 Duty Handguns	6,700			E	
5	Police	01-5100	Motorola GIS Managed Services	12,033				IT
6	Police	01-5100	4 Ballistic Shields & 7 Breaching Kits	23,500			E	
7	Police	01-5100	8 Security Cameras	6,000				IT
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TOTAL: **$ 386,148**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

38 Body Cameras

SERVICE GOAL:

To equip all officers with their own body camera.

WHY IS GOAL IMPORTANT?

It is important to provide each officer with their own body camera as the current body cameras are at end of life with no tech support. Officers have to share body cameras which result in dead batteries during their shifts, it reduces the number of cameras when someone forgets to place the camera on the dock and takes it home, and provides better accountablity and care for the camera when it is issued to the individual officer.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5706	Quick view subscription plan	$ 22,572		
01-2000-5706	38 FVPRO 90 Cameras	110,466		
01-2000-5706	Magnetic mounts	2,925		
01-2000-5706	Activation Fee	1,200		
01-2000-5706	Glove, FirstVu Pro	903		
01-2000-5706	Freight	1,094		
				We could do a 5 year payment plan as follows:
				Year 1 - $32,728.20
				Year 2 - $26,607.60
				Year 3 - $26,607.60
				Year 4 - $26,607.60
				Year 5 - $26,607.60
				Total 5 year - $139,158.60
	SUBTOTAL	**$ 139,160**	**$ -**	
	TOTAL		**$ 139,160**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

2 Patrol Vehicles & Upfitting

SERVICE GOAL:

To replace aging fleet

WHY IS GOAL IMPORTANT?

Replacing aging police vehicles is important because reliable transportation is essential for public safety and effective law enforcement. Older police vehicles often experience increased mechanical problems, breakdowns, and higher maintenance costs, which can delay officers from responding quickly to emergencies. Newer vehicles are safer for officers and the public because they include updated safety features, improved braking systems, better lighting, and more dependable performance during high-speed or emergency situations. Modern vehicles also support current technology such as computers, radios, cameras, and communication equipment that officers rely on every day. In addition, replacing outdated vehicles can reduce fuel and repair expenses over time while improving overall efficiency and readiness within the department. Ensuring that officers have dependable vehicles helps maintain fast response times, protects public safety, and allows police departments to serve the community more effectively.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5708	Chevy 1500 Truck	$ 110,000		2 Trucks for Sergeant vehicle
01-2000-5708	Upfitting for Truck	70,000		Equipment upfitting for 2 trucks
	SUBTOTAL	**$ 180,000**	**$ -**	
	TOTAL		**$ 180,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police Department

ITEM / POSITION REQUESTED:

2 Kyocera Printers, 4 Dell Rugged Laptops & 5 Dell Desktop Computers

SERVICE GOAL:

Replace aging computer equipment that has reached end-of-life status and ensure all police department computer systems meet current CJIS security requirements and operational needs. Replace printers that reached end-of-life.

WHY IS GOAL IMPORTANT?

Several Police Department computers are currently operating on Microsoft Windows 10, which is no longer supported by Microsoft and no longer meets CJIS compliance requirements. Additionally, existing printers have exceeded their useful service life and are experiencing increasing maintenance and reliability issues. Replacing this equipment will improve cybersecurity, maintain compliance with criminal justice information security standards, reduce equipment failures and repair costs, and ensure officers and staff have reliable technology to perform law enforcement, investigative, records management, and administrative functions efficiently. Modern, dependable equipment is essential to maintaining operational readiness and providing effective service to the community.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5224-01	Computer Hardware/Software	$ 18,755		
	SUBTOTAL	**$ 18,755**	**$ -**	
	TOTAL		**$ 18,755**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

6 Duty Handguns

SERVICE GOAL:

Provide standardized, department-approved duty weapons for all sworn personnel to ensure operational readiness and compliance with departmental training and qualification requirements.

WHY IS GOAL IMPORTANT?

As the department fills current and future vacancies, newly hired officers must be equipped with approved duty weapons to safely perform their duties. Maintaining an adequate inventory of duty weapons allows the department to quickly outfit new personnel, support staffing needs, maintain training compliance, and ensure officer and public safety. An inventory is also needed in the event of an officer involved shooting. The officer's weapon will be logged as evidence so the Department will need to issue them another one that same day.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5626	Operating Supplies	$ 6,700		Glock G45 9mm, Aimpoint Red Dot, Flashlight, Holster
	SUBTOTAL	**$ 6,700**	**$ -**	
	TOTAL		**$ 6,700**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

Motorola GIS Managed Services

SERVICE GOAL:

Motorola will process ArcGIS updates from the PD and FD's source GIS data contact. Motorola GIS managed Services provide geoprocessing of the data provided.

WHY IS GOAL IMPORTANT?

The fire department and police department's current computer aided dispatch (CAD) system uses Esri ArcGIS Desktop for geovalidation purposes. The geovalidation contains all addresses in Palo Pinto County and Parker County. ArcGIS Desktop is no longer supported and we must move to ArcGIS Pro. Motorola will complete the migration process. ArcGIS Pro must have a GIS Specialist or an employee who can navigate the GIS software to apply updates/patches and to correct errors in the geovalidation files. Currently, the City does not have an employee with the expertise to troubleshoot and maintain the ArcGIS system. Motorola has a team of GIS Specialists that are solely dedicated to public safety to update and publish the GIS data for our maps. The cost for the managed service will be split 50/50 between the fire department and the police department. The cost is $12,032.64 annually.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5302	Professional Services - Other		$ 12,033	
	SUBTOTAL	**$ -**	**$ 12,033**	
	TOTAL		**$ 12,033**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

4 Ballistic Shields & 7 Breaching Kits

SERVICE GOAL:

To have ballistic shields in every patrol and CID Vehicle

WHY IS GOAL IMPORTANT?

Ballistic shields are important for police officers because they provide critical protection during dangerous situations involving firearms or other threats. These shields are designed to help protect officers and civilians from gunfire while responding to high-risk incidents such as active shooter situations, hostage rescues, barricaded suspects, and tactical operations. By providing portable cover, ballistic shields allow officers to move more safely toward victims, evacuate injured people, and approach dangerous areas while reducing the risk of serious injury or death. They also help officers create safer positions during emergencies, giving them more time to assess situations, communicate, and de-escalate when possible. In addition, ballistic shields can improve the overall effectiveness of emergency responses by increasing officer confidence and safety in rapidly evolving incidents. Having access to properly maintained ballistic shields is an important part of ensuring that law enforcement personnel are equipped to protect both themselves and the public during critical events. Ballistic Shields / Breaching tools are also required of School Districts and police departrment due to HB 33, The Uvalde Strong Act.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5706	(4) Ballistic Shields	$ 20,000		
01-2000-5706	(7) Breaching Kits	3,500		
	SUBTOTAL	**$ 23,500**	**$ -**	
	TOTAL		**$ 23,500**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2000

DEPT TITLE: Police

ITEM / POSITION REQUESTED:

8 Security Cameras

SERVICE GOAL:

Implement a dedicated evidence monitoring system to provide continuous video surveillance of evidence storage areas, preserve the integrity of evidence, improve accountability, and support accreditation and law enforcement best practices.

WHY IS GOAL IMPORTANT?

The Police Department's evidence storage areas are not currently monitored by a dedicated video surveillance system. Additionally, the existing camera system has reached its hardware and software limitations and cannot support the addition of new cameras. Installing a dedicated evidence monitoring system will strengthen evidence security, document access and activity within evidence storage areas, reduce the risk of evidence loss or tampering allegations, and enhance accountability. The project supports recognized law enforcement best practices and positions the department to meet future accreditation standards. Protecting the integrity of evidence is critical to successful criminal investigations, prosecutions, and maintaining public trust in the criminal justice process.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2000-5224-01	Computer Hardware/Software	$ 6,000		NDA compliant Ubiquiti security cameras.
	SUBTOTAL	**$ 6,000**	**$ -**	
	TOTAL		**$ 6,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: Animal Services

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Animal Services	01-2050	3/4-ton Truck	65,000		V		
2	Animal Services	01-2050	Animal Transport Unit	30,000			E	
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TOTAL: $ 95,000

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2050

DEPT TITLE: Animal Services

ITEM / POSITION REQUESTED:

3/4-ton Truck

SERVICE GOAL:

To provide a safe vehicle for our employees to drive while on duty.

WHY IS GOAL IMPORTANT?

Both vehicles that the Animal Shelter have are aging and in poor condition. The purchase of a new Animal Control vehicle is necessary to ensure reliable, safe, and efficient service delivery to the community. The vehicle will provide secure and humane transportation for animals, reduce maintenance and repair costs associated with the aging fleet, improve response times to public safety incidents, and enhance officer safety. Investing in a properly equipped Animal Control vehicle supports the City's commitment to public safety, animal welfare, and responsible stewardship of taxpayer resources.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2050-5708	Vehicles	$ 65,000	$ -	3/4 ton truck
	SUBTOTAL	**$ 65,000**	**$ -**	
	TOTAL		**$ 65,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2050

DEPT TITLE: Animal Services

ITEM / POSITION REQUESTED:

Animal Transport Unit

SERVICE GOAL:

To provide safer transport for animals and reduce risk of injury to the Animal Control Officers

WHY IS GOAL IMPORTANT?

The purchase of a new bed-mounted animal transportation unit is necessary to ensure the safe, humane, and efficient transport of animals within the community. The unit will provide climate-controlled and secure compartments, improve officer and public safety, reduce liability, increase operational efficiency, and support modern animal welfare standards. It will have a lift gate to assist with transport of large animals that are deceased and also have a lift box to asset lifting large dogs safely. This investment will enhance the City's ability to provide professional animal control services while protecting both animals and employees.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2050-5708	Vehicles	$ 30,000		Model SSCMD Stainless Chassis Mount transportation unit
	SUBTOTAL	**$ 30,000**	**$ -**	
	TOTAL		**$ 30,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: Fire/EMS

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Fire/EMS	01-2400	Administrative Assistant	69,886	P			
2	Fire/EMS	01-2400	Handheld radios, mobile radios, & mobile repeaters	87,000			E	
3	Fire/EMS	01-2400	3 Firefighters/Paramedics	227,149	P			
4	Fire/EMS	01-2400	(2) half ton trucks to replace squad	160,000		V		
5	Fire/EMS	01-2400	Command Truck & Equipment	84,000		V		
6	Fire/EMS	01-2400	Bunker Gear Replacement	27,000			E	
7	Fire/EMS	01-2400	AFG Grant Match for Tender Tanker	25,000				IT
8	Fire/EMS	01-2400	SAFER Grant Match for 3 firefighters	249,149	P		E	
9	Fire/EMS	01-2400	Replacing CAD devices in fire out apparatus	25,200			E	IT
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TOTAL: $ 954,384

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire/EMS

ITEM / POSITION REQUESTED:

Administrative Assistant

SERVICE GOAL:

To enhance fire/EMS efficiencies through organization, revenue enhancements, and administration.

WHY IS GOAL IMPORTANT?

We currently have the ability to collect other revenues. Currently all administrators are unable to fulfill all duties in a timely manner because of the overwhelming clerical duties. This can enhance processes and revenues. There are 34 employees in the FD. It is unique in that it has processes that no other department needs to accomplish. This would be a major asset to be more efficient and productive while increasing production in revenues.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5100	Annual Salary		$ 46,613	$22.41 an hour.
01-2400-5101	Overtime		3,362	100 hrs x $33.62
01-2400-5103	Social Security		3,823	$46613+$3362 x 0.0765
01-2400-5104	Group Insurance		11,000	
01-2400-5105	TMRS		3,688	$46613+$3362 x 0.0738
01-2400-5106	Workers' Comp		1,400	
	SUBTOTAL	**$ -**	**$ 69,886**	
	TOTAL		**$ 69,886**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire

ITEM / POSITION REQUESTED:

New Radios for all first out apparatus, apparatus repeaters, and handheld radios.

SERVICE GOAL:

To comply with updates and the ability to communicate with our neighboring partners. To prevent safety concerns through communication equipment.

WHY IS GOAL IMPORTANT?

2026, Parker County has moved to the Fort Worth radio system, which is a system that trunks all towers from Fort Worth to Palo Pinto County to improve coverage. To be a part of this endeavor, you must have compatible radios that have certain code plugs. Palo Pinto County fire departments will make the transition to this system in 2027. This makes communication with both partners difficult and unsafe. Most of our radios are not compatible and have to be replaced in the apparatus, and 80% of our handhelds will not take the new code plugs. Individual apparatus repeaters will help with communications on scene by enhancing signals to hit towers. There are many voided areas due to our terrain within the city limits. This causes missed radio traffic which can lead to safety issues.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5706	Handheld Radios	$ 25,000		(10) handheld radios. $2,500 each.
01-2400-5706	Apparatus Radios	30,000		(10) mobile/apparatus radios. $3,000 each.
01-2400-5706	Apparatus repeaters	32,000		(4) apparatus repeaters. $8,000 each
	SUBTOTAL	**$ 87,000**	**$ -**	
	TOTAL		**$ 87,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire

ITEM / POSITION REQUESTED:

3 Firefighters/Paramedics

SERVICE GOAL:

Increase operational readiness and safety by hiring 3 firefighters/EMT's.

WHY IS GOAL IMPORTANT?

The fire department currently responds with two people on each fire apparatus. The need for the third firefighter on each fire apparatus to respond safely, and efficiently to emergency calls. This addition could move our fire department to an ISO class 2 which will lower insurance rates for both residential and commercial buildings in the city limits. The need for the additional employees is to create a safe and effective response to all emergencies, help in preventing burn-out, and retaining employees.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5100	Salaries		$ 162,000	Estimated that each firefighter cost $54,000
01-2400-5103	Social Security		12,393	$162,000 x 0.0765
01-2400-5104	Group Insurance		33,000	$11,000 x 3
01-2400-5105	TMRS		11,956	$162,000 x 0.0738
01-2400-5106	Workers' Comp		7,800	$2600 x 3
	SUBTOTAL	**$ -**	**$ 227,149**	
	TOTAL		**$ 227,149**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire

ITEM / POSITION REQUESTED:

Replace 2017 mini-pumper (Squad)

SERVICE GOAL:

To replace current apparatus with a more cost-efficient solution, when responding to emergency calls.

WHY IS GOAL IMPORTANT?

The Squad is now approaching 10 years and has had numerous mechanical problems. This is used to respond to EMS calls, and we would like to change this operational challenge. Instead of replacing it with the exact same model (mini pumper "$300 K"), we would like to replace it with two 1/2-ton trucks. This would reduce wear to our Engine and other fire apparatus that currently respond to EMS calls. Order would be placed with the command vehicle to hopefully reduce cost.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5708	(2) 1/2 ton trucks	$ 150,000		$75,000 each vehicle includes needed equipment.
01-2400-5706	(2) Radios	10,000		New Radios for apparatus
	SUBTOTAL	$ 160,000	$ -	
	TOTAL		$ 160,000	(One-Time + Recurring)

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire

ITEM / POSITION REQUESTED:

Replace 2019 Command Tahoe

SERVICE GOAL:

Replacing current command apparatus to be operationally ready to provide oversight on emergency calls.

WHY IS GOAL IMPORTANT?

The command Tahoe is needing to be replaced due to the age, miles, and issues occurring. This apparatus is used to command large scale incidents and needs to be dependable. The current command unit is starting to experience mechanical issues and over the last four years we have replaced the transmission twice.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5708	1/2 ton command truck	$ 70,000		Command truck and basic equipment.
01-2400-5706	Command equipment	6,000		Additional equipment for command needs and setup.
01-2400-5706	Radio	8,000		New Radios (needs 2).
	SUBTOTAL	**$ 84,000**	**$ -**	
	TOTAL		**$ 84,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire

ITEM / POSITION REQUESTED:

Bunker Gear replacement

SERVICE GOAL:

To prevent bunker gear from expiring and have a successful replacement plan to conform to state mandates.

WHY IS GOAL IMPORTANT?

Fire administration completed a 10-year capital equipment budget, and over the next three years the department will need to dispose of 25 sets of bunker gear. 2028: 6 sets, 2029: 11 sets, 2030: 8 sets. The bunker gear is inspected by the Texas Commission on Fire Protection every year and records must be kept on all sets. In FY 2025-2026, we replaced three sets of gear which brings the total to 22 sets that will need to be replaced in the next three years. We are requesting to replace 7 sets of gear to disperse the cost of three years.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5610	Bunker Gear: 6 Sets		$ 27,000	This will be for three years to replace expired gear.
	SUBTOTAL	**$ -**	**$ 27,000**	
	TOTAL		**$ 27,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire/EMS

ITEM / POSITION REQUESTED:

AFG Grant Match - Tender Tanker

SERVICE GOAL:

To obtain capital equipment through grant writing services.

WHY IS GOAL IMPORTANT?

Currently the fire department does not have their own tender/tanker. This apparatus provides water supply to fire scenes when hydrants are not available or not sufficient to keep up with fire pump demands. This apparatus is important in maintaining and/or lowering our ISO rating. We currently lease a 2003 American La France tender/tanker from Parker County ESD #6. If successful award of the AFG we will be responsible for 5% on the total cost.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5302	Grant Services	$ 25,000		Total cost of tender/tanker $500,000.
	SUBTOTAL	$ 25,000	$ -	
	TOTAL		$ 25,000	(One-Time + Recurring)

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire/EMS

ITEM / POSITION REQUESTED:

SAFER Grant Match for 3 Firefighters

SERVICE GOAL:

To provide a safe and effective response to emergency calls.

WHY IS GOAL IMPORTANT?

The fire department currently responds with two people on each fire apparatus. The need for the third firefighter on each fire apparatus to respond safely, and efficiently to emergency calls. This addition could move our fire department to an ISO class 2 which will lower insurance rates for both residential and commercial buildings in the city limits. The need for the additional employees is to create a safe and effective response to all emergencies, help in preventing burn-out, and retaining employees.

*** Utilizing the SAFER grant can reduce initial cost for three years. Year 1 & 2 are estimated to be 75% of salaries and benefits. Year 3 is estimated to be 35% of salaries and benefits. This would allow a gradual increase in our budget to allocate sufficient funds for these positions.
Fire Department's cost share- Year 1: $60,175, Year 2: $54,675, & Year 3: $142,155
Federal cost share- Year 1: 180,525, Year 2: $164,025, & Year 3: $76,545

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5100	Salaries		$ 162,000	(3) firefighters estimated at $54,000
01-2400-5103	Social Security		12,393	$162,000 x 0.0765
01-2400-5104	Group Insurance		33,000	$11,000 x 3
01-2400-5105	TMRS		11,956	$162,000 x 0.0738
01-2400-5106	Workers' Comp		7,800	$2600 x 3
01-2400-5610	Gear & Clothing	22,000		(3) sets of gear and clothing
	SUBTOTAL	**$ 22,000**	**$ 227,149**	
	TOTAL		**$ 249,149**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2400

DEPT TITLE: Fire/EMS

ITEM / POSITION REQUESTED:

Replace unsupported CAD computers in first out apparatus.

SERVICE GOAL:

To provide a safe and effective response to emergency calls with technology upgrades that can be supported.

WHY IS GOAL IMPORTANT?

The fire department utilizes computer aided dispatches to safely and effectively respond to calls. Our current fleet of Toughbook laptops are only supported by Windows 10. The Toughbook laptops have increased in price and working with IT, we have found a more cost-efficient solution. By utilizing Surface Pro tablets and new docking stations the cost is estimated to be $2,800 each. The immediate need for 9 Surface Pros and docking stations will ensure that CAD can be supported and updated. The State of Texas stated that they will not be supporting Windows 10 this next year. This creates a problematic potential for our employees to have up to date information that could jeopardize safety.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2400-5224-01	Surface Pro & Mounts	$ 25,200		(9) Surface Pro tablets & mounting kits. $2,800 each.
	SUBTOTAL	**$ 25,200**	**$ -**	
	TOTAL		**$ 25,200**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

CITY OF MINERAL WELLS

Department: **Development Services**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Dev. Services	02-2600	2 Laptops	2,138				IT
2								
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TOTAL: $ 2,138

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2600

DEPT TITLE: Development Services

ITEM / POSITION REQUESTED:

2 Laptops

SERVICE GOAL:

Provide a laptop for Permit Coordinator and Building Official.

WHY IS GOAL IMPORTANT?

This will provide employees with greater flexibility and mobility by allowing them to easily bring their laptops to meetings, inspections, conferences, and out-of-town training events, improving efficiency and accessibility while working remotely or in the field.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-2600-5706	Equipment	$ 2,138		Two (2) Laptops ($1,069 each)
	SUBTOTAL	**$ 2,138**	**$ -**	
	TOTAL		**$ 2,138**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **Street**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	Street	01-3101	Street Sweeper	400,000			E	
2	Street	01-3101	Additional Street Materials	100,000				
3	Street	01-3101	Pavement Condition Assessment and Road Management	67,000				
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			TOTAL:	**$ 567,000**				

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-3101

DEPT TITLE: Street

ITEM / POSITION REQUESTED:

Street Sweeper

SERVICE GOAL:

Keep Mineral Wells Beautiful

WHY IS GOAL IMPORTANT?

A regenerative air sweeper uses an onboard compressor to blast air onto the pavement and immediately vacuum the loose debris into an onboard hopper. Advantages of this system to clean streets over other types of sweepers are lower water consumption, improved fine particulate removal, MS4 / stormwater compliance, increased broom life, reduced airborne dust, and enhanced curb and gutter cleaning. Today, there is no other municipal street sweeping technology that can match the performance of this process. The City currently utilizes a compact style sweeper, which is compared to the regenerative sweeper below. This cost should be shared between streets and the drainage fund, 60/40, respectively.

Type	Best Use	Fine Dust	Heavy Debris	Typical Cost
Regenerative Air	Routine streets	Excellent	Good	Medium-High
Compact Sweeper	Sidewalks/trails	Good	Fair	Medium

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-3101-5706	Equipment	$ 400,000	$ -	Street Sweeper
	SUBTOTAL	$ 400,000	$ -	
	TOTAL		$ 400,000	(One-Time + Recurring)

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-3100

DEPT TITLE: Streets

ITEM / POSITION REQUESTED:

Increase funds for Street Materials

SERVICE GOAL:

We can repair more roads.

WHY IS GOAL IMPORTANT?

Beautification of Mineral Wells streets. Annually, the city receives approximately $600,000 from franchise fees from the contracted solid waste provider, Frontier Waste Solutions. These funds are used to maintain the streets. Last fiscal year, the City increased funding to $700,000. This year's request is to continue with the $700,000 and add an additional $100,000 to fund more street materials.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-3100-5620	Street Materials		$ 100,000	Added street materials
	SUBTOTAL	**$ -**	**$ 100,000**	
	TOTAL		**$ 100,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-2100

DEPT TITLE: Street Department

ITEM / POSITION REQUESTED:

Pavement Condition Assessment and Road Management

SERVICE GOAL:

To obtain a complete data driven assessment for the purpose of informed decision making about roadway preservation, re-hab and reconstruction.

WHY IS GOAL IMPORTANT?

Modern technology has changed road assessment capabilities tremendously. Less than a decade ago these were still done visually by trained personnel which, often were too costly for an entire network and could still be considered somewhat subjective. Today several technologies can work in unison to compile data accurately over a complete road system. The whole network can now be viewed with defensible, data driven and accurate input. The information gathered instantly categorizes every road segment into preservation, re-habilitation or reconstruction. After categories are defined and sized, the data can also be used to explore road maintenance techniques not currently utilized that may provide better, less expensive, more efficient or longer lasting results. The information gathered can then be furthered into a management software for a completely subjective tool that can generate multiple scenarios for budgeting, compliance and goal setting over long periods of time. The software will record treatments including cost, date applied and predict estimated next treatment. This over time will develope even further data within the software on how different treatments perform over time, cost accuracy and yearly completion rates.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01 2101-5302	Professional Services	$ 49,000		Road Data Gathering by Van
01 2101-5302	Professional Services	7,000		Software Implementation/Training
01 2101-5302	Software Subscription		11,000	Yearly Subscription/ Tech Support
	SUBTOTAL	**$ 56,000**	**$ 11,000**	
	TOTAL		**$ 67,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **Parks & Recreation**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Parks & Recreation	01-5100	Restroom Trailer	65,522			E	
2	Parks & Recreation	01-5100	Portable Stage	85,000			E	
3	Parks & Recreation	01-5100	Sports Field Feasibility Study	23,250				
4	Parks & Recreation	01-5100	Recreation SUV	60,000		V		
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TOTAL: $ 233,772

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5100

DEPT TITLE: Parks & Recreation

ITEM / POSITION REQUESTED:

Portable Self-Contained Restroom

SERVICE GOAL:

Provide portable, ADA-accessible restroom facilities to support the growing use of the new Backyard Pickleball Courts at the City Gym, particularly during evenings and weekends when indoor restroom access may be limited. The self-contained restroom will

WHY IS GOAL IMPORTANT?

This project is important because it improves public access to safe, convenient, and ADA-accessible restroom facilities during high-use recreation times when permanent facilities may not be available. The portability of the unit also provides the City with a long-term, cost-effective solution to support community events, park activities, and downtown gatherings without the ongoing expense and limitations of temporary restroom rentals.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5100-5710	Mobile Equipment	$ 65,522		Comfort Isle 14 ADA 3ST J
	SUBTOTAL	**$ 65,522**	**$ -**	
	TOTAL		**$ 65,522**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5100

DEPT TITLE: Parks & Recreation

ITEM / POSITION REQUESTED:

Portable Stage - Eurostage 20X16

SERVICE GOAL:

Purchase of a portable stage system will enhance the City's ability to host safe, professional, and engaging community events, including concerts, festivals, holiday celebrations, and recreation programs. The stage will serve as a shared asset for both Parks

WHY IS GOAL IMPORTANT?

A portable stage will expand opportunities for community events and entertainment while improving the overall experience for residents and visitors. It also provides the City with a cost-effective shared resource that supports tourism, downtown activity, and year-round community engagement.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5100-5710	Mobile Equipment	$ 85,000		Eurostage 20X16
	SUBTOTAL	**$ 85,000**	**$ -**	
	TOTAL		**$ 85,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5100

DEPT TITLE: Parks & Recreation

ITEM / POSITION REQUESTED:

Sport Field Feasibility & Development Study

SERVICE GOAL:

The study directly supports the City's Strategic Plan goal of expanding baseball, football, and soccer field capacity by identifying future field needs, potential locations, infrastructure requirements, and opportunities to increase recreation and tournament-related

WHY IS GOAL IMPORTANT?

The Parks and Recreation Department and the EDC will equally share the cost of a sports field feasibility and development study to support future recreation growth and community needs.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5100-5302	Professional Service	$ 23,250		
	SUBTOTAL	**$ 23,250**	**$ -**	
	TOTAL		**$ 23,250**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5100

DEPT TITLE: Parks & Recreation

ITEM / POSITION REQUESTED:

Small SUV

SERVICE GOAL:

Provide a dependable and fuel-efficient small SUV for the Recreation Department to safely and efficiently travel between the City Gym, City Pool, and City Hall to support daily operations and department coordination across the city.

WHY IS GOAL IMPORTANT?

This goal is important because it provides the Recreation Department with dependable transportation for daily operations between City facilities while also allowing staff to safely travel throughout the Metroplex for continued education, meetings, trainings, and other departmental needs not available in Mineral Wells. This would replace a current SUV that is not reliable for long distances and requires expensive repairs.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5100-5708	Vehicles	$ 60,000		Small SUV
	SUBTOTAL	**$ 60,000**	**$ -**	
	TOTAL		**$ 60,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: Parks Maintenance

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Parks Maintenance	01-5110	Dump Trailer	10,000			E	
2	Parks Maintenance	01-5110	Truck	70,000		V		
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TOTAL: $ 80,000

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5110

DEPT TITLE: Parks Maintenance

ITEM / POSITION REQUESTED:

Dump Trailer

SERVICE GOAL:

Provide a dump trailer to improve the Parks Maintenance Department's efficiency in hauling equipment, debris, and materials needed for park maintenance, beautification, and improvement projects throughout the community.

WHY IS GOAL IMPORTANT?

This goal is important because a dump trailer would improve efficiency and reduce labor time for hauling materials, debris, and equipment for park maintenance and improvement projects, while also providing a resource that currently does not exist within the City and could be shared with other departments as needed.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5110-5706	Equipment	$ 10,000		
	SUBTOTAL	**$ 10,000**	**$ -**	
	TOTAL		**$ 10,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5110

DEPT TITLE: Parks Maintenance

ITEM / POSITION REQUESTED:

Truck

SERVICE GOAL:

The Parks Maintenance department is in need of a new reliable work truck to safely and efficiently support daily maintenance operations, transport equipment and materials, and respond to park and facility needs throughout the community.

WHY IS GOAL IMPORTANT?

This goal is important because the department relies on dependable transportation to maintain parks, athletic fields, trails, and City-owned facilities in a timely manner. A new work truck will reduce downtime and costly repairs associated with aging vehicles while improving staff productivity and operational efficiency. Reliable transportation also ensures staff can safely travel throughout the city and surrounding metroplex area for training, meetings, and other department-related responsibilities.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5110-5708	Vehicles	$ 70,000		Pickup
	SUBTOTAL	**$ 70,000**	**$ -**	
	TOTAL		**$ 70,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

CITY OF MINERAL WELLS

Department: **Cemetery**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Cemetery	01-5300	Stonework	50,000				
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TOTAL: $ 50,000

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5300

DEPT TITLE: Cemetery

ITEM / POSITION REQUESTED:

Stonework

SERVICE GOAL:

Fix failing stone on the border wall, office and pavilion at Woodland Park Cemetery.

WHY IS GOAL IMPORTANT?

This goal is necessary to address deteriorating stonework on the office building, border wall, and pavilion at Woodland Park Cemetery to maintain the structural integrity, safety, and appearance of these important public facilities. Repairs will help preserve the cemetery's historic character, prevent further costly damage, and ensure the property continues to provide a respectful and well-maintained environment for visitors and families.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5300-5418	Other Maintenance	$ 50,000		
	SUBTOTAL	**$ 50,000**	**$ -**	
	TOTAL		**$ 50,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: Library

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT)
1	Library	01-5500	Part-Time Library Assistant	19,102	P			
2	Library	01-5500	New Carpet	35,000				
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TOTAL: $ **54,102**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 01-5500

DEPT TITLE: Library

ITEM / POSITION REQUESTED:

Part-Time Library Assistant

SERVICE GOAL:

To support growing usage of the library, improve customer service, and to help maintain a welcoming space and efficient daily operations.

WHY IS GOAL IMPORTANT?

The new Part-Time Library Assistant position will help manage the anticipated increase in library usage resulting from the new park being built behind the library, which is expected to bring additional visitors, families, and community activity. This position will provide essential support for daily operations, including customer service, shelving materials, maintaining clean and organized public spaces, and assisting with increased programming, community events, and children's activities.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5500-5100	Salaries		$ 17,280	16.00/hr x 1080
01-5500-5103	Social Security		1,322	$17280 x 0.0765
01-5500-5106	Workers' Comp		500	$17280 x 0.0765
	SUBTOTAL	**$ -**	**$ 19,102**	
	TOTAL		**$ 19,102**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 01-5500

DEPT TITLE: Library

ITEM / POSITION REQUESTED:

New Carpet

SERVICE GOAL:

To improve patron comfort and safety and to create a clean, welcoming environment at the library.

WHY IS GOAL IMPORTANT?

Replacing the carpet in the library is important for patron safety, as there are uneven spots and holes in the existing carpeting that create potential trip hazards. It is also important because the new park being built behind the library is expected to significantly increase foot traffic and overall community use of the facility. New carpet will help create a welcoming environment, improve the appearance of the library, and present a clean, professional space for patrons using the facility for meetings, programs, business, and community events.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
01-5500-5702	Building Improvements	$ 35,000		Carpet Tiles Installed & Old Tiles Removed
	SUBTOTAL	**$ 35,000**	**$ -**	
	TOTAL		**$ 35,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **Water & Sewer Fund - Public Works**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	PW Administration	02-2100	Ram Water Storage Tank Rehabilitation	600,000				
2	PW Administration	02-2100	Utility Inspection Camera System	150,000			E	
3	Water Distribution	02-2202	Valve Maintenance Trailer	100,000			E	
4	PW Administration	02-2100	Conference/Class Room & Furniture	15,000			E	
5	Facility Maintenance	02-3102	Air Compressor Trailer	20,000			E	
6	Wastewater	02-2700	Pollard Creek WWTP Roof	25,000				
7	Wastewater	02-2700	Blower for Willow Creek WWTP	76,500				
8	Wastewater	02-2700	Digester Wier Gate for Pollard Creek WWTP	55,000				
9	Wastewater	02-2700	Pollard Creek WWTP Assessment	130,000				
10	Water Distribution	02-2202	Mini Excavator	45,000			E	
11	Wastewater	02-2700	Mower for Pollard Creek WWTP	10,000			E	
12	PW Administration	02-2100	Fuel Tank Removal	40,000				
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			TOTAL:	**$ 1,266,500**				

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **PW Administration**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	PW Administration	02-2100	Ram Water Storage Tank Rehabilitation	600,000				
2	PW Administration	02-2100	Utility Inspection Camera System	150,000			E	
3	PW Administration	02-2100	Conference/Class Room & Furniture	15,000			E	
4	PW Administration	02-2100	Fuel Tank Removal	40,000				
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			TOTAL:	**$ 805,000**				

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2100

DEPT TITLE: PW Administration

ITEM / POSITION REQUESTED:

Ram Water Storage Tank Rehabilitation

SERVICE GOAL:

Repair water storage tanks

WHY IS GOAL IMPORTANT?

We had Parkhill engineering do an inspection and assessment on all of our water storage tanks last budget year. After assessment it was determined that Ram tank roof needs replaced. This will be a ongoing expense until all tanks have been rehabbed.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2100-5704	Water tank rehab		$ 600,000	
	SUBTOTAL	**$ -**	**$ 600,000**	
	TOTAL		**$ 600,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS MW TX

FUND - DEPT NO.: 02-2100

DEPT TITLE: PW Administration

ITEM / POSITION REQUESTED:

Utility Inspection Camera System

SERVICE GOAL:

Replace worn out equipment

WHY IS GOAL IMPORTANT?

Our current utility inspection camera system is 10 years old and is reaching the end of its lifespan. Our inspection system is used daily, we survey lines to keep our system running properly, and also aid in pinpointing issues for Water Distribution. We also follow boring contractors to inspect our system, and when our system is harmed by a contractor we have photographic and video proof of the problem, which helps with billing contractors for damage. This is a very important piece of equipment. The current system we have is now to the point when it needs repair it has to be sent to Californian for repairs. This costs the City money for shipping and rental of equipment awaiting the return of our system.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2100-5700	Equipment	$ 150,000	$ -	
	SUBTOTAL	**$ 150,000**	**$ -**	
	TOTAL		**$ 150,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2100

DEPT TITLE: PW Administration

ITEM / POSITION REQUESTED:

Conference/Class Room & Furniture

SERVICE GOAL:

Conduct training and meetings

WHY IS GOAL IMPORTANT?

Most of our staff are required to be licensed by TCEQ. To obtain a license you must take classes then test. You are also required to take classes annually to keep renewal hours for each license. It is cheaper for the City to have an instructor to come teach classes here than it is to send our staff to schools in other areas. We have used the activity center in the past as well as the Purdue building. Scheduling seems more difficult now than in years past. We as well as the rest of the City is much busier and it is harder to have an open spot to conduct class. We would also use this area as a meeting area. This item includes tables and chairs furniture for the class room.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2100-5702	Building Improvements	$ 10,000	$ -	Class/Conference room
02-2100-5712	Furniture & Fixtures	5,000		Tables & chairs
	SUBTOTAL	**$ 15,000**	**$ -**	
	TOTAL		**$ 15,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2100

DEPT TITLE: PW Administration

ITEM / POSITION REQUESTED:

Fuel Tank Removal

SERVICE GOAL:

Remove old fuel tanks

WHY IS GOAL IMPORTANT?

We have old fuel tanks in the ground on the Public Works property that have been out of service several years. We are required to maintain insurance and have them inspected by TCEQ annually.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2100-5704	Impvts other than Buildings	$ 40,000	$ -	Fuel tank removal
	SUBTOTAL	**$ 40,000**	**$ -**	
	TOTAL		**$ 40,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

CITY OF MINERAL WELLS

Department: **Water Distribution**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	Water Distribution	02-2202	Valve Maintenance Trailer	100,000			E	
2	Water Distribution	02-2202	Mini Excavator	45,000			E	
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			TOTAL:	**$ 145,000**				

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2202

DEPT TITLE: Water Distribution

ITEM / POSITION REQUESTED:

Valve Maintenance Trailer

SERVICE GOAL:

Maintain valves and fire hydrants

WHY IS GOAL IMPORTANT?

The City's water distribution system contains critical isolation valves that must remain operational to support emergency repairs, routine maintenance, and fire protection. Currently, many valves are not exercised on a regular schedule due to equipment limitations and the process's labor-intensive nature. The purchase of a valve maintenance trailer will establish a proactive valve exercising and asses management program that improves system reliability, reduces emergency repair costs, minimizes water loss, enhances employee safety, and extends the service life of existing infrastructure assets. The trailer will also improve operational efficiency by providing a dedicated mobile platform for valve maintenance, GIS data collecting, and preventative maintenance activities consistent with industry best practices. The valve trailer improves employee safety by reducing manual lifting and repetitive strain associated with hand-turning large distribution valves. The trailer-mounted hydraulic equipment also allows safer roadside operations and reduces worker exposure to traffic hazards. The acquisition of a valve trailer aligns with the City's creation of a valve and hydrant crew, which the council has already staffed and equipped with a crew truck. This dedicated crew's purpose is aligned with the industry best practices for water distribution system maintenance and supports long-term system reliability, resiliency, and fire protection readiness.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2202-5706	Equipment	$ 100,000	$ -	Valve Maintenance Trailer
	SUBTOTAL	**$ 100,000**	**$ -**	
	TOTAL		**$ 100,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2202

DEPT TITLE: Water Distribution

ITEM / POSITION REQUESTED:

Mini Excavator

SERVICE GOAL:

Replace a mini excavator that is over 20 years old.

WHY IS GOAL IMPORTANT?

This would replace a piece of 20 year old equipment that is used daily to repair water and sewer leaks, and is getting to the pint of disrepair.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2202-5706	Equipment	$ 45,000	$ -	Mini Excavator
	SUBTOTAL	**$ 45,000**	**$ -**	
	TOTAL		**$ 45,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

CITY OF MINERAL WELLS

Department: **Wastewater**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	Wastewater	02-2700	Pollard Creek WWTP Roof	25,000				
2	Wastewater	02-2700	Blower for Willow Creek WWTP	76,500			E	
3	Wastewater	02-2700	Pollard Creek WWTP Assessment	130,000				
4	Wastewater	02-2700	Digester Wier Gate for Pollard Creek WWTP	55,000				
5	Wastewater	02-2700	Mower for Pollard Creek WWTP	10,000			E	
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			TOTAL:	**$ 296,500**				

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2700

DEPT TITLE: Wastewater

ITEM / POSITION REQUESTED:

Roof on Pollard Creek Operations Building

SERVICE GOAL:

prevent damage to interior

WHY IS GOAL IMPORTANT?

The roof on Pollard Creek operations building leaks in the lab. After attempts of patching we have had professionals asses the leak and have determined the roof needs replacement.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2700-5404	Building maintenance	$ 25,000	$ -	Roof
	SUBTOTAL	$ 25,000	$ -	
	TOTAL		$ 25,000	(One-Time + Recurring)

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 02-2700

DEPT TITLE: Wastewater

ITEM / POSITION REQUESTED:

Blower for Willow Creek WWTP

SERVICE GOAL:

Treat wastewater

WHY IS GOAL IMPORTANT?

Blowers are a vital piece of the treatment process, we have 3 active blowers at Willow Creek and one of the blower is 31 years old and in disrepair an needs replaced.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2700-5704	Blower	$ 76,500	$ -	Blower needed for wastewater treatment
	SUBTOTAL	**$ 76,500**	**$ -**	
	TOTAL		**$ 76,500**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2700

DEPT TITLE: Wastewater

ITEM / POSITION REQUESTED:

Pollard Creek WWTP Assessment

SERVICE GOAL:

Preventive repairs

WHY IS GOAL IMPORTANT?

Have a professional assessment performed on Pollard Creek to see what needs to be repaired, updated, etc.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2700-5302	Professional Services	$ 130,000		Professional Plant Assessment
	SUBTOTAL	**$ 130,000**	**$ -**	
	TOTAL		**$ 130,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

FUND - DEPT NO.: 02-2700

DEPT TITLE: Wastewater

ITEM / POSITION REQUESTED:

Digester Wier Gate for Pollard Creek WWTP

SERVICE GOAL:

Replace faulty equipment

WHY IS GOAL IMPORTANT?

This is a movable gate that is adjusted to remove supernatant from the West aerobic digester at Pollard Creek.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2700-5704	Impvts other than bldgs	$ 55,000	$ -	Blower
	SUBTOTAL	**$ 55,000**	**$ -**	
	TOTAL		**$ 55,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS

FUND - DEPT NO.: 02-2700

DEPT TITLE: Wastewater

ITEM / POSITION REQUESTED:

Mower for Pollard Creek WWTP

SERVICE GOAL:

General maintenance

WHY IS GOAL IMPORTANT?

We are in need of a replacement mower for Pollard Creek.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-2700-5706	Equipment	$ 10,000	$ -	Mower
	SUBTOTAL	**$ 10,000**	**$ -**	
	TOTAL		**$ 10,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
Supplemental Ranking Sheet
FY 2026-27

Department: **Facility Maintenance**

Item	Department Name	Fund & Department Number (xx-xxx)	Supplemental Description (Short Name)	Cost	Personnel (P)	Vehicle (V)	Equipment (E)	Info Technology (IT
1	Facility Maintenance	02-3102	Air Compressor Trailer	20,000			E	
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TOTAL: $ 20,000

CITY OF MINERAL WELLS
Supplemental Request
FY 2026-27

CITY OF MINERAL WELLS MW TX

FUND - DEPT NO.: 02-3102

DEPT TITLE: Facility Maintenance

ITEM / POSITION REQUESTED:

Air Compressor Trailer

SERVICE GOAL:

Aid in repair of water leaks, limit rental fees

WHY IS GOAL IMPORTANT?

Facility Maintenance has to have a trailer compressor for a water break on conctrete steel cylinder pipe, in an emergency we have to rent this unit no matter how far we have to travel to get one. This trailer can also run all of the City's large air tools and be able to sand blast facilities needing rehabed prior to painting. The proposed air compressor purrchase is expected to generate anticipated annual savings of approximately $2,340.00 through reduced downtime and operating expenses. Operational expenses. Operational expenses include rental costs, FTE pick-up, delivery, lost time, and truck operational costs. This piece of quipment is expected to have a usable life span of 10 to 15 years and a calculated payback period of 8.5 years. In addition to the measurable cost savings described above, the compressor is expected to provide non-monetary benefits, including improved operational efficiency, reduced service interruptions, enhanced worker productivity, and lower ling-term maintenance requirements.

ITEMS NEEDED TO ACHIEVE GOAL (ITEMIZE BELOW):

Account Number xx-xxxx-xxxx-xx	Account Description	One-Time Costs	Recurring Costs	Additional Notes or Comments (If vehicle, put type only i.e., sedan, pickup)
02-3102-5706	Equipment	$ 20,000	$ -	Trailer with air compressor
	SUBTOTAL	**$ 20,000**	**$ -**	
	TOTAL		**$ 20,000**	**(One-Time + Recurring)**

CITY OF MINERAL WELLS
STRATEGIC PLAN FY 2026-2030
May 2026

Category

Communications & Marketing

Communications & Marketing

Communications & Marketing

Communications & Marketing

Communications & Marketing

Development Services

Development Services

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Public Safety

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Quality of Life

Quality of Life

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Quality of Life

Goals

Find a way to brand the City's water billing system to wholesale customers.

Find other ways to communicate other than Facebook (i.e., digital signage, newsletters, etc.)

Continue increasing citizen knowledge of what is going on within the City.

Partner with MW Area Chamber of Commerce to host "knowledge" event for datacenters

Having "ground breaking" events for projects

Develop a policy and procedure within Development Services that requires code compliance (code enforcement) officers notify non-compliance by door hangers before issuing two certified citation notifications.

Increase more beautification efforts through code enforcement and not being too stringent on landscaping requirements.

Evaluate cost-effectiveness of inspections on rental homes every two years or when utility accounts change.

Implement Development Services Department overseen by the Development Services Director.

Bring plan review services in-house.

Bring building inspections in-house.

Upgrade from 2012 building codes to minimum 2021 building codes.

Hire Development Services Director

Define data centers, what zone allowed to operate, and require special condition use permit.

Revise sign and fence ordinance.

Strengthen code enforcement function to give them a viable method obtaining compliance regarding unsightly/unsafe properties.

Develop a financial and operational plan for a demolition crew.

Discontinue the acceptance of American Express credit card as a payment method to reduce the credit card fees.

Evaluate the cost-effectiveness of bringing legal in-house.

Repurpose the Palo Pinto County Municipal Water District No. 1 remaining unspent debt issuance funds (approximately $59 million) toward the Hilltop WTP project.

Utilize the funding received from the sale of city-owned property to start a fund to use to maintain the parks & library.

Work to identify a grant writer or administrator to assist with finding state and federal grants for the Turkey Peak, Brazos Pump & Pipeline capital projects.

Develop 5-10 Year Capital Improvement Plan (all departments).

Conduct annual utility rate study.

Complete Millsap WSC water agreement.

Complete Santo SUD water agreement.

Sell un-needed city-owned property.

Identify a dedicated person that will be charged with moving the new Hilltop Water Treatment Plant capital project forward.

Bring information technology systems up-to-date.

Construction of Reverse Osmosis project.

Design & construction of the new public safety complex (police, fire & dispatch).

Develop a street replacement program that provides a year-to-year schedule for the public to know which streets are being replaced.

Develop a street replacement program based on streets with no utility infrastructure needing to be replaced vs. those that need all utility infrastructure needing to be

Lease building next to City Hall Annex to allow for adequate office space for finance, human resources, development services, and utility billing (if applicable).

Develop Master Water Study.

Develop Master Wastewater Study.

Develop long-term plan for eastside water treatment plant and wastewater plant.

Complete capital improvement projects (parks, water, streets, and wastewater).

Develop Master Thoroughfare Study (if the one from Comprehensive Plan is not usable).

Hire Executive Director of Public Works

Develop and implement city-owned vehicle take home policy and procedures.

Develop and implement a merit-based compensation pay plan that separates public safety employees from civilian employees.

Develop and implement a family-care benefit policy and procedures for city employees.

Develop and implement city employee certification benefit policy and procedure.

Increase the Texas Municipal Retirement System percentage from 5% to 7%.

Increase the minimum pay rate wage for full-time city employees to $20 per hour.

Develop and implement an annual city employee evaluation system.

Evaluate the cost-effectiveness of bringing solid waste in-house.

Work with Palo Pinto County on paying their fair share of the Mineral Wells animal shelter and Boyce-Ditto Public Library.

Develop and implement a Code of Ethics policy for city employees.

Implement policy that requires all new development to have concrete curb/gutter and streets.

Increase customer service throughout all city departments.

Develop administrative agreement between the City of Mineral Wells and Palo Pinto County Municipal Water District No. 1 on how to handle operations & maintenance items.

Establish airport strategic planning committee (three council members and two airport advisory members).

Better working relationship with Palo Pinto County Emergency Services District No. 1.

Remove deed restrictions from properties at Fort Wolters

Develop economic plan incorporating areas outside of downtown, especially at the airport.

Work with the Palo Pinto County Emergency Services District No. 1 on utilizing space within the new public safety building for ESD #1 Fire & EMS and pay their fair share of capital and operations costs.

Evaluate the cost-effectiveness of police and fire utilizing same drone.

Hire 3 firefighters/EMT's to allow for enough staff to operate two ambulances and two fire apparatuses on each shift.

Reduce fire services to either Extraterritorial Jurisdiction or City Limits.

Replace 2019 Fire Command Tahoe.

Replace 2017 Fire Squad vehicle.

Hire clerical staff for Fire/EMS

Implement policy that requires all developments more that five continuous lots require sidewalk on both sides of the street.

Amend the alcohol sale curfew ordinance to mirror state law (either 1 am or 2 am).

Increase the number of neighborhood parks by installing play equipment for "all" (inclusive).

Partner with Mineral Wells Independent School District for increasing play equipment at the MWISD schools that could be used by the public.

Increase/Update the number of soccer and baseball fields.

Evaluate the likelihood of the Dunbar Recreation Center to be utilized by the city (either by agreement or purchase) as another recreation center. (work with Clarence Hollman)

Be more initiative with parks and library program that attracts more kids (i.e. nerf wars)

AGENDA ITEM COMMENTARY

ITEM TITLE

Consider and take appropriate action on the Mineral Wells Regional Airport Airfield Drainage Study prepared by Garver Engineering and authorize staff to coordinate with the Texas Department of Transportation Aviation Division to advance the highest-priority drainage improvement project identified within the study.

INITIATOR/STAFF INFORMATION SOURCE

Aaron J. Bovos, Director of Finance & Assistant City Manager

BACKGROUND

The Mineral Wells Regional Airport is a critical transportation and economic development asset for the community. Persistent drainage deficiencies throughout portions of the airfield have resulted in recurring flooding, erosion, and maintenance challenges that can affect airport operations, increase long-term maintenance costs, and create potential safety concerns for airport users. To better understand these issues and identify practical solutions, the City partnered with Garver Engineering and the Texas Department of Transportation (TxDOT) Aviation Division to complete a comprehensive Airfield Drainage Study.

The resulting Airfield Drainage Study Engineering Report, dated May 22, 2026, evaluated existing drainage infrastructure and identified multiple areas throughout the airport that experience flooding, ponding, erosion, and drainage deficiencies during storm events. The report notes that much of the existing drainage infrastructure dates back to the airport's original military construction and subsequent expansion and is no longer adequate to meet current Federal Aviation Administration (FAA) guidance and operational needs. The study further concluded that these conditions create operational challenges, increase maintenance demands, and present potential safety concerns for airport users.

The report identified eleven separate areas of concern and developed both interim and ultimate drainage improvement strategies to address the deficiencies. The engineering analysis identified replacement of the drainage crossing near the north-west end of Taxiway A as the highest-priority project because of its direct impact on airfield drainage performance and its role in contributing to flooding during storm events. The report notes that the existing culvert has collapsed and recommends removal and replacement of the structure as part of future improvements.

PURPOSE

The purpose of this agenda item is twofold:

1. To formally accept the findings and recommendations contained within the Mineral Wells Regional Airport Airfield Drainage Study; and
2. To authorize staff to work collaboratively with the Texas Department of Transportation

Aviation Division to pursue implementation of the highest-priority project identified within the study, including the completion of any required applications, engineering coordination, environmental reviews, grant documentation, and other activities necessary to position the project for future funding consideration.

Acceptance of the study establishes a data-driven framework for addressing long-standing drainage issues at the airport and provides a prioritized roadmap for future capital improvements. It also enhances the City's competitiveness for outside funding opportunities, reduces the likelihood of costly emergency repairs, and supports continued safe and reliable airport operations.

Approval of this agenda item does not authorize construction expenditures. Rather, it authorizes acceptance of the engineering study and directs staff to coordinate with TxDOT Aviation to complete the planning, design coordination, environmental documentation, and grant application activities necessary to position the project for future funding consideration. Any future construction contracts or expenditures requiring City participation will be presented to the Mayor and City Council for separate consideration and approval.

FINANCIAL IMPACT
The Engineer's Opinion of Probable Cost (OPC) for the highest-priority drainage improvement project is summarized below:

- Design Services: $170,000
- Construction Phase Services: $1,000,000
- **Total Project Cost:** $1,170,000

Funding for the drainage study was provided through the Infrastructure Investment and Jobs Act (IIJA) in the amount of $167,833.65, along with a City match of $8,833.35, for a total project cost of $176,667.00. The drainage study was included in the TxDOT Airport Fiscal Year 2026 Capital Improvement Plan.

Funding for construction of the highest-priority project is currently identified within the TxDOT Airport Fiscal Year 2027 Capital Improvement Plan as follows:

- $600,000 in Non-Primary Entitlement (NPE) funding;
- $300,000 in Infrastructure Investment and Jobs Act (IIJA) Airport Infrastructure Grant (AIG) funding;
- $100,000 City contribution; and
- **Total Funding:** $1,000,000.

Based upon the current TxDOT Airport Capital Improvement Program, the City's anticipated participation for construction is estimated to be approximately $100,000, or 10 percent of the total construction cost, subject to final grant approvals and project costs.

The City receives approximately $150,000 annually in Non-Primary Entitlement (NPE) funding from the Federal Aviation Administration (FAA) through the National Plan of Integrated Airport

Systems (NPIAS). NPE funding supports projects that maintain and improve the safety and efficiency of general aviation airports. These funds may be accumulated for up to four years to assist with larger capital projects. Funds not utilized within the allowable timeframe expire.

In addition to NPE funding, the airport receives Infrastructure Investment and Jobs Act (IIJA) Airport Infrastructure Grant (AIG) funding. These supplemental federal funds provide assistance for eligible airport infrastructure projects that enhance safety, operational efficiency, and long-term airport sustainability.

Acceptance of the drainage study at this time allows staff to maintain eligibility for future TxDOT and FAA funding opportunities and positions the City to advance the project in accordance with the TxDOT Airport Capital Improvement Program schedule.

STRATEGIC PLAN ALIGNMENT

This item supports the Mayor and City Council's strategic priorities related to infrastructure investment, economic development, and maintaining safe and reliable public facilities. Reliable airport infrastructure preserves critical public assets, supports existing aviation activity, enhances opportunities for future aeronautical development, and demonstrates the City's commitment to maintaining safe and efficient facilities. Addressing drainage deficiencies at the Mineral Wells Regional Airport will improve operational reliability, reduce long-term maintenance costs, and support future airport development initiatives.

RECOMMENDATION

Staff recommends that the Mayor and City Council accept the Mineral Wells Regional Airport Airfield Drainage Study Engineering Report prepared by Garver Engineering and authorize staff to coordinate with the Texas Department of Transportation Aviation Division to advance the highest-priority drainage improvement project identified within the study. This authorization includes completion of grant applications, engineering coordination, environmental documentation, and other project development activities necessary to pursue future funding opportunities. Any future construction contracts or associated expenditures requiring City participation will be presented to the Mayor and City Council for separate consideration and approval.

EXHIBITS

1. MWL - Final Drainage Study - Report Reduced Size - 2026-05-22

ITEM NUMBER 7.
MEETING DATE 6/16/2026

Airfield Drainage Study

Preliminary Engineering Report

Mineral Wells Regional Airport (MWL) | Mineral Wells, Texas

May 22, 2026

TxDOT CSJ No. 2402MNWLS
Garver Project No. 2500883

GARVER
3000 Internet Boulevard, Suite 400
Frisco, TX 75034

MINERAL WELLS REGIONAL AIRPORT

Engineer's Certification

I hereby certify that this Airfield Drainage Study for the Mineral Wells Regional Airport (MWL) was prepared by Garver under my direct supervision for Mineral Wells, Texas.

Kathryn B Wimberly

Kathryn B. Wimberly, PE, CFM
State of Texas PE License 122462

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms

Acronym	Definition
AC	Advisory Circular
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALP	Airport Layout Plan
CBR	California Bearing Ratio
CFS	Cubic Feet Per Second
CIP	Capital Improvements Program
CMP	Corrugated Metal Pipe
CSPP	Construction Safety and Phasing Plan
DW	Dual Wheel (Aircraft Wheel Configuration)
EOPC	Engineer's Opinion of Probable Cost
FAA	Federal Aviation Administration
FAAFIELD	FAA Pavement Design Software
FBO	Fixed Base Operator
FDR	Full-Depth Reclamation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FY	Fiscal Year
GA	General Aviation
HMAC	Hot-Mix Asphalt Concrete
HP-PP	High Performance Polypropylene Pipe
ISWM	Integrated Stormwater Management
KMWL	Mineral Wells Regional Airport
NFIP	National Flood Insurance Program
NPIAS	National Plan of Integrated Airport Systems
NWS	National Weather Service
OFZ	Obstacle Free Zone
PCC	Portland Cement Concrete
PCI	Pavement Condition Index
RCBC	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
ROFA	Runway Object Free Area
RSA	Runway Safety Area
RW	Runway
SFHA	Special Flood Hazard Area
SW	Single Wheel (Aircraft Wheel Configuration)
T82	Gillespie County Airport
TDG	Taxiway Design Group
TL	Taxilane
TLOFA	Taxilane Object Free Area

Acronym	Definition
TOFA	Taxiway Object Free Area
TSA	Taxiway Safety Area
TTI	Texas A&M Transportation Institution
TW	Taxiway
TX	Texas
TxDOT	Texas Department of Transportation
XPSWMM	XP Stormwater and Wastewater Management Model

1.0 Drainage Study Background

1.1 General Airport Information and Project Introduction

The Mineral Wells Regional Airport (MWL) is located southeast of the City of Mineral Wells and on the border of Palo Pinto County and Parker County. Mineral Wells Regional Airport (MWL) originated as a military installation (Camp Wolters) in 1925, with the airfield constructed and activated in May 1943 for World War II training operation. Following decades of military use, including its role as a primary helicopter training during the Cold War and Vietnam era. The facility was decommissioned in the mid-1970s and transitioned to a public-use airport owned by the City of Mineral Wells. The airport consists of two runways. Runway 13-31 is approximately 6,000-ft long and is 100-ft wide, and Runway 17-35 is approximately 4,200-ft long and is 100-ft wide. A parallel taxiway to Runway 13-31 (Taxiway A), six perpendicular taxiways (Taxiway B, C, D, E, F, and G), T-Hangars, and box hangars. The airport is classified as Aircraft Design Group (ADG) B-II for purposes of establishing applicable safety area requirements. Refer to Table 1-1 for the corresponding dimensional criteria associated with the design classification.

The airport has experienced drainage issues, such as flooding and ponding. Specific areas of flooding include existing buildings and portions of the tie down apron. The existing drainage patterns in the area travel through overland flows, collected through inlets, ditches, and culverts which drain north to Harvey Road which eventually makes its way into Rock Creek. Mineral Wells Airport intends to continue developing the airport, which will require additional drainage infrastructure.

This report will discuss drainage modeling and results of the existing conditions of the airfield. To create an existing conditions model, several pieces of preliminary data were necessary, including site photos, FEMA data, topography, as-built plans, and relevant criteria. Once the preliminary data was gathered, a hydrologic assessment was taken of the area and used as inflow data for the hydraulic model. The hydraulic model, performed in XPSWMM, highlighted areas of concern across the airport property.

Once the problem areas were identified through our existing conditions analysis, the proposed conditions analysis began, finding solutions for each problem area. This analysis was also performed in XPSWMM. We have identified two future project layouts and costs associated with each. In addition, we have created an outline of targeted future projects in order of priority.

Table 1-1 - Airport Criteria

AAC (RWY 13-31 & RWY 17-35)	**B-II**
RSA (RWY 13-31 & RWY 17-35)	150’
ROFA (RWY 13-31 & RWY 17-35)	500’
TSA	79’
TOFA	124’

2.0 Data Collection

2.1 Site Visit

A site visit was conducted by Garver on December 18, 2025. The site visit included visual inspection of existing drainage concerns on the airport property. Existing concerns expressed during the site visit included the terminal apron, erosion and sink holes along the existing storm drainage infrastructure on the east side of Runway 13-31 within the Runway Safety Area (RSA), and erosion and sink holes along the existing storm drain south of Taxiway F. Site visit photos can be found in Appendix A.

2.1.1 Topographic Data

Topographic data for the project was obtained using 2019 lidar data and as-built construction plans. Topographical survey using GPS and total station methods of the existing airside and landside stormwater infrastructure was collected by White Hawk Engineering and provided to Garver on November 11, 2025. It should be noted that no finished floor elevations (FFEs) were collected for existing airport buildings.

2.2 FEMA Data

The airport is located on the county line of both Palo Pinto and Parker County, Texas. The Effective Flood Insurance Study (FIS) for both counties is dated April 5th, 2019. The FIS report and effective Flood Insurance Rate Map (FIRM) Panels were acquired from the FEMA Map Service Center. The effective FIRMs for the project area are shown in Figure 2-1 and included in Appendix C.

The entire airport property is located within FEMA Special Flood Hazard Area (SFHA) Zone X, which is outside the 500-year floodplain. It should be noted that the effective FEMA floodplain mapping is based on approximate methods and older, less detailed topographic data and may not depict the accurate flood risk of the airport property.

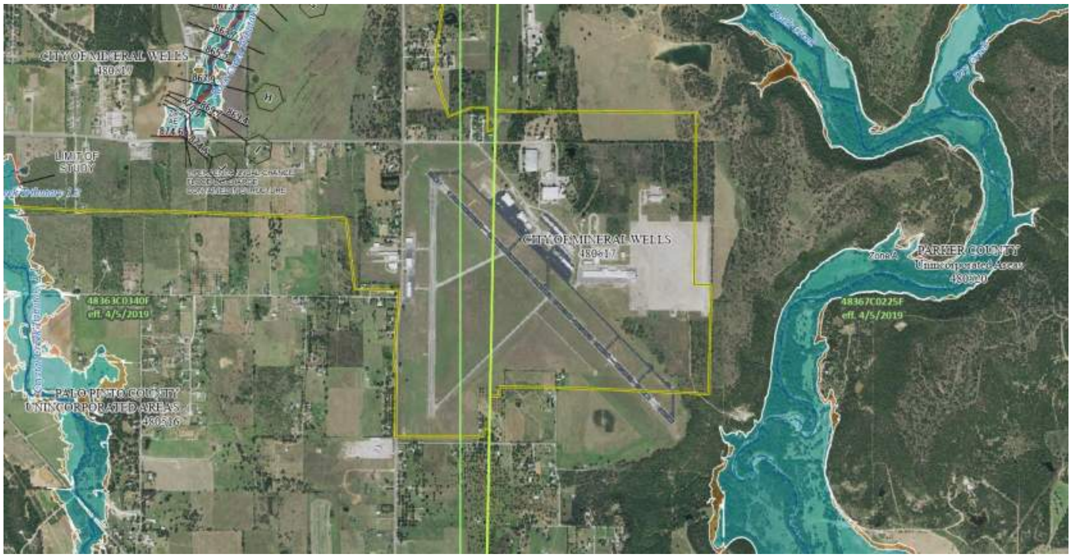


Figure 2-1. Effective FEMA Published NFHL Viewer

2.3 Plans and Data for Existing Infrastructure

2.3.1 Received from Airport

1. Airport Improvements MWL CON (1975)
2. Airport Layout Drawings (2004)
3. KMWL Airport Web Datasheet (2023)
4. Runway Seal Coat Rehabilitation – Record Drawings (2019)
5. Runway Lighting Rehabilitation – Record Drawings (2014)

2.3.2 Standards and Regulations

The following criteria were used for this drainage analysis:

FAA Advisory Circular 150/5320-5D provides guidance for the design of airport surface storm drainage systems. The guidance states that the 5-year storm is recommended for analysis to show no encroachment of water on taxiways and runway pavements, including their shoulders, as well as no surface ponding on apron inlets that exceed 4 inches. Additionally, it recommends analysis of the 10-year event to show that the center 50 percent of runways and taxiways are free from ponding. It also recommends that the 10-year event should be drained from dry detention facilities within 48 hours.

iSWM drainage manual requires peak flow rates be shown for the 1-, 25-, and 100-year storms. Post-development flow must be equal or less than pre-development flow per iSWM drainage manual requirements, unless a downstream assessment proves that no adverse impacts occur to adjacent property owners.

3.0 Existing Conditions Drainage Analysis

Much of the drainage infrastructure at MWL Airport dates to its original construction as a military airfield and subsequent expansion during its use as a training base. The analysis of the airport drainage system shows that it is currently inadequate to meet FAA requirements and that flooding is an issue across the airport property. Consequently, the surrounding infrastructure is regularly subjected to inundation risks and waterlogging which not only jeopardizes the structural integrity of the airport facilities but also poses operational challenges and safety hazards. Addressing the inherent drainage limitations posed by the site's topography is crucial for ensuring the long-term viability and resilience of the airport's infrastructure. The analysis was done using the design software XPSWMM 2026.

3.1 Precipitation Data

Precipitation data for the project was taken from NOAA National Weather Service (NWS) Atlas 14, which provides point precipitation-frequency data for the United States. Precipitation data reported for the Mineral Wells Regional Airport for a 24-hour duration are provided below in Table 3-1.

Table 3-1. 24-Hour Point Precipitation Frequency Estimates

Recurrence Interval (% Annual Exceedance Probability)	**<100%**	**50%**	**20%**	**10%**	**4%**	**2%**	**1%**
Recurrence Interval (years)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
24-hour Duration Precipitation Depth (in)	2.99	3.62	4.55	5.42	6.72	7.86	9.09

3.2 Drainage Modeling Analysis

3.2.1 Hydrologic Analysis

The XPSWMM 2026 model utilizes rain-on-grid precipitation data to represent the flow within the model limits. This modeling approach used a precipitation hyetograph input as a distributed inflow boundary condition for the 2D model mesh. The drainage area and land uses were delineated using publicly available lidar topographic data and aerial imagery, as well as field observations. The land use and soil characteristics of the area were used to determine infiltration rates for the drainage area. For this project, the 1-, 5-, 10-, 25-, and 100-year flow events were modeled in accordance with iSWM and FAA criteria. Figure 3-1 shows the existing drainage areas within the airport property.

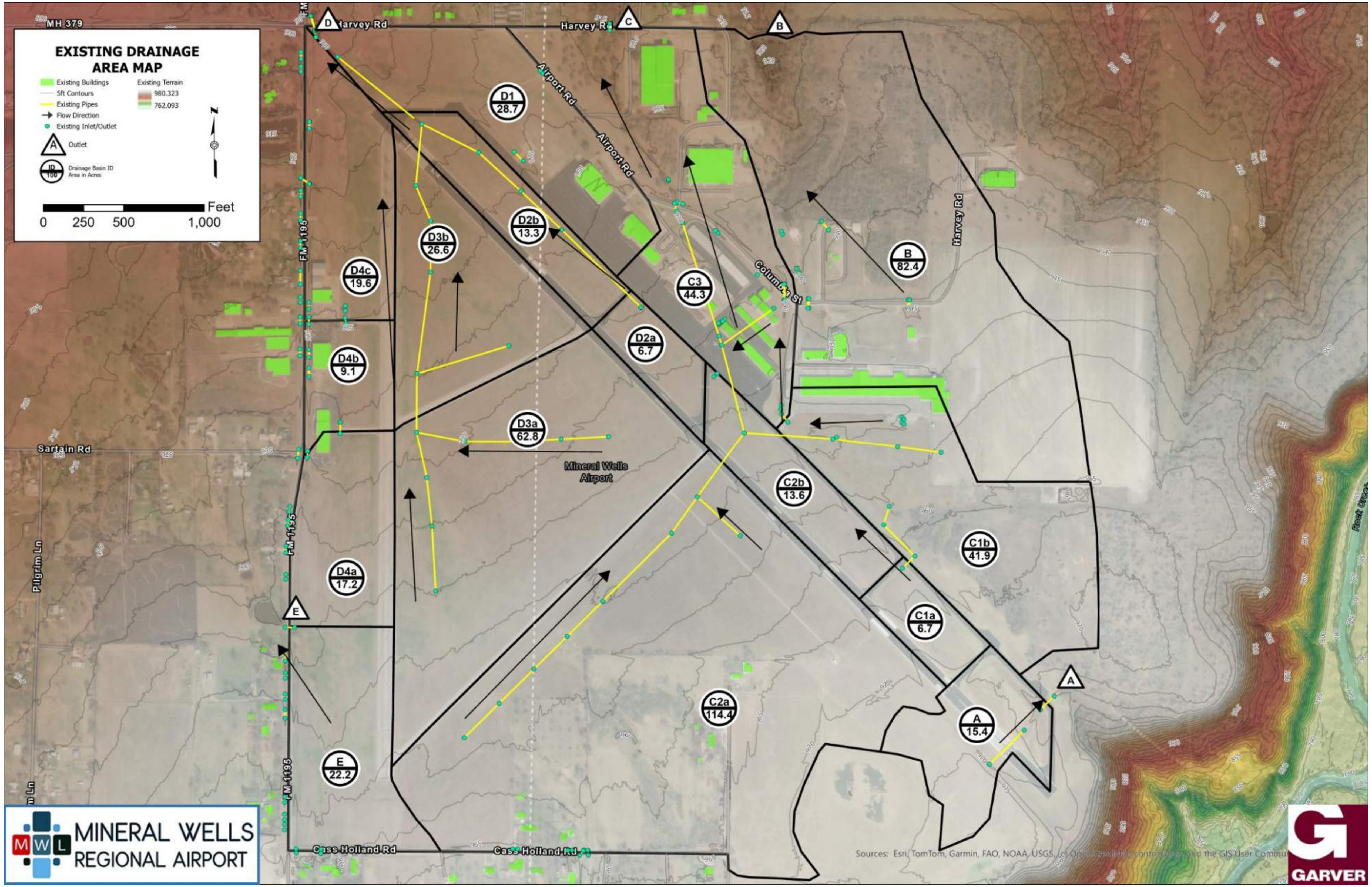


Figure 3-1. Existing Drainage Areas

3.2.2 Hydraulic Analysis

A hydraulic model of the airport was performed to determine flow patterns and flood inundation within the project area. XPSWMM 2026 allows for subsurface stormwater systems to be modeled concurrently with surface flow. Surface terrain is represented in a two-dimensional (2D) grid to allow for flow patterns to be represented in multiple directions. Hydrologic inputs can include point inflows or precipitation applied directly to the model surface through rain-on-grid methodology.

All upstream drainage to the airport is contained within the model domain, so no upstream inflow boundary was necessary. The downstream boundary condition was set to normal depth slope along the eastern and northern sides of the model domain.

The grid was set to a 5-ft grid cell size with an orientation angle of 0 degrees. The DTM for the 2D model was built from 2019 1-m lidar data and project survey. The manning's n layer was updated with land use data. Soils data was gathered from the NRCS Web Soil Survey to determine infiltration parameters. The rainfall layer was set to the same extent as the grid layer and set to use a SCS Type II rainfall distribution with a cumulative depth equal to the 24-hour NOAA Atlas 14 precipitation depth, shown in Table 3-1 for the corresponding storm interval.

The 1D elements were compared to the survey data and updated as needed. The stormwater conduit and junction shapefiles included in the model accurately represent the elevations and lengths in the received survey, with a few assumptions regarding how the underground stormwater drainage network is connected.

The model was set to run for 48 hours at a 1-minute time step. This run time allowed for the outflow hydrograph to reach its peak and for the falling limb to dissipate. Because the model is unsteady and therefore has results specific to each timestep, the maximum water depth (MWD) output was utilized to represent results for each storm event. Full page results for existing conditions models can be found in Appendix D for the various recurrence intervals.

3.3 Existing Areas of Concern

The following sections document the areas that are inundated under existing conditions. Results are reported beginning in the southwest corner of the airport (at the southern boundary of Runway 13-31) and continue around the airport property in a counterclockwise direction. Figure 3-2 below shows the areas of concern in numbered sections. The existing full scale inundation maps for existing conditions can be found in Appendix D for each recurrence interval.

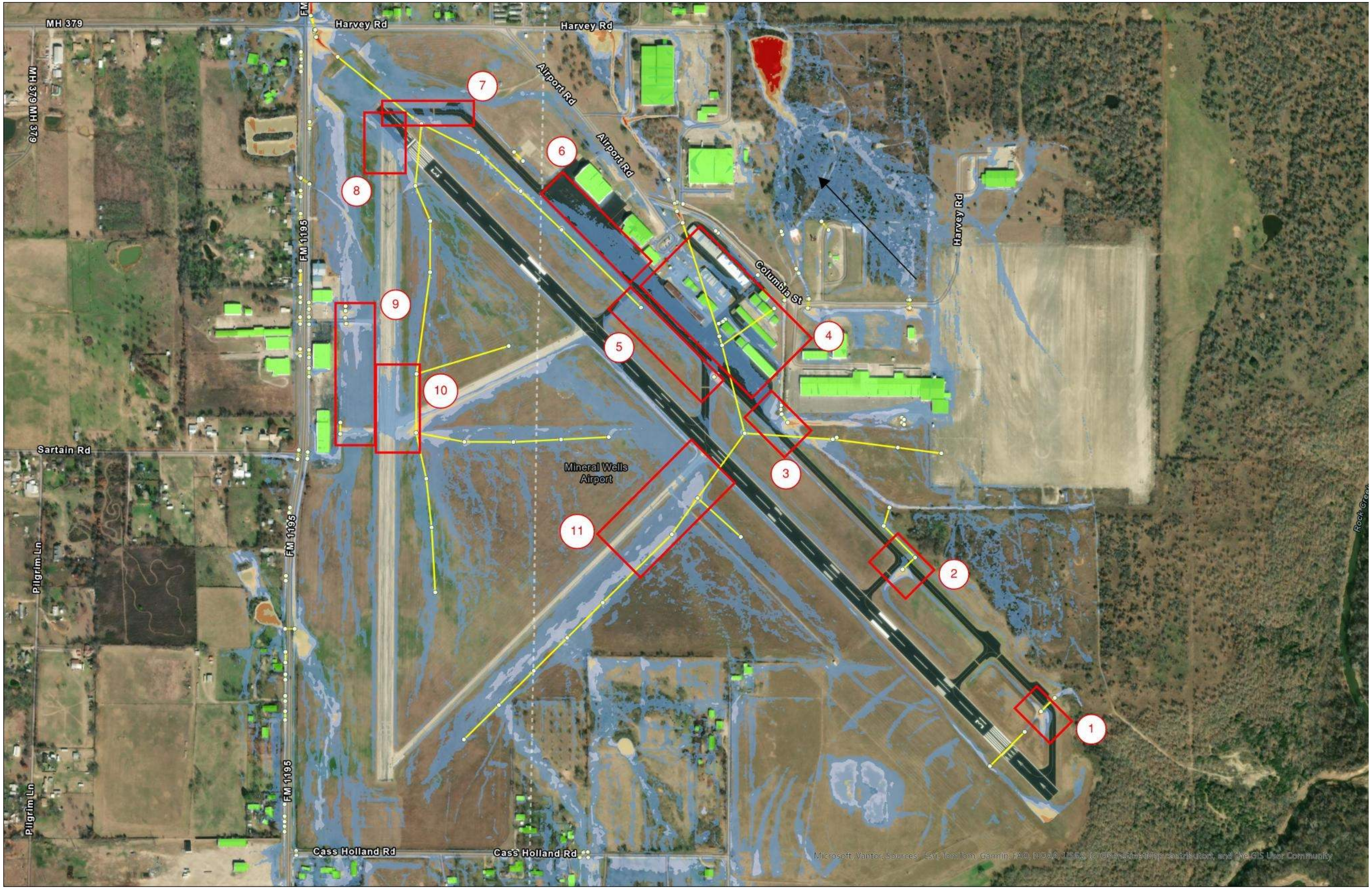


Figure 3-2. Existing Drainage System with Common Flooding and Ponding Areas

3.3.1 Area 1 - Taxiway A (Southeast Corner)

The southeast corner of Taxiway A overtops at the 5-year with the 10-year inundation limits covering the taxiway by more than 50%. This overtopping indicates that the existing structure under the taxiway is undersized and will need to be improved under proposed conditions. Figure 3-3 shows the 5-year inundation limits.

Figure 3-3. Area 1 Flooding Limits (5-Year Results)

3.3.2 Area 2 - Taxiway A (intersection of Taxiway A and Taxiway D)

The intersection between Taxiway A and Taxiway D overtops at the 5-year event. This overtopping indicates that the existing structure under the taxiway is undersized and will need to be improved under proposed conditions. The existing inlets are outside of the TSA but slightly inside the TOFA, so the inlets will need to be adjusted to outside the TOFAs. Figure 3-4Figure 3-4. Area 2 Flooding Limits (5-Year Results) shows the 5-year inundation limits.

Figure 3-4. Area 2 Flooding Limits (5-Year Results)

3.3.3 Area 3 - Taxiway A (intersection of Taxiway A and drive)

The intersection of Taxiway A and the existing drive just southeast of the main terminal. Overtopping occurs at the 5-year. This overtopping occurs because the structure under the drive is undersized. Water not only overtops the drive, but floods onto Taxiway A and the adjacent apron. The existing structure under the apron is undersized and will need to be improved under proposed conditions. Figure 3-5 shows the 5-year inundation limits.

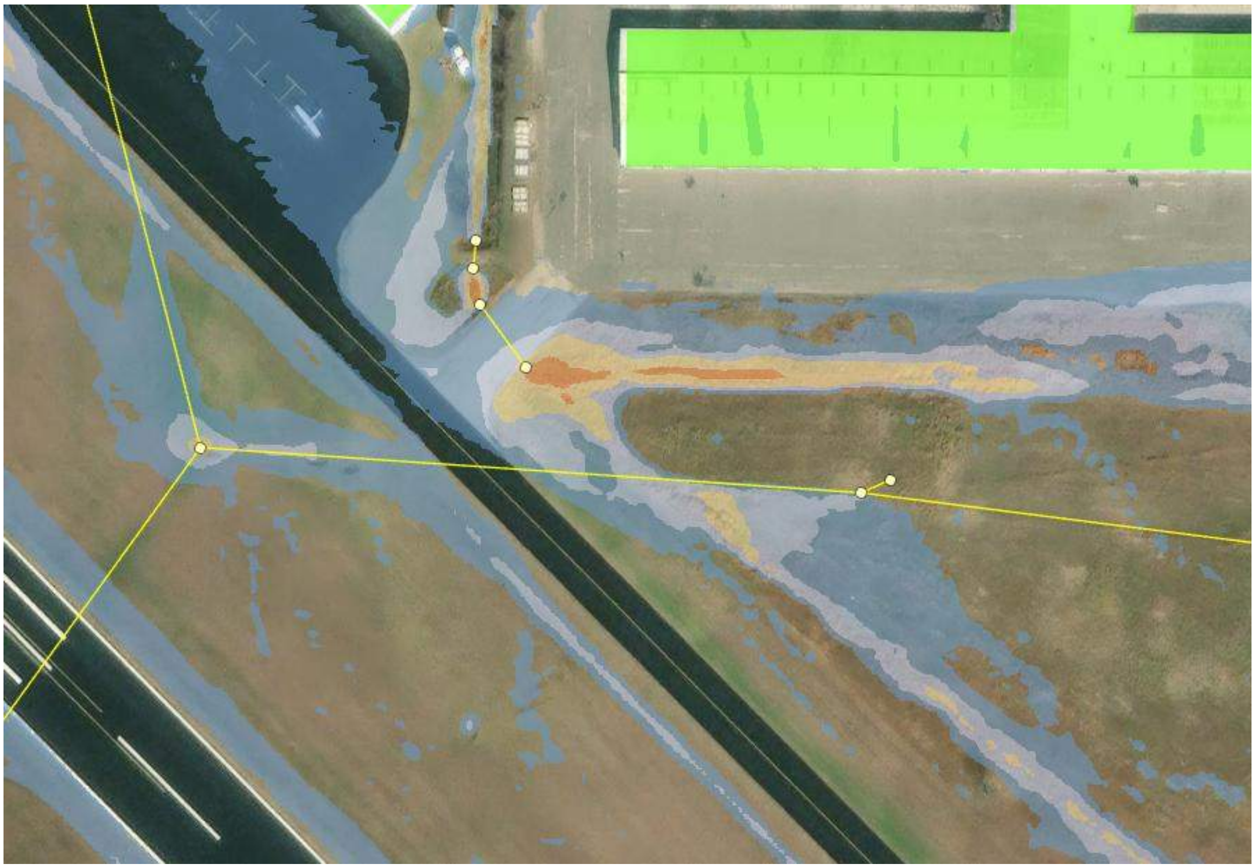


Figure 3-5. Area 3 Flooding Limits (5-Year Results)

3.3.4 Area 4 - South of Columbia Street (between buildings and apron)

There is existing flooding at the buildings and surrounding apron located south of Columbia Street for the 10-year event. Floodings depths range in this area between 0.25 feet and 0.50 feet with the deeper depths localized close to the buildings. The model shows that the existing area inlets and subsurface system draining this area are undersized. Water appears to also accumulate in the area due to the overtopping that is occurring upstream and flowing here. The existing drainage system in this area is undersized and will need to be improved under proposed conditions. Figure 3-6 shows the 5-year inundation limits.

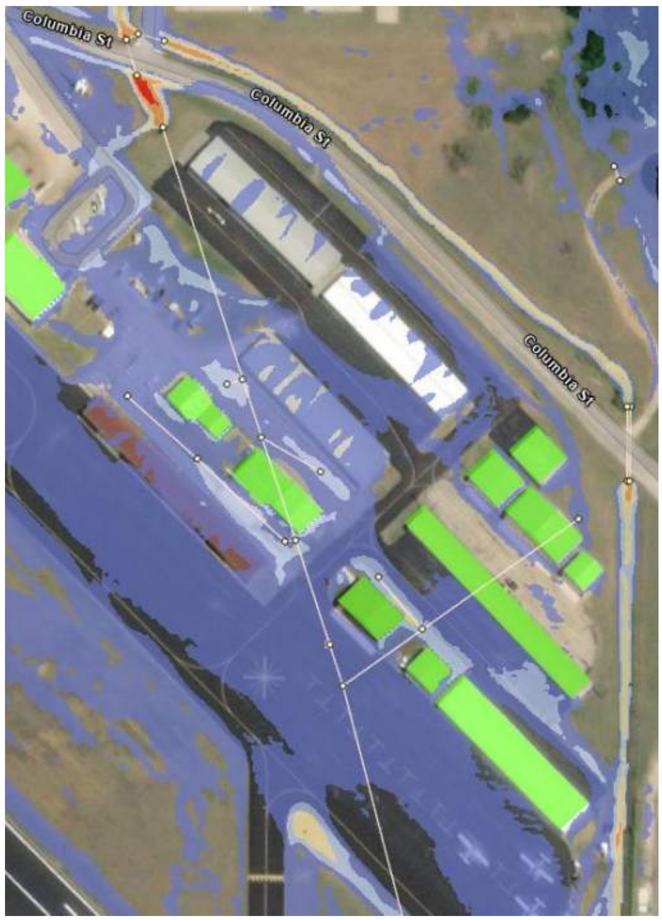


Figure 3-6. Area 4 Flooding Limits (5-Year Results)

3.3.5 Area 5 - Taxiway C and Taxiway B

There is existing flooding at Taxiway C and Taxiway B for the 5-year event. Taxiway C, it appears the overtopping occurs because water pools in the northeast corner where Taxiway C intersects the apron at which point it builds up until it reaches an elevation above the pavement. Once the water is above the pavement, it overtops the taxiway and floods the surrounding apron and buildings. Taxiway B overtops for the 5-year event because the structure under the pavement is too small and there is a lack of surface storage behind the road. The existing drainage system in these areas is undersized and will need to be improved under proposed conditions. Figure 3-7 shows the 5-year inundation limits.

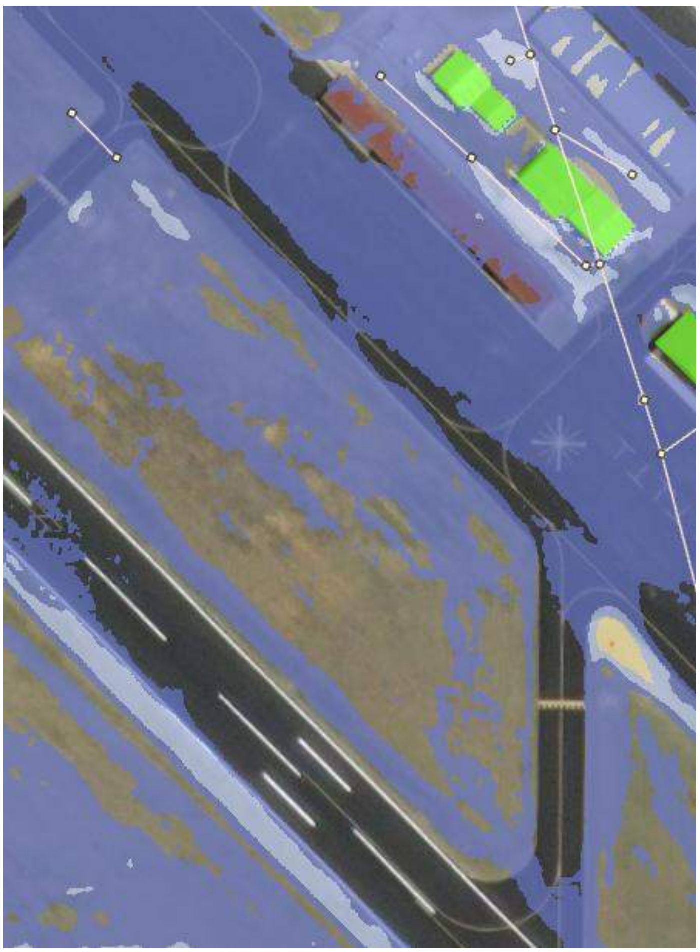


Figure 3-7. Area 5 Flooding Limits (5-Year Results)

3.3.6 Area 6 - South of Airport Road (Tie Down Apron)

There is existing flooding at the apron that is located south of Airport Road for the 5-year event. Water appears to accumulate in this area from overtopping that is occurring upstream and flowing here. The existing upstream drainage system in this area is undersized and will need to be improved under proposed conditions. Figure 3-8 shows the 5-year inundation limits.

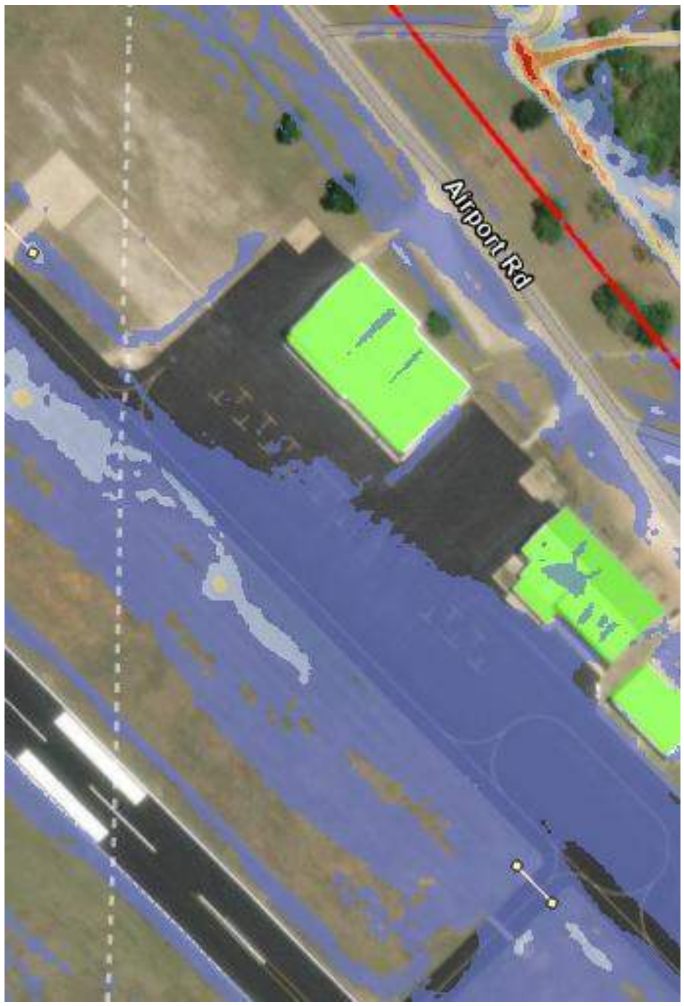


Figure 3-8. Area 6 Flooding Limits (5-Year Results)

3.3.7 Area 7 - Taxiway A (northwest end)

The northwest end of Taxiway A overtops at the 5-year event. The existing culvert under Taxiway A is collapsed and is the main cause of the flooding in this area. The existing structure here will need to be removed and replaced in proposed conditions to address the flooding issues. Figure 3-9 shows the 5-year inundation limits and Figure 3-10 shows the erosion that is occurring near the collapsed corrugated metal pipe.

Figure 3-9. Area 7 Flooding Limits (5-Year Results)

Figure 3-10. Collapsed Culvert

3.3.8 Area 8 - Runway 13-31 and Runway 17-35 (northwest end)

The northwest end of Runway 31-31, where it intersects Runway 17-35, is inundated for the 5-year storm event. It appears the flooding in this area is a combination of overtopping and backwater. The existing subsurface drainage system that conveys from the south to the north under the runway is undersized and water from the infield area gets onto the runways. The flooding also appears to be caused by the backwater effect of water pooling in the low-lying area at the end of the runway. The existing drainage system in this area is undersized and will need to be improved under interim and proposed conditions.

The existing drainage pipe which crosses under Taxiway A is severely damaged. The existing corrugated metal pipe is rusting, causing failures in the pipe and at its joints. This failure at the joints, combined with the water flowing through the pipe creates a vacuum, pulling the surrounding soil into the pipe from above. This is compounded by surface erosion, leading to a significant depression and safety hazard adjacent to the ends of both runways. Figure 3-11 shows the 5-year inundation limits.

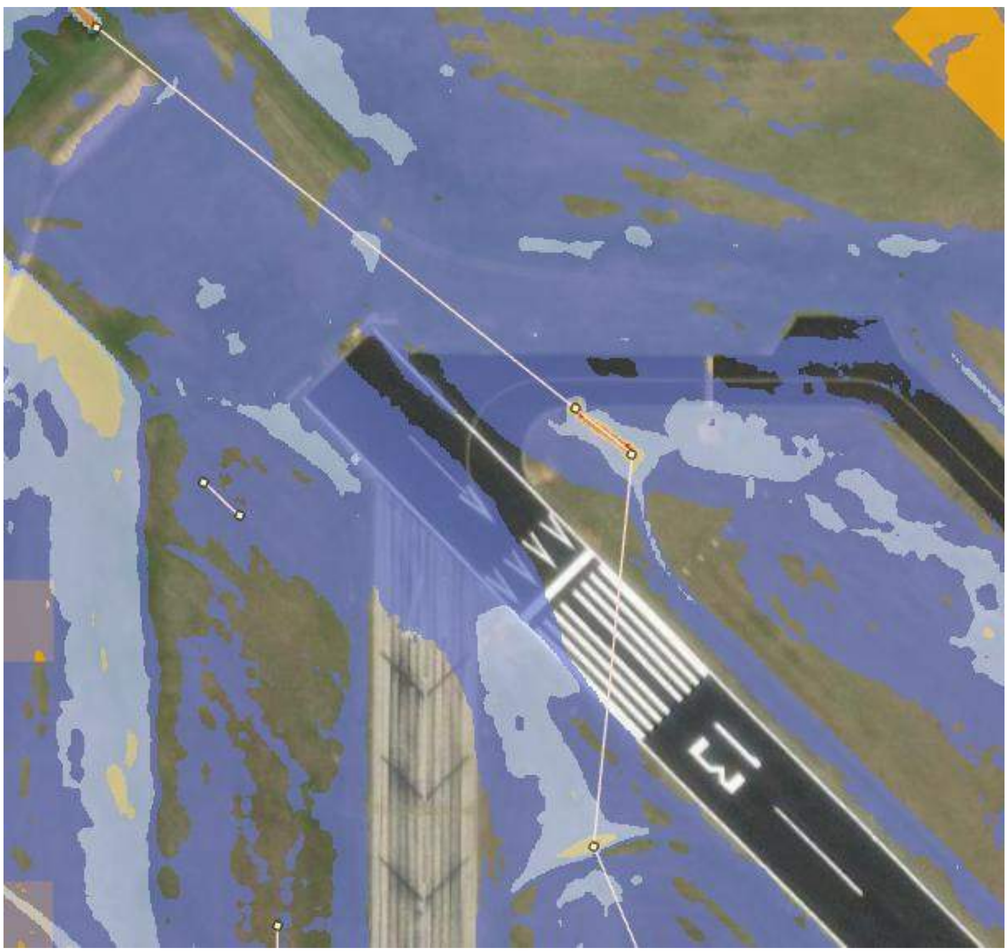


Figure 3-11. Area 8 Flooding Limits (5-Year Results)

3.3.9 Area 9 – Taxiway J and Taxiway H

Both Taxiway J and Taxiway H overtop significantly in the 5-year event. This is due to grading issues and undersized culverts under each taxiway and to the north of Taxiway J. Figure 3-12 shows the 5-year inundation limits.

Figure 3-12. Area 9 Flooding Limits (5-Year Results)

3.3.10 Area 10 - Intersection of Taxiway G and Runway 17-35

Where Taxiway G intersects Runway 17-35, flooding occurs for the 5-year event. The flooding in this area appears to occur because the structure under Taxiway G is undersized. Water at the low point pools until it overtops the pavement and floods not only Taxiway G, but Runway 17-35 as well. Improvements will need to be made to this area under proposed conditions. Figure 3-13 shows the 5-year inundation limits.

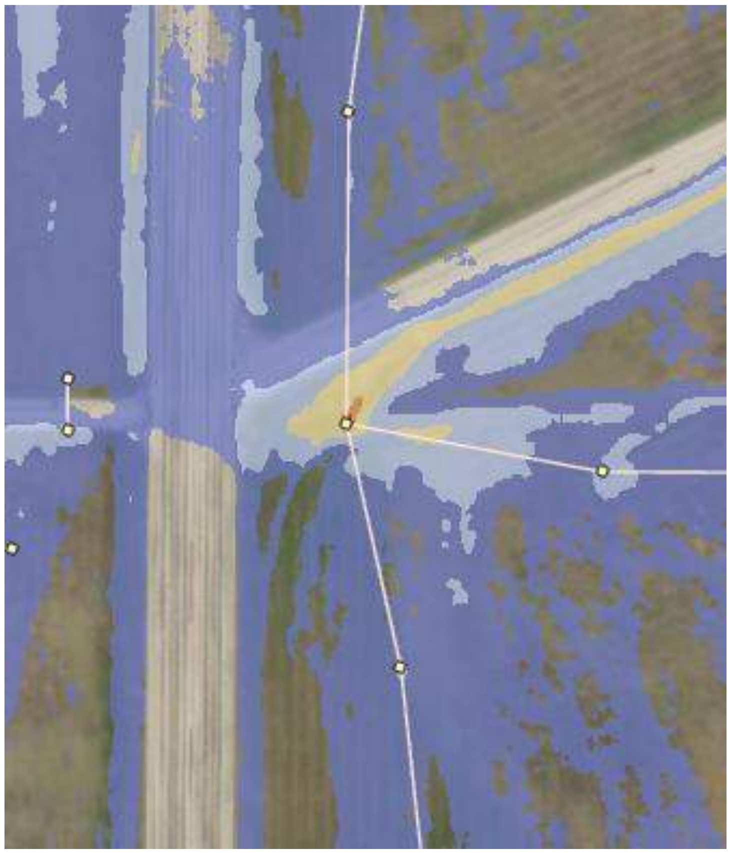


Figure 3-13. Area 10 Flooding Limits (5-Year Results)

3.3.11 Area 11 - Taxiway F (multiple locations)

Taxiway F floods for the 5-year event by approximately 0.25 feet at any given spot where overtopping is present. The flooding in this area appears to occur because the existing subsurface system that is running parrel to the taxiway on the south side is undersized. Water cannot get into the inlets fast enough and begins to back up over the taxiway. Improvements to the inlets and subsurface system will need to be made under proposed conditions. Figure 3-14 shows the 5-year inundation limits and Figure 3-15 shows the erosion occurring near Taxiway F.

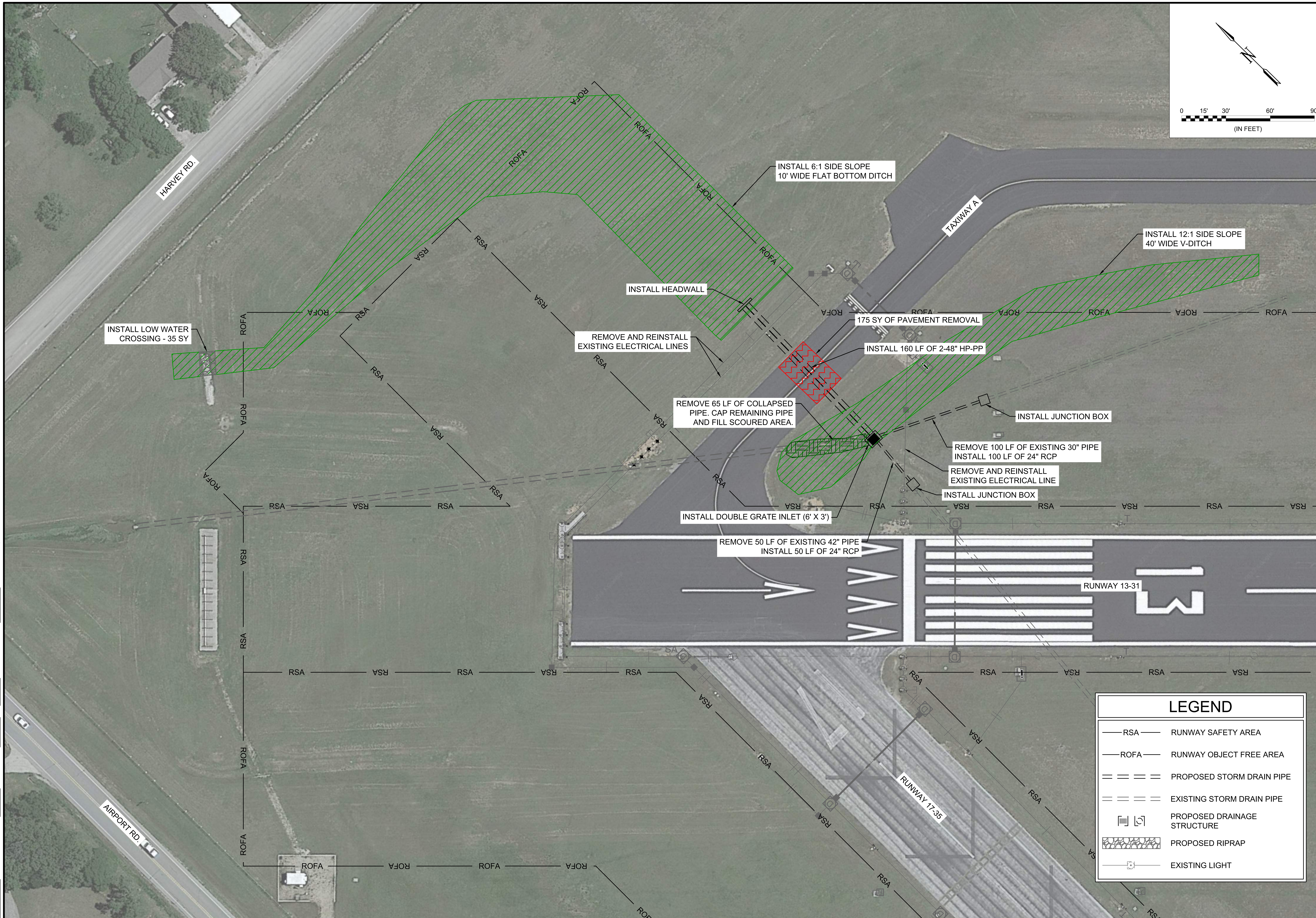
Figure 3-14. Area 11 Flooding Limits (5-Year Results)

Figure 3-15. Erosion Near Taxiway F

4.0 Area 7 Design Improvements

After discussing with MWL and TXDOT representatives, it was decided that addressing the problems around Area 7 would be the top priority. To do this, several improvements are necessary to prevent further scouring issues and to keep runoff off Runway 13-31. First, the currently exposed area of the eroded pipe must be removed and filled in. Second, the brick junction box that connected to the upstream end of the eroded pipe must be replaced with 2-6'x3' grate inlet and be lowered to a top elevation of 913.0’. Grading on the upstream will be a 40’ wide V-ditch at 12:1 side slopes. A 10’ flat-bottom ditch with 6:1 side slopes and a 0.3% backslope should be installed downstream of the new 2-48" HP-PPs under Taxiway A. A low water crossing will need to be installed with riprap seen below. Inundation result exhibits can be found in Appendix E. See Figure 4-1 for Area 7 proposed improvements.

The estimated construction cost for this improvement is $837,000 and includes demolition of some of the existing drainage system, the earthwork to repair the depressed area adjacent to Runway 13-31 and for the flat bottom ditch and new drainage infrastructure. A complete breakdown of this cost estimate can be found in Appendix H.



GARVER

REGISTRATION NO.
F-5713

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY

MINERAL WELLS REGIONAL AIRPORT

MINERAL WELLS REGIONAL AIRPORT
MINERAL WELLS, TEXAS

DRAINAGE STUDY

AREA 7
IMPROVEMENTS

JOB NO.: 2500883
DATE: MARCH 2026
DESIGNED BY: AMJ
DRAWN BY: JAH

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
FIG. 4-1

SHEET NUMBER **30**

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Last plotted by: Henderson, James, A Plot Style: AECmono.ctb Plot Scale: 1:1 Plot Date: 5/22/2026 8:50 AM Plotter used: AutoCAD PDF (General Documentation).pc3

5.0 Interim Airport Drainage Improvement Program

The identified problem areas were evaluated, and interim alternatives were developed to address existing deficiencies until ultimate improvements can be implemented to accommodate the applicable storm events. Figure 5-1 on page 32 shows the updated drainage areas for the recommended improvements. Full page results can be found in Appendix F.

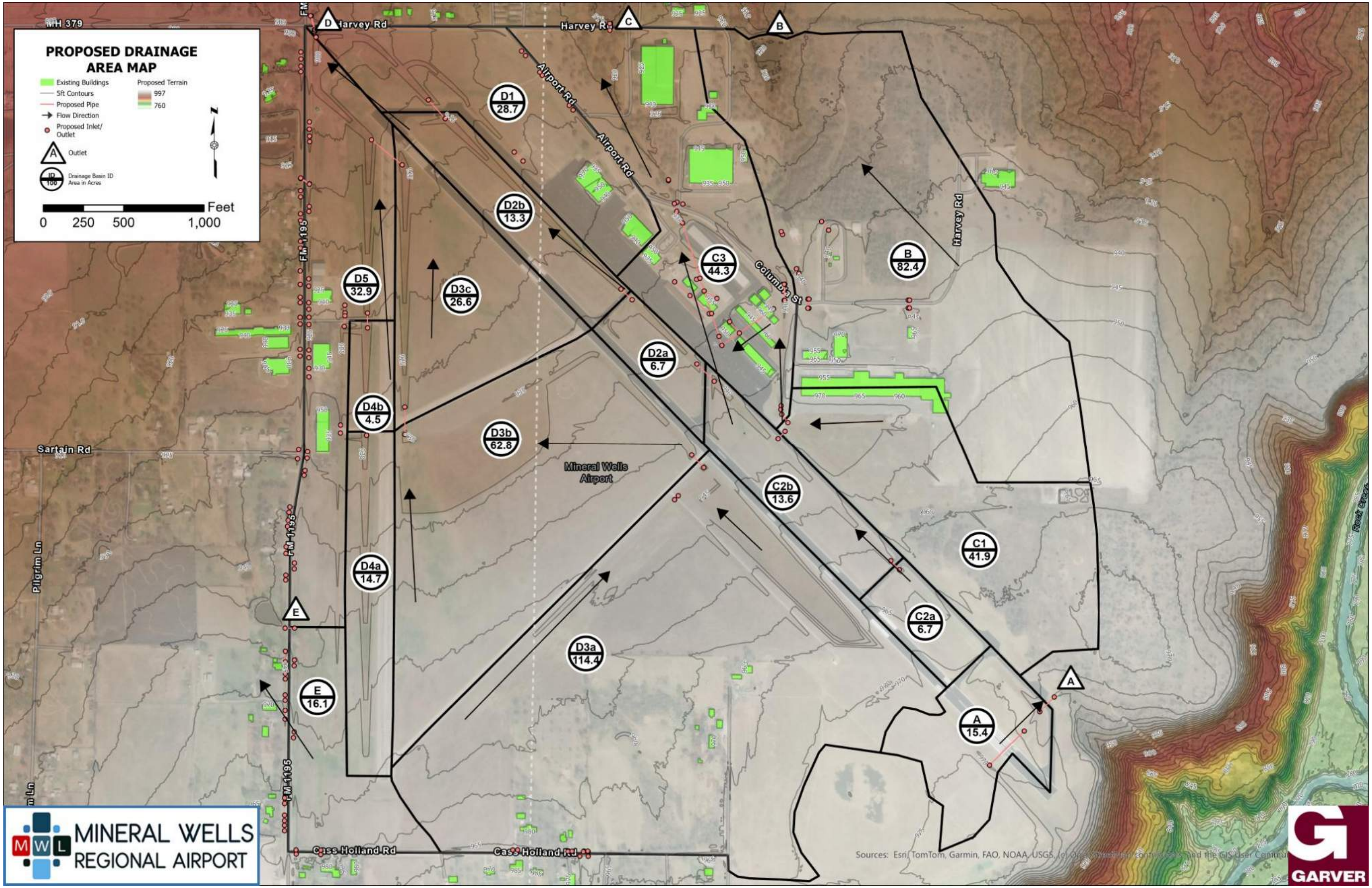


Figure 5-1. Proposed Drainage Area Map

5.1.1 Area 1 - Taxiway A (Southeast Corner)

The southeast corner of Taxiway A will be modified with 2-24” RCPs proposed alongside the existing 24” pipe to remove any remaining drainage issues. Figure 5-2 shows the 5-year inundation limits after the addition of 2-24” RCPs for a total of 3-24” RCPs.

Figure 5-2. Area 1 Flooding Limits (5-Year Results)

5.1.2 Area 2 - Taxiway D (intersection of Taxiway A and Taxiway D)

A 600' long, 30' wide flatbottomed ditch with 6:1 side slopes and a 1% backslope is recommended parallel to Taxiway A. 2-24" RCPs will be placed underneath Taxiway D to carry the flow downstream along Taxiway A. Figure 5-3 shows the 5-year inundation limits after the existing culvert is replaced.

Figure 5-3. Area 2 Flooding Limits (5-Year Results)

5.1.3 Area 3 - Taxiway A (intersection of Taxiway A and drive)

The overtopping of the 5-year event at the intersection Taxiway A and the existing access for Downing Hanger will be resolved with the placement of 2-36" RCPs under Taxiway A channeling the flow from the area between Taxiway A and Runway 13-31 to the outside. A 2-36" RCP system will also be added under Taxiway C to carry water downstream along Taxiway A using the proposed ditch system. Figure 5-4 shows the 5-year inundation limits after the existing pipes are replaced.

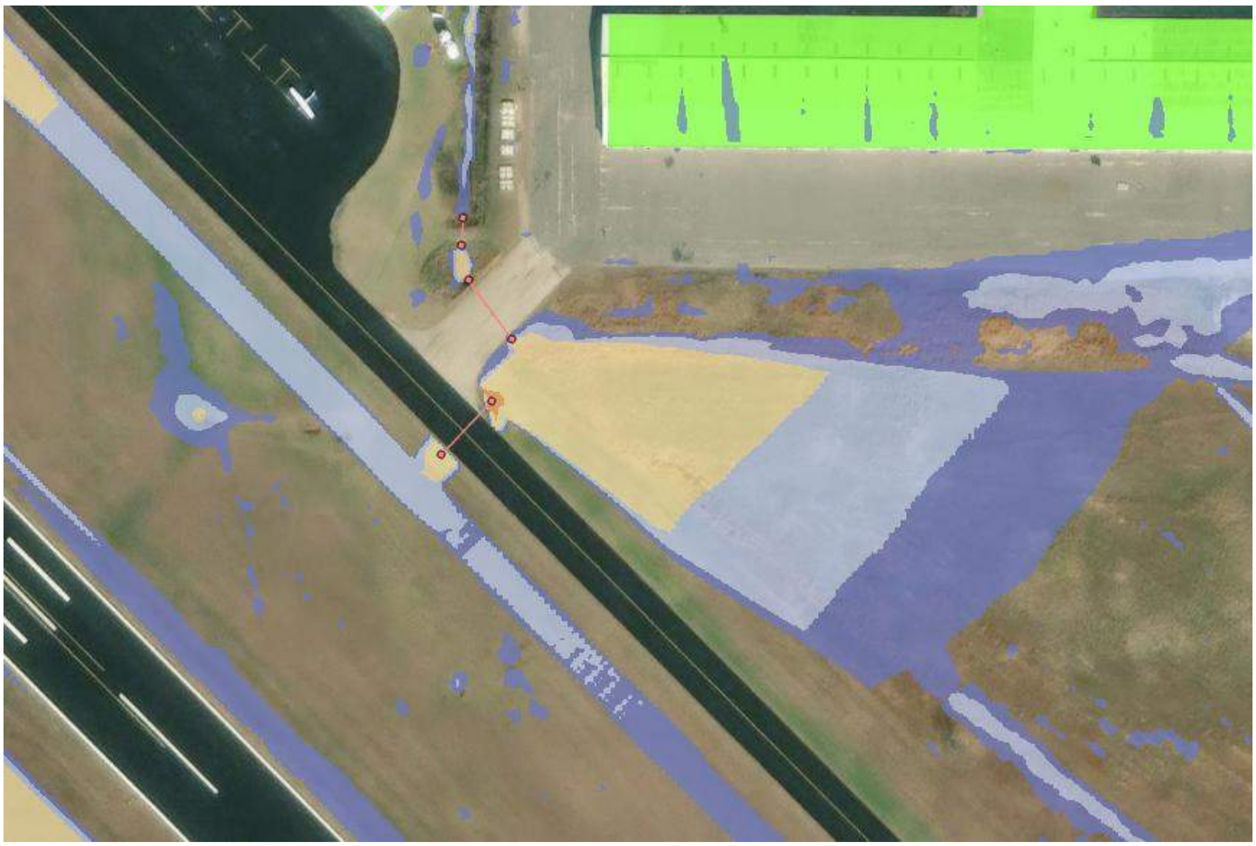


Figure 5-4. Area 3 Flooding Limits (5-Year Results)

5.1.4 Area 4 - South of Columbia Street (between buildings and apron)

The terrain updates and pipe network modification proposed in this area will drastically reduce the flooding at the buildings surrounding the Tie Down Apron that are located south of Columbia Street for the 10-year event. The flow in the interior apron will be channelized by a ditch and carried downstream along Taxiway A by 2-36" RCP system under Taxiway B. 5-6'x3' grate inlets will also be added between the buildings to collect flow and drain towards the existing pipe system. Figure 5-5 shows the 5-year inundation limits after the two culverts are added beneath Taxiway A and the grate inlets are added near the existing buildings.

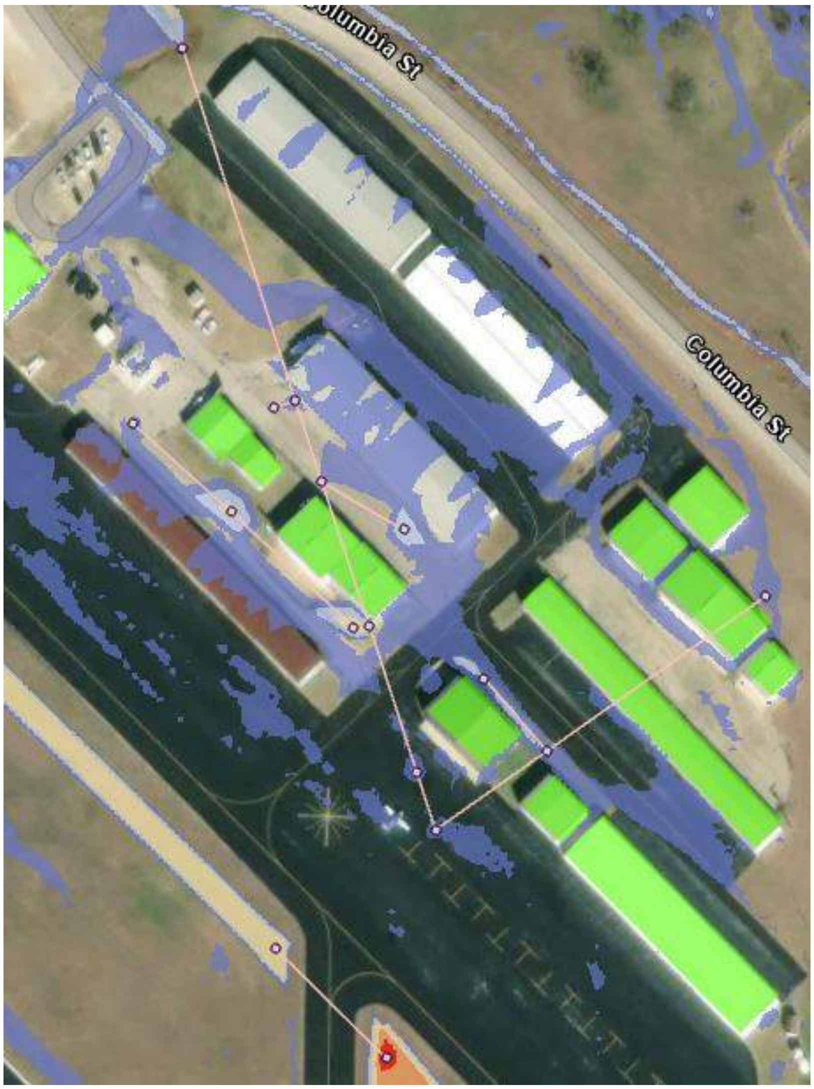


Figure 5-5. Area 4 Flooding Limits (5-Year Results)

5.1.5 Area 5 - Taxiway B and Taxiway C

Under proposed conditions, Taxiways B and C are not anticipated to overtop during the 5-year storm event. This is expected to be achieved through the construction of a 30' wide flat-bottom ditch with 6:1 side slopes and a 1% longitudinal grade. In addition, installation of 2-6'x3' RCBs beneath each taxiway is recommended to convey flow. Figure 5-6 shows the 5-year inundation limits after cross-culverts are replaced by RCBs.

Figure 5-6. Area 5 Flooding Limits (5-Year Results)

5.1.6 Area 6 - South of Airport Road (Tie Down Apron)

The drainage improvements described under Area 4 above have greatly reduced the flooding at the Tie Down Apron that is located south of Airport Road for the 10-year event. However, it is still recommended that a pavement rehabilitation project occurs to help remedy some of the drainage issues occurring underneath the pavement, as well as the installation of an improved drainage system underneath the pavement either with underdrains or pipes. Figure 5-7 shows the 5-year inundation limits after the overtopping is removed upstream.

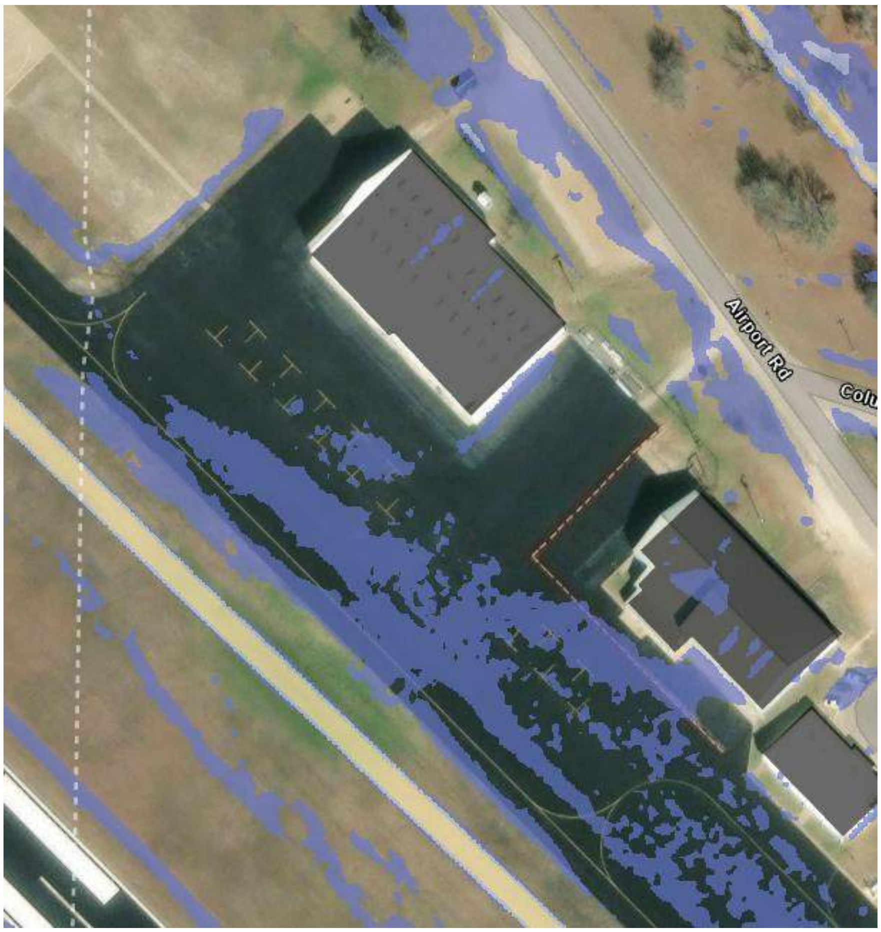


Figure 5-7. Area 6 Flooding Limits (5-Year Results)

5.1.7 Area 8 - Runway 13-31 and Runway 17-35 (northwest end)

Area 8 proposed improvements involve the removal of the existing pipe network between the two runways, including the crossing 43”x27” arch CMP under the 13-31 Runway. 2-48” RCPs will cross under Runway 17-35 parallel to the main runway. This solution also requires two 20’ flat-bottom ditches with 6:1 side slopes and a 1% backslope to Taxiway G running parallel to each respective runway. Figure 5-8 shows the 5-year inundation limits after the proposed improvements are in place.

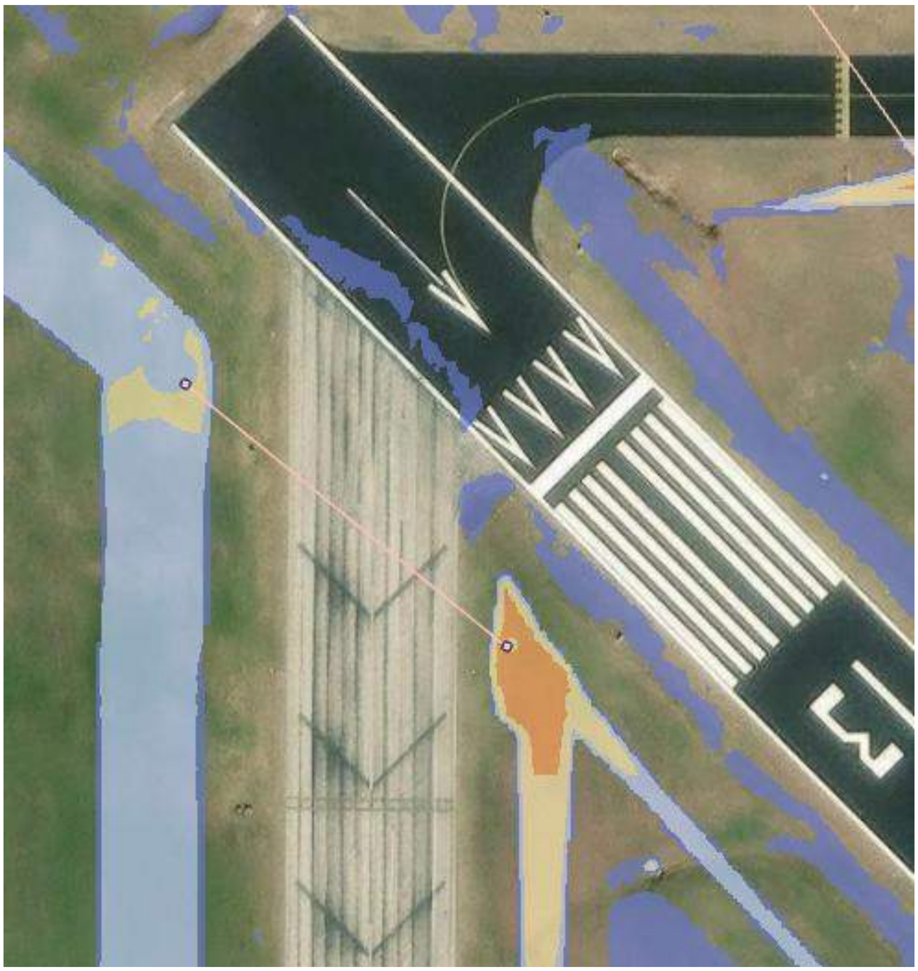


Figure 5-8. Area 8 Flooding Limits (5-Year Results)

5.1.8 Area 9 – Taxiway J and Taxiway H

To prevent overtopping at Taxiways J and H while also protecting the apron to the west and the runway to the east, a 60ft flat bottom ditch with 6:1 side slopes and a 1% backslope is recommended from the north end of the project site to the complete length of Runway 17-35, approximately 2300 ft. Under each taxiway along the ditch, 2-48” RCPs are recommended. Figure 5-9 shows the 5-year inundation limits after the proposed improvements are in place.

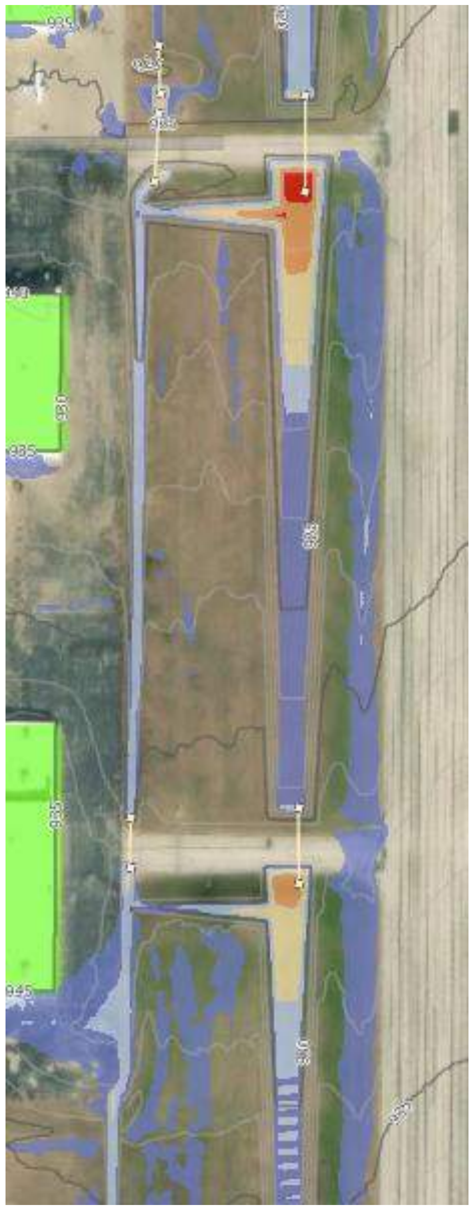


Figure 5-9. Area 9 Flooding Limits (5-Year Results)

5.1.9 Area 10 - Intersection of Taxiway G and Runway 17-35

The existing subsurface drainage south of Taxiway G is no longer needed and should be removed. 2-36” RCPs will be placed under Taxiway G to provide passage of water from the north to the southside of Taxiway G. Along with the creation of a 30ft flat-bottom ditch with 4:1 side slopes and 0.5% backslope along Taxiway F, Runway 17-35, and Taxiway G and 13.15 acre-ft of storage on the south side of Taxiway G, there is no overtopping of the Taxiway for the 5-year event. Figure 5-10 shows the 5-year inundation limits after the proposed improvements are in place.

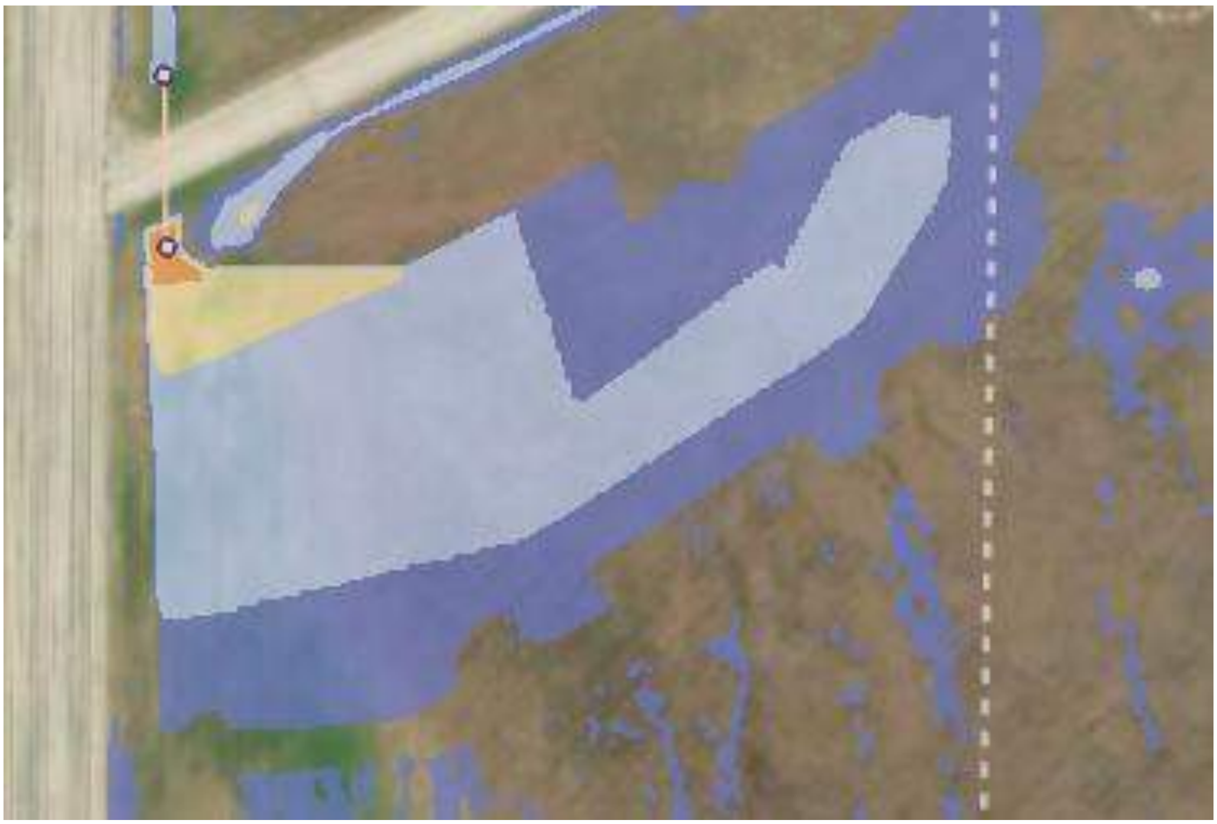


Figure 5-10. Area 9 Flooding Limits (5-Year Results)

5.1.10 Area 11 - Taxiway F (multiple locations)

Area 11 proposed improvements involve the removal of the subsurface drainage system south of Taxiway F, including the 58"x36" arch CMP crossing the 13-31 Runway. A 20' flat-bottom ditch with 4:1 side slopes and a 0.3% backslope is proposed to run parallel to Taxiway F roughly 60' south of the taxiway. A new 2-6'x3' RCB crossing is proposed under Taxiway F near its western intersection with Runway 13-31. An additional 6.30 acre-ft storage is required in this area. Figure 5-11 shows the 5-year inundation limits after the proposed improvements are in place.

The estimated construction cost for this work is $1,373,500, and it includes the demolition of the existing drainage system and the construction of the earthwork required for the new system. A complete breakdown of this cost estimate can be found in Appendix H.

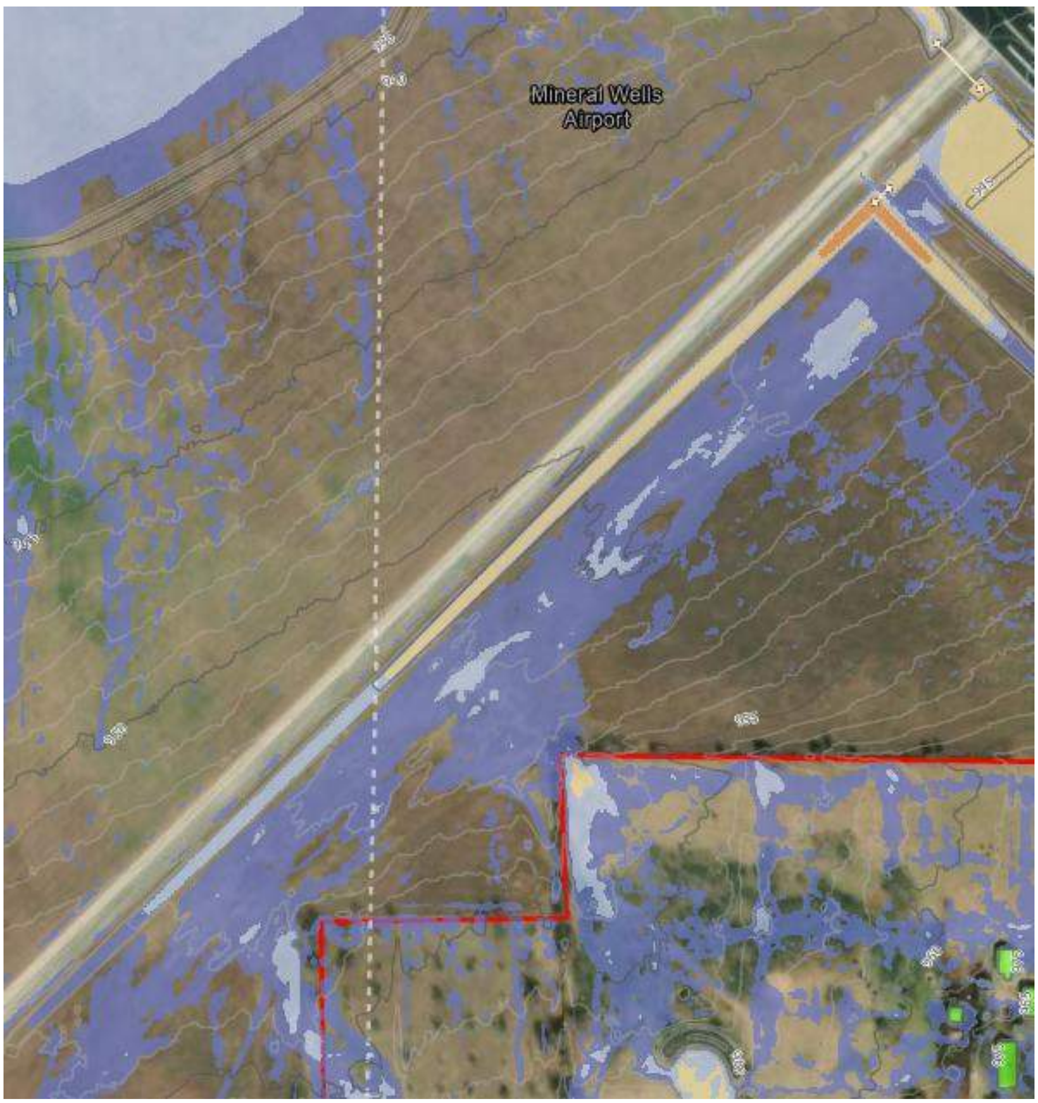


Figure 5-11. Area 11 Flooding Limits (5-Year Results)

File: L:\2025\A11-2500883 - MWL Drainage Study\Drawings\EXHIBITS\MWL-PIPE-REHAB-EX-2026-03-11.dwg Last Save: 5/20/2026 2:35 PM Last saved by: JAHenderson
Last plotted by: Henderson, James, A Plot Style: AECmono.ctb Plot Scale: 1:2 Plot Date: 5/22/2026 8:51 AM Plotter used: AutoCAD PDF (General Documentation).pc3

GARVER

REGISTRATION NO.
F-5713

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY

MINERAL WELLS REGIONAL AIRPORT
MINERAL WELLS, TEXAS

DRAINAGE STUDY

AREA 11
IMPROVEMENTS

JOB NO.: 2500883
DATE: MARCH 2026
DESIGNED BY: AMJ
DRAWN BY: JAH

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
FIG. 5-12

SHEET NUMBER **43**

6.0 Ultimate Airport Drainage Improvement Program

The observations and corresponding recommendations for the ultimate build out of the entire airfield based on the ALP, shown in Appendix B. Full page results can be found in Appendix G.

6.1.1 Area 7 - Taxiway A (northwest end)

With the change of Taxiway A's path, the proposed 2-48" RCPs built in the interim conditions should be placed under the new alignment and the ditch extended to the new alignment. Figure 6-1 shows the 5-year inundation results after the improvements are in place.

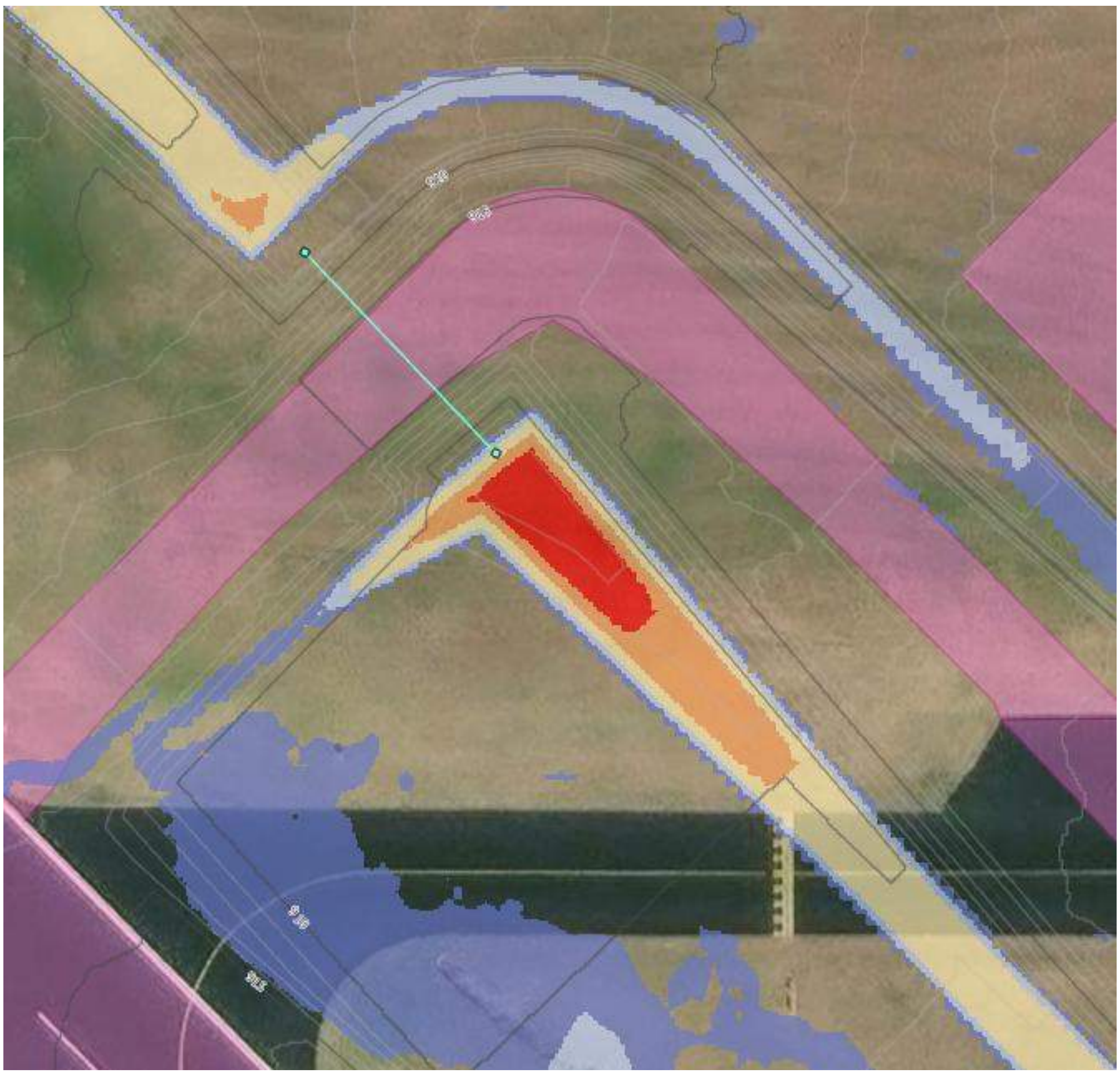


Figure 6-1. Area 7 Flooding Limits (5-Year Results)

6.1.2 Area 8 - Runway 13-31 and Runway 17-35 (northwest end)

The overtopping at the northwest end of Runway 13-31, where it intersects Runway 17-35, will be drastically reduced by removing the current subsurface CMP under Runway 13-31 and adding 2-48" RCPs under the new taxiway alignment. Another 2-48" RCP is proposed at the downstream roadway approximately 300ft northwest of the new 17-35 alignment. Figure 6-2 shows the 5-year inundation limits after the improvements have been made.

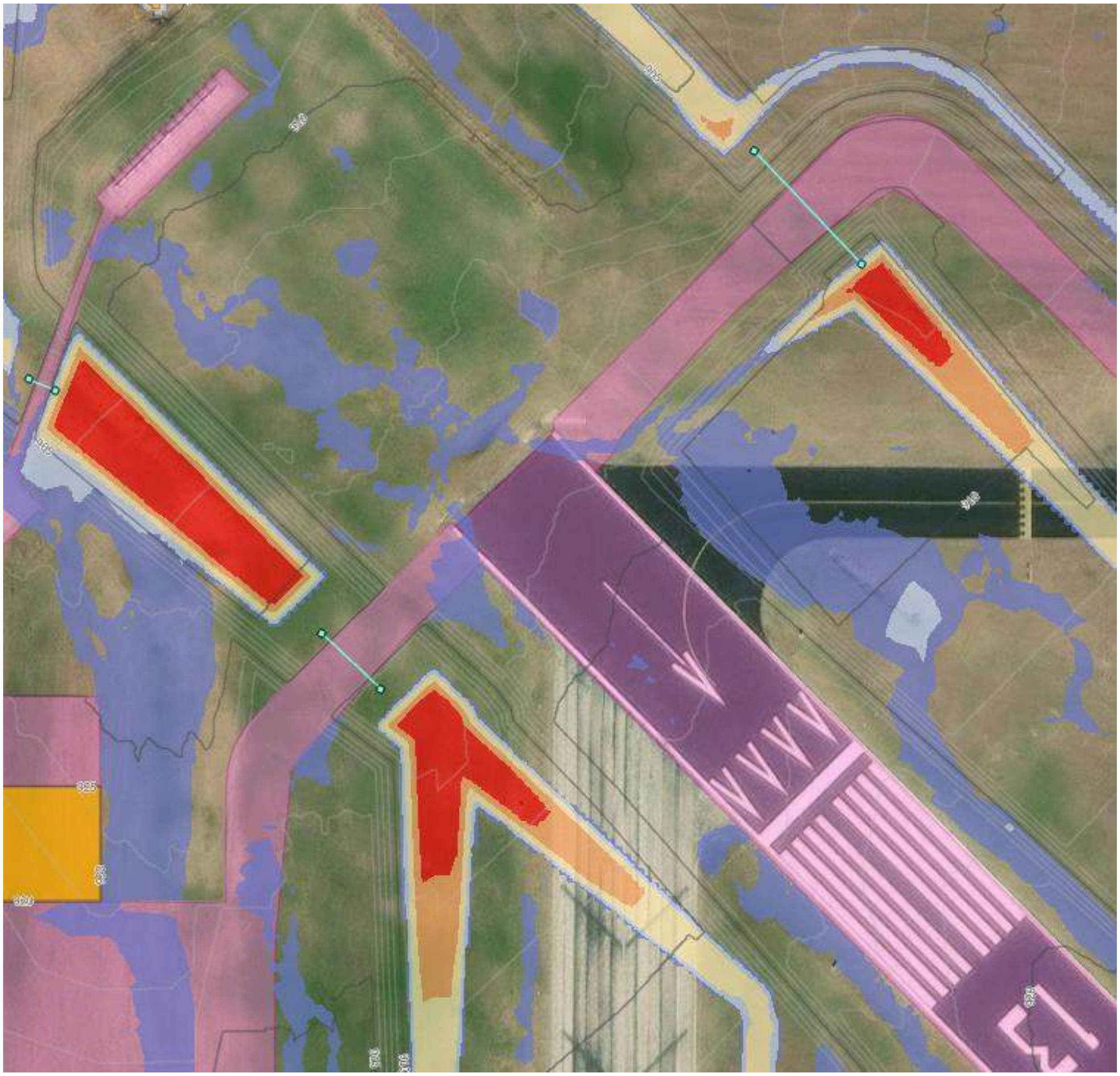


Figure 6-2. Area 8 Flooding Limits (5-Year Results)

6.1.3 Area 9 – Taxiway J and Taxiway H

To prevent overtopping at Taxiways J and H while also protecting the apron to the west and the runway to the east, a 60ft flat bottom ditch with 4:1 side slopes and a 1% backslope is recommended from the north end of the project site to the complete length of Runway 17-35, approximately 2300 ft. Under each taxiway along the ditch, 4-48" RCPs are recommended. A smaller 5 ft flat bottom ditch is also recommended 170 ft west of centerline in anticipation to future construction. 9-3'x6' grate inlets will be placed throughout this ditch and will drain to the larger ditch through 36" RCPs. Figure 6-3 shows the 5-year inundation after the improvements are in place.

Figure 6-3. Area 9 Flooding Limits (5-Year Results)

6.1.4 Area 11 - Taxiway F (multiple locations)

Area 11 proposed improvements involve the removal of the subsurface drainage system south of Taxiway F, including the 58”x36” arch CMP crossing the 13-31 Runway. A 20’ flat-bottom ditch with 4:1 side slopes and a 0.3% backslope will run parallel to Taxiway F roughly 60’ south of the taxiway. A new 4-6’x3’ RCBC crossing is being proposed under Taxiway F near its western intersection with Runway 13-31. 8-6’x3’ grate inlets are recommended to be placed in the ditch with 36” RCPs outlet to another ditch running parallel to Taxiway F on the northern end. An additional 6.30 acre-ft storage is required in this area.

Under each new driveway, 4-18” RCPs are proposed to drain the additional onsite issues. The original subsurface drainage system will be replaced with 22 new 3’x6’ grate inlets connected to keep flooding away from the future buildings. Grading the future area is also crucial for proper drainage. Figure 6-4 shows the 5-year inundation limits after the proposed improvements are in place.

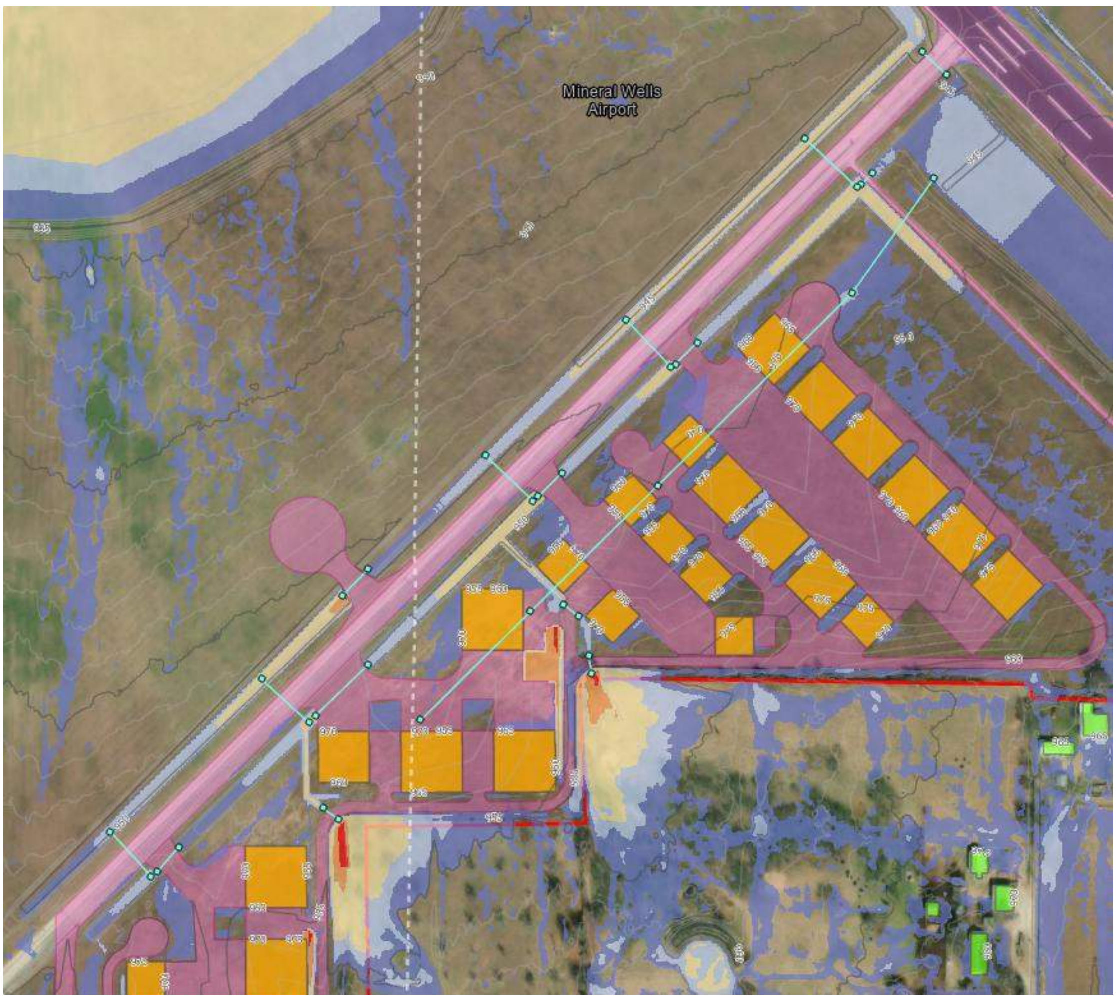


Figure 6-4. Area 11 Flooding Limits (5-Year Results)

7.0 Results Comparison

In accordance with ISWM criteria, an analysis of runoff leaving Mineral Wells Regional Airport was conducted with all site conditions. As shown below in Table 7-1. 100-Year Peak Outfall North of Harvey Rd., the Area 7 improvements, interim conditions, and ultimate conditions plans reduce the peak flow from MWL property to the primary outfall location going north-west over Harvey Rd.

Table 7-1. 100-Year Peak Outfall North of Harvey Rd.

Site Conditions	100-Year Peak Outflow (cfs)
Existing Conditions	2,026
Area 7 Improvements Only	1,500
Interim Conditions	1,160
Ultimate Conditions	1,169

8.0 Summary of Recommendations

Programming the funding to accomplish some or all the recommended improvements will be the primary driver for the implementation of the MWL drainage improvement program. Any improvements implemented will also require careful consideration of airport operations. The following summarizes recommended considerations for minimizing impacts of airfield operations for each improvement.

8.1 Runway 13-31 Improvements

To mitigate the existing flooding issues on the northwest end of Runway 13-31, the collapsed culvert materials should be removed, and the exposed earth should be filled in. A new 2-48" HP-PP will be installed under Taxiway A, replacing the existing culvert going under Taxiway A. A new ditch is proposed going from the exposed outlet to the new culvert.

On the west side of Runway 13-31, the subsurface pipe going under Runway 13-31 will be removed, and a new 2-48" HP-PP will drain the area under Runway 17-35.

8.2 Taxiway Improvements

For Taxiways B, C, and D, it is recommended that the existing subsurface drainage system between Runway 13-31 and Taxiway A be taken out and replaced with an open channel system. This system will require new culverts under Taxiways B, C, and D with a connecting ditch running between them parallel to Taxiway A that eventually connects with the proposed culvert under Taxiway A. This system keeps water from overtopping the taxiways in the 5-year and 10-year event storms.

Directly upstream of the driveway between Taxiway A and the Downing Hangar, a new storage area is proposed to help temporarily store water. This storage area is connected downstream to proposed 2-36" RCPs under Taxiway A that drains into the new ditch between Taxiways B and C. This drainage system significantly reduces the total flow reaching the Tie Down Apron due to the undersized culvert under the driveway connector.

Taxiways J and H that run perpendicular to Runway 17-35 each require new culverts to prevent water from overtopping and spilling onto Runway 17-35.

Taxiway F overtops significantly during all existing storm events studied. The solution for this area requires a new culvert under Taxiway F and a ditch that runs parallel to Taxiway F to its south.

Taxiway G is also prone to overtopping and will require removing the existing storm sewer network. A storage area is necessary upstream of Taxiway G that eventually drains into the new proposed culvert under the taxiway. A ditch connecting the downstream of Taxiway F's culvert and the new storage area is also required.

8.3 Apron Improvements

As stated above in Section 6.2, many of the flooding issues regarding the east apron can be resolved by diverting flow under Taxiway A. To fully protect the buildings and aprons, some additions to the subsurface drainage system are required. Five new grate inlets are proposed for this area and are to be tied to the existing drainage system. Also, some grading between buildings will allow the grates to capture as much flow as possible.

Appendix A - Site Visit Photos

Figure 1: Collapsed areas around drainage pipe west of Runway 13-31

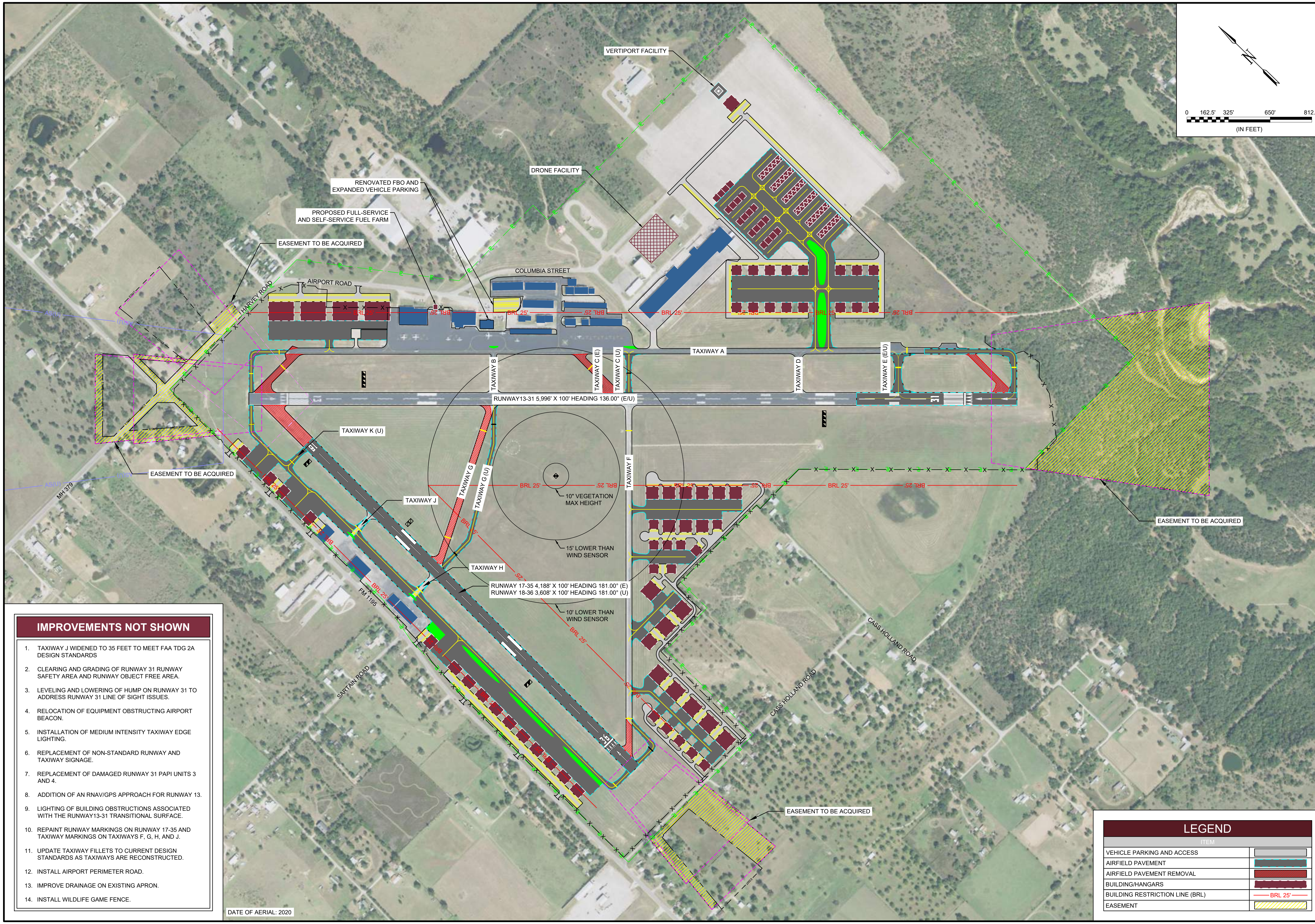
Figure 2: Sink holes over drainage pipes

Figure 3: Exposed pipes south of Taxiway F

Figure 4: Erosion around inlets and sink holes south of Taxiway F

Figure 5: Erosion and exposed pipe around inlet south of Taxiway F

Appendix B - Airport Layout Plan



IMPROVEMENTS NOT SHOWN

1. TAXIWAY J WIDENED TO 35 FEET TO MEET FAA TDG 2A DESIGN STANDARDS
2. CLEARING AND GRADING OF RUNWAY 31 RUNWAY SAFETY AREA AND RUNWAY OBJECT FREE AREA.
3. LEVELING AND LOWERING OF HUMP ON RUNWAY 31 TO ADDRESS RUNWAY 31 LINE OF SIGHT ISSUES.
4. RELOCATION OF EQUIPMENT OBSTRUCTING AIRPORT BEACON.
5. INSTALLATION OF MEDIUM INTENSITY TAXIWAY EDGE LIGHTING.
6. REPLACEMENT OF NON-STANDARD RUNWAY AND TAXIWAY SIGNAGE.
7. REPLACEMENT OF DAMAGED RUNWAY 31 PAPI UNITS 3 AND 4.
8. ADDITION OF AN RNAV/GPS APPROACH FOR RUNWAY 13.
9. LIGHTING OF BUILDING OBSTRUCTIONS ASSOCIATED WITH THE RUNWAY13-31 TRANSITIONAL SURFACE.
10. REPAINT RUNWAY MARKINGS ON RUNWAY 17-35 AND TAXIWAY MARKINGS ON TAXIWAYS F, G, H, AND J.
11. UPDATE TAXIWAY FILLETS TO CURRENT DESIGN STANDARDS AS TAXIWAYS ARE RECONSTRUCTED.
12. INSTALL AIRPORT PERIMETER ROAD.
13. IMPROVE DRAINAGE ON EXISTING APRON.
14. INSTALL WILDLIFE GAME FENCE.

LEGEND

ITEM	
VEHICLE PARKING AND ACCESS	
AIRFIELD PAVEMENT	
AIRFIELD PAVEMENT REMOVAL	
BUILDING/HANGARS	
BUILDING RESTRICTION LINE (BRL)	BRL 25'
EASEMENT	

GARVER

REV.	DATE	DESCRIPTION	BY

MINERAL WELLS REGIONAL AIRPORT
MINERAL WELLS, TEXAS

PREFERRED ALTERNATIVE

JOB NO.: 23A14100
DATE: MAY 2024
DESIGNED BY: NRP
DRAWN BY: NMF

BAR IS ONE INCH ON ORIGINAL DRAWING
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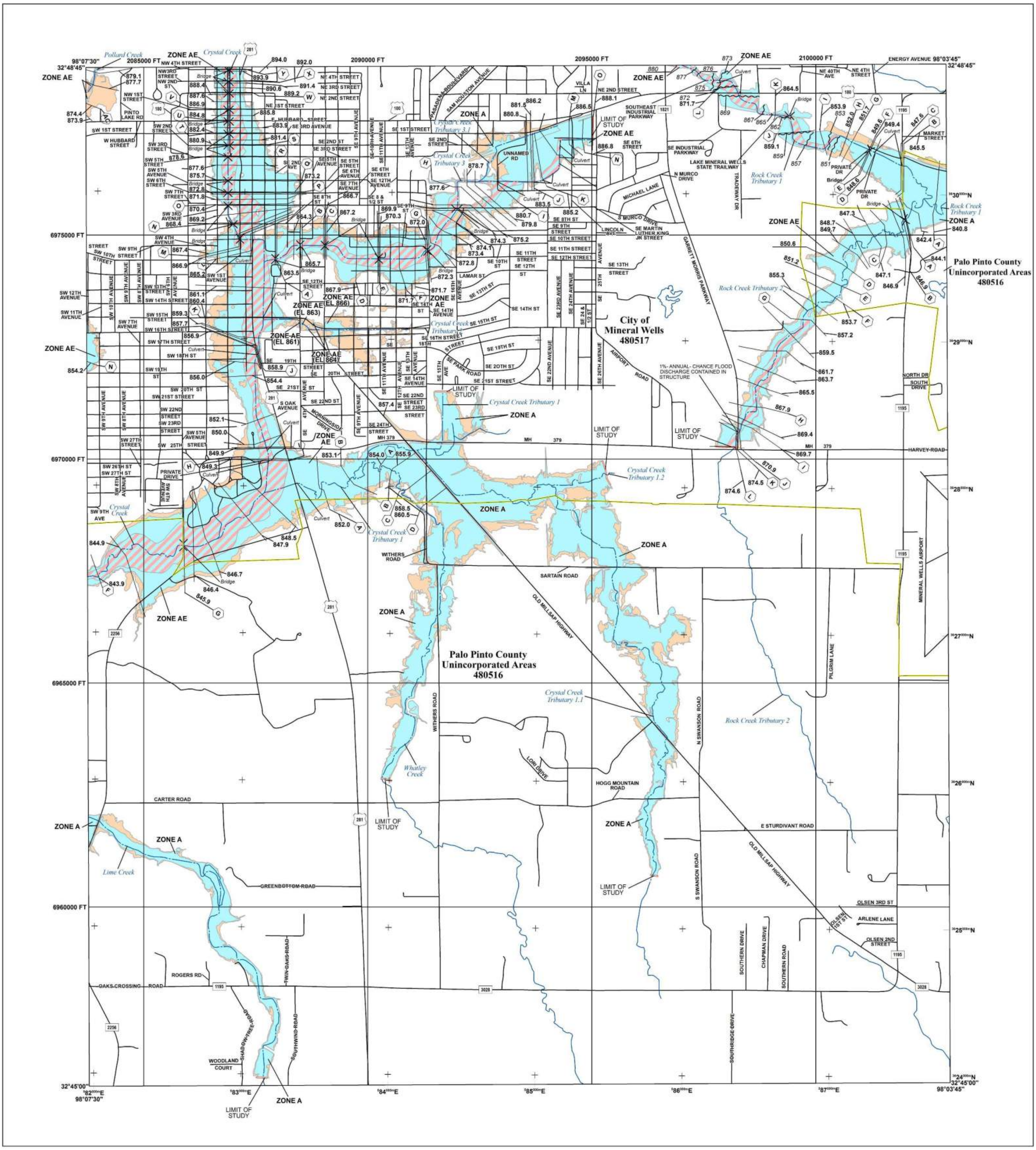
DRAWING NUMBER

SHEET NUMBER

Appendix C - FEMA Flood Insurance Rate Maps



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A,V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes *Zone X*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	8 Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM including historic versions, the current map date for each FIRM panel, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

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SCALE

Map Projection:
Texas State Plane North Central Zone (FIPS Zone 4202); North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PALO PINTO COUNTY, TEXAS
And Incorporated Areas

PANEL **340** OF **600**

FEMA

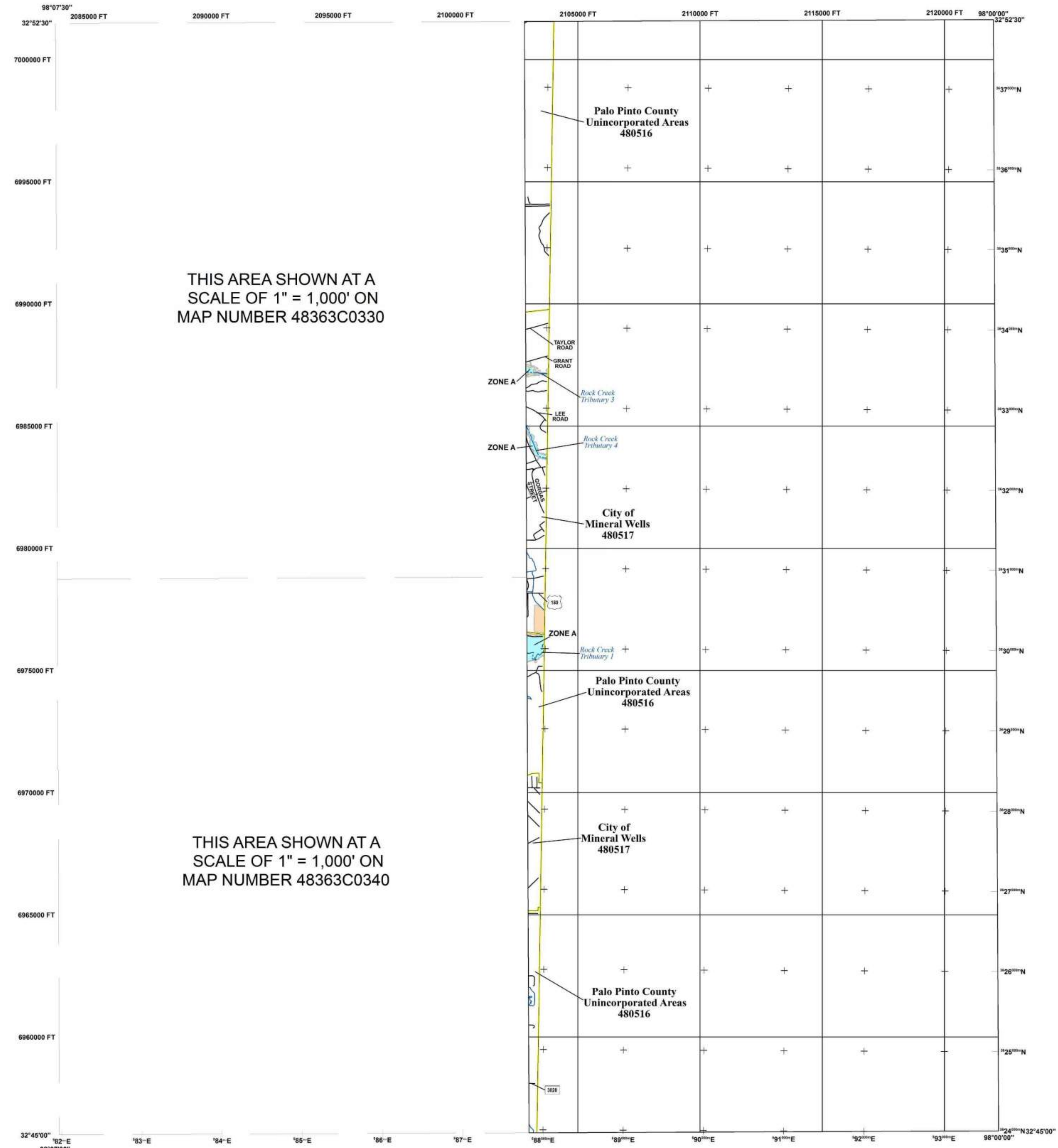
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MINERAL WELLS, CITY OF	480517	0340	F
PALO PINTO COUNTY	480516	0340	F

VERSION NUMBER
2.3.3.2

MAP NUMBER
48363C0340F

MAP REVISED
APRIL 5, 2019



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	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes *Zone X*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	8 Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

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Base map information shown on this FIRM was derived from various sources in 2009, including Texas Natural Resources Information System, North Central Texas Council of Governments, National Geodetic Survey, and United States Geological Survey.

SCALE

N

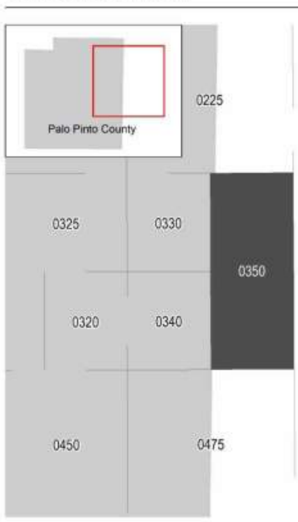
Map Projection:
Texas State Plane North Central Zone (FIPS Zone 4202); North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 2,000 feet 1:24,000

0 2,000 4,000 8,000 Feet

0 500 1,000 2,000 Meters

PANEL LOCATOR



National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PALO PINTO COUNTY, TEXAS
And Incorporated Areas

PANEL **350** OF **600**

FEMA

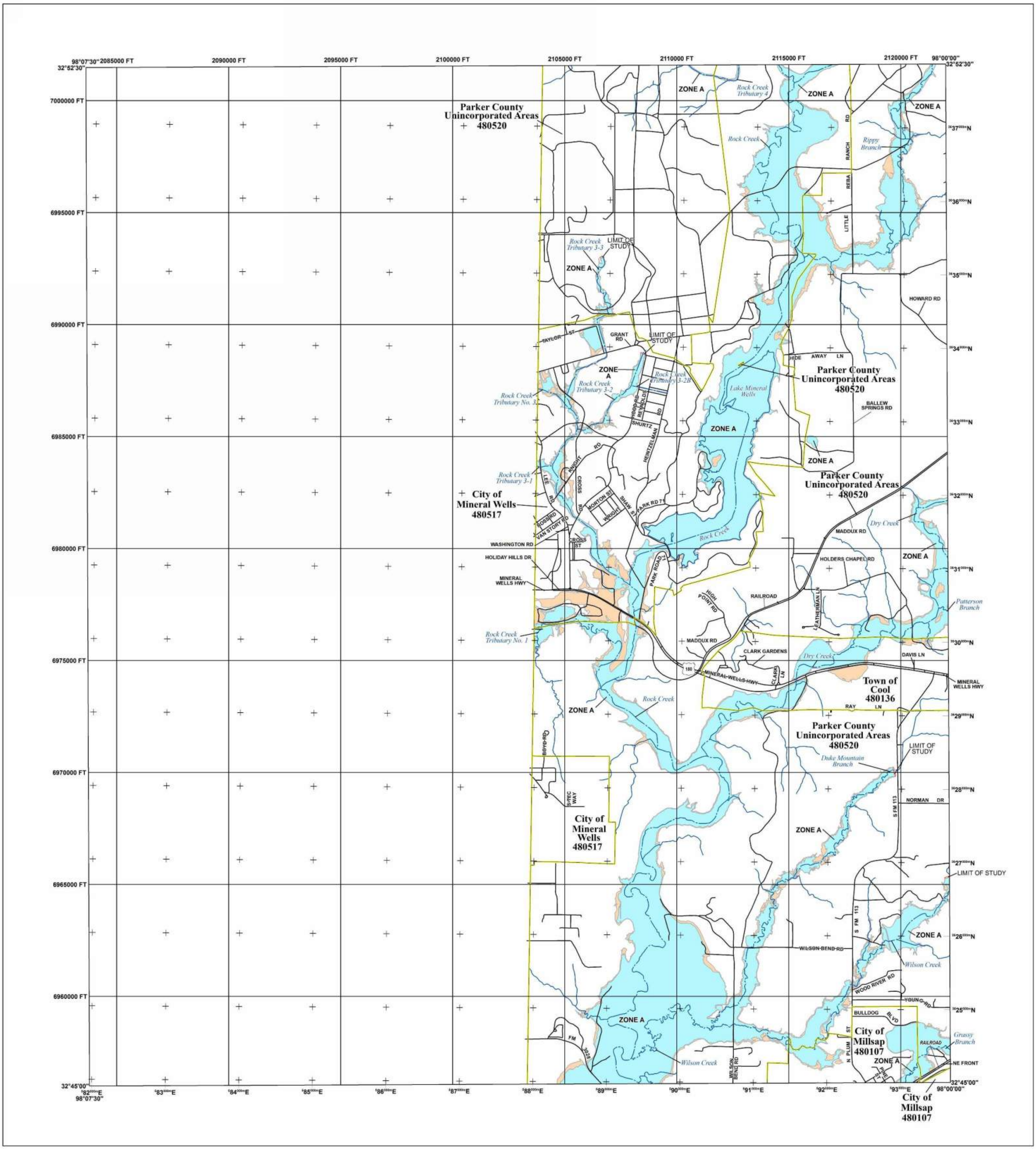
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MINERAL WELLS, CITY OF	480517	0350	F
PALO PINTO COUNTY	480516	0350	F

VERSION NUMBER
2.3.3.2

MAP NUMBER
48363C0350F

MAP REVISED
APRIL 5, 2019



FLOOD HAZARD INFORMATION

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SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes *Zone X*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (E) 18.2 / 17.5
	(8) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

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SCALE

N

Map Projection:
Texas State Plane North Central Zone (FIPS Zone 4202); North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 2,000 feet 1:24,000

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0 500 1,000 2,000 Meters

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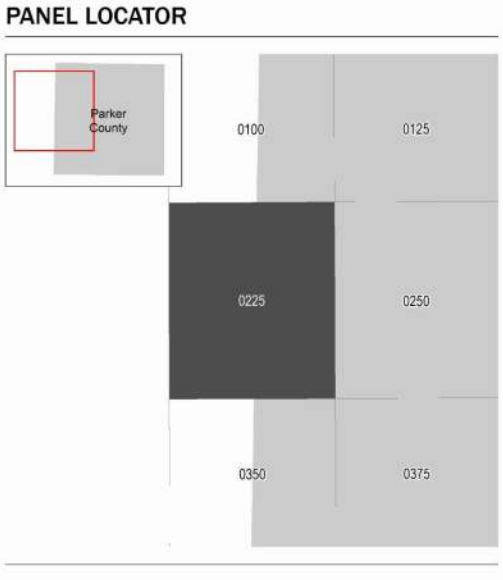


FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PARKER COUNTY, TEXAS
And Incorporated Areas

PANEL **225** OF **575**

FEMA

Panel Contains:

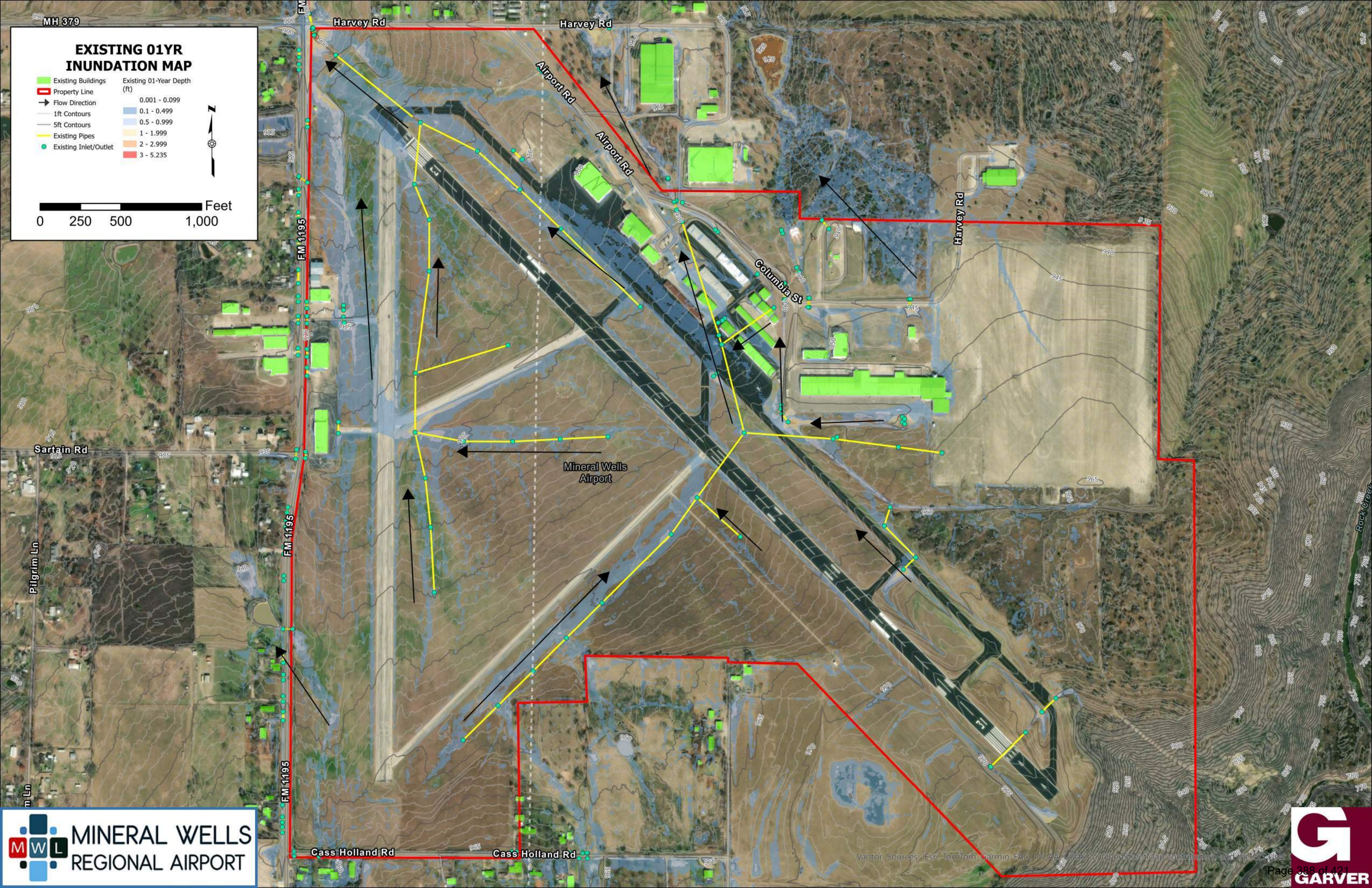
COMMUNITY	NUMBER	PANEL	SUFFIX
COOL, TOWN OF	480136	0225	F
MILLSAP, CITY OF	480107	0225	F
MINERAL WELLS, CITY OF	480517	0225	F
PARKER COUNTY	480520	0225	F

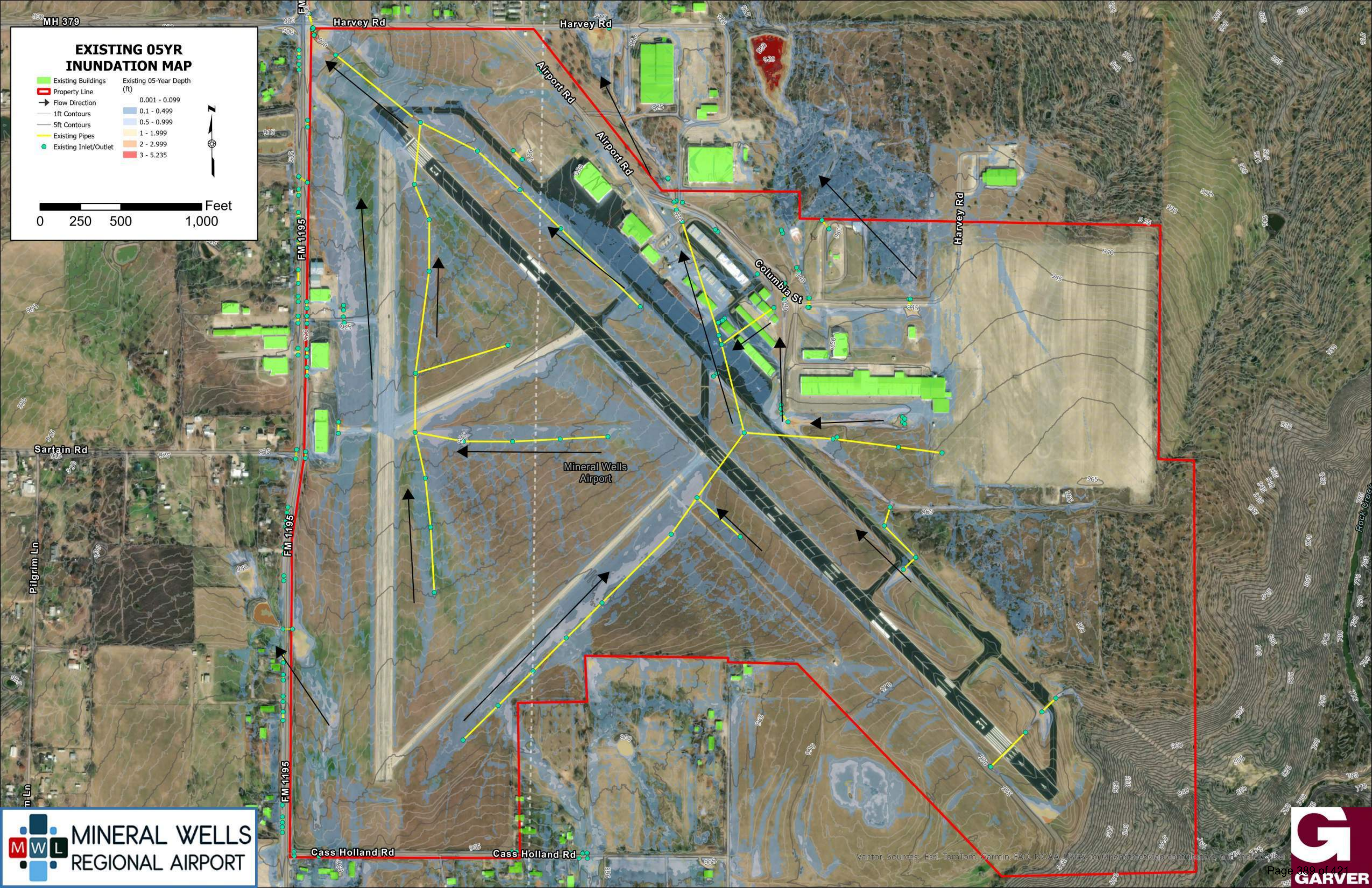
VERSION NUMBER
2.3.3.2

MAP NUMBER
48367C0225F

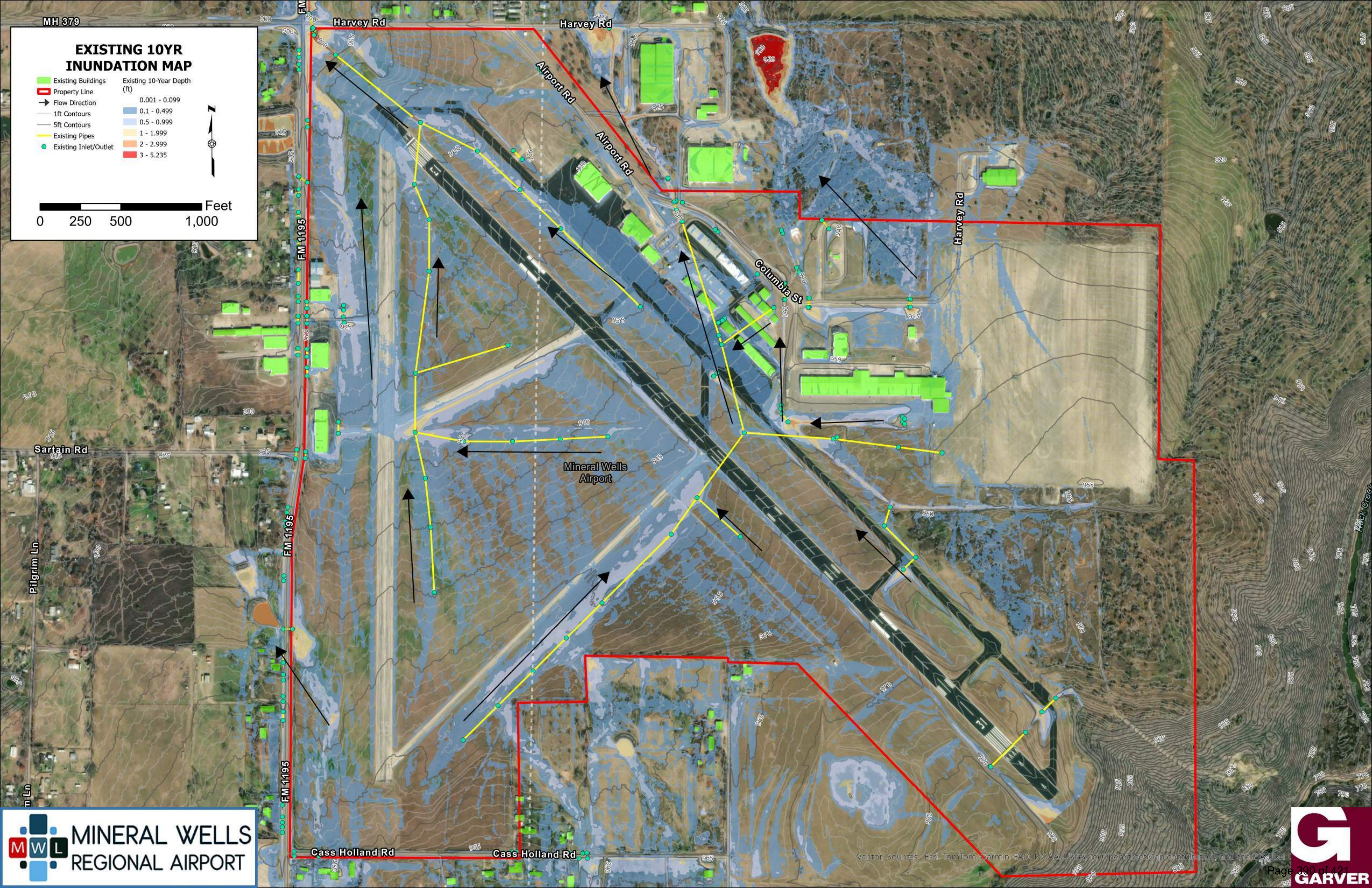
MAP REVISED
APRIL 5, 2019

Appendix D - Existing Inundation Maps


EXISTING 01YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Existing Pipes
Existing Inlet/Outlet
Existing 01-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 5.235
0 250 500 1,000 Feet
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
MINERAL WELLS REGIONAL AIRPORT
GARVER



EXISTING 05YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Existing Pipes
Existing Inlet/Outlet
Existing 05-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 5.235
Feet
0 250 500 1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
Mineral Wells Airport
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER


EXISTING 10YR
INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Existing Pipes
Existing Inlet/Outlet
Existing 10-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 5.235
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Feet
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250
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MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
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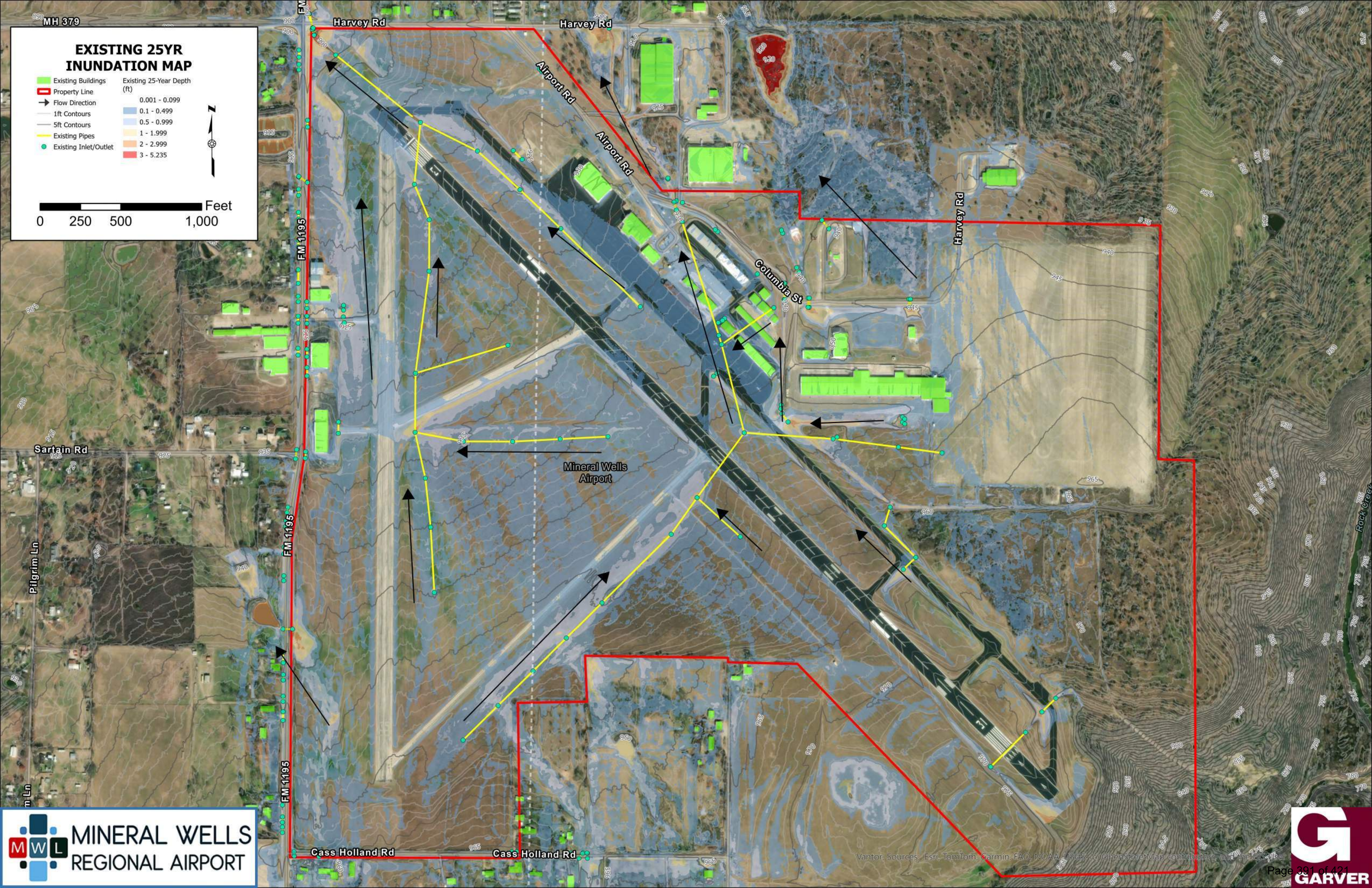
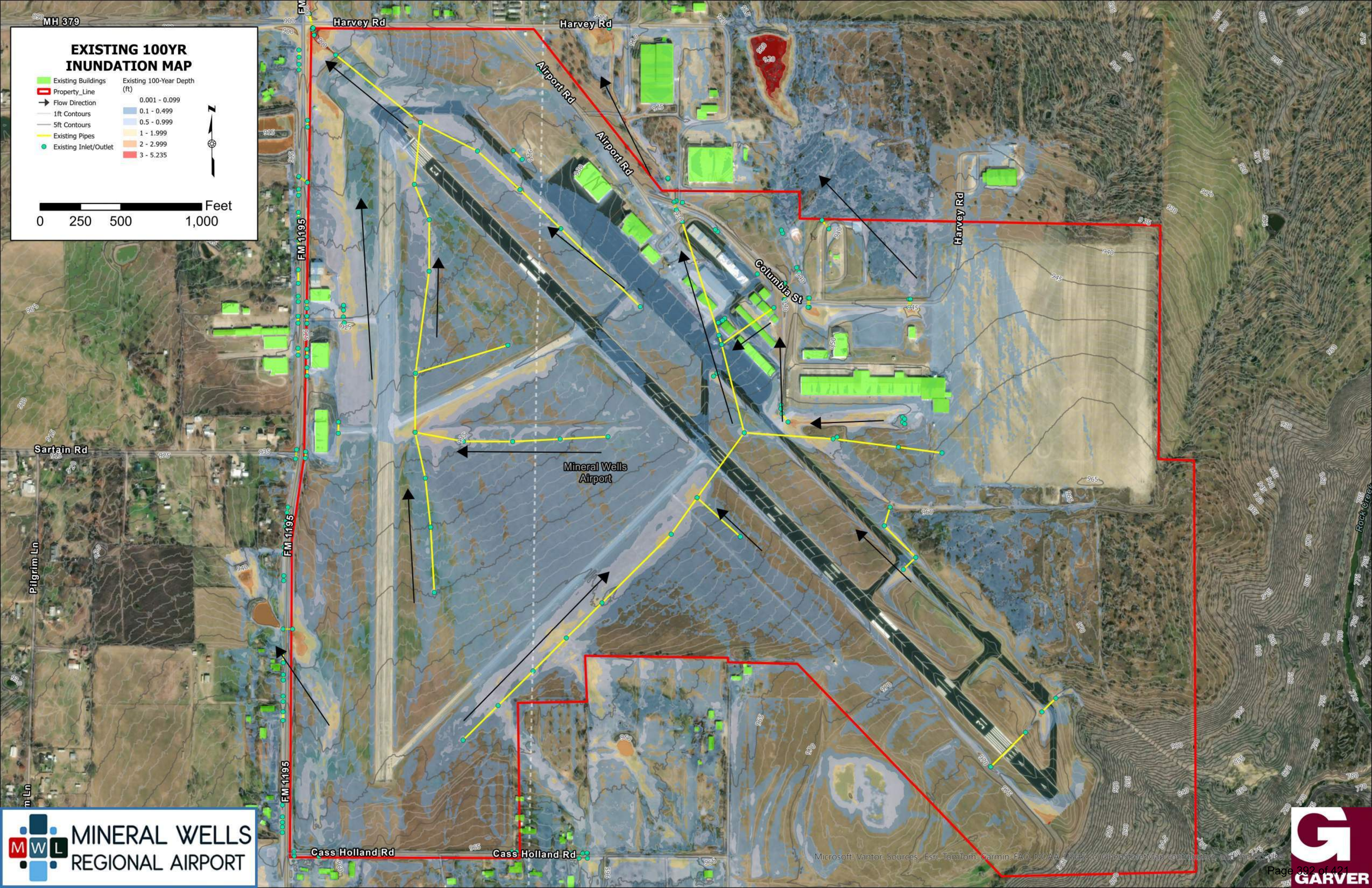
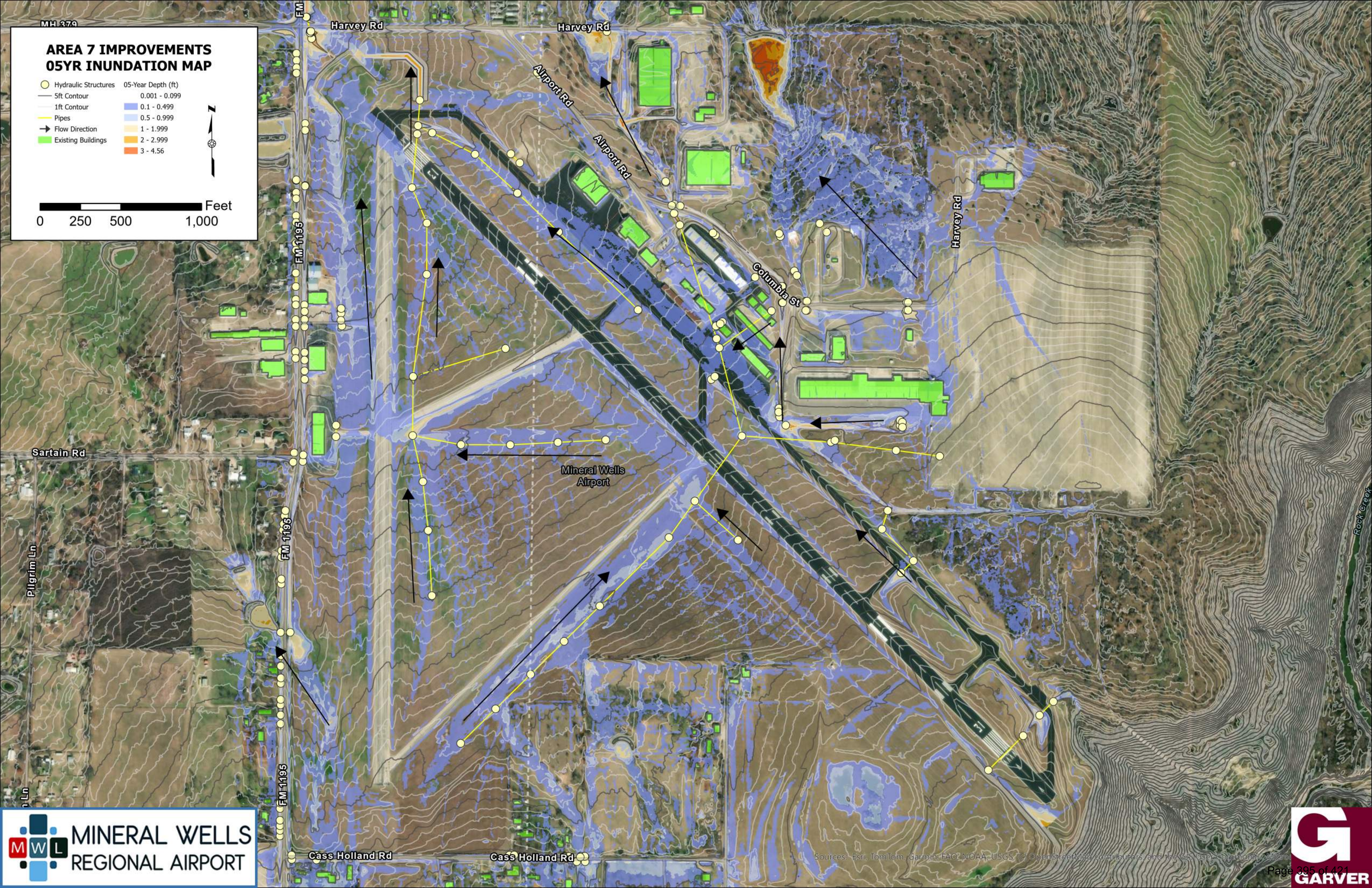
MINERAL WELLS
REGIONAL AIRPORT
MWL
GARVER


EXISTING 25YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Existing Pipes
Existing Inlet/Outlet
Existing 25-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 5.235
N
Feet
0 250 500 1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
Mineral Wells Airport
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER

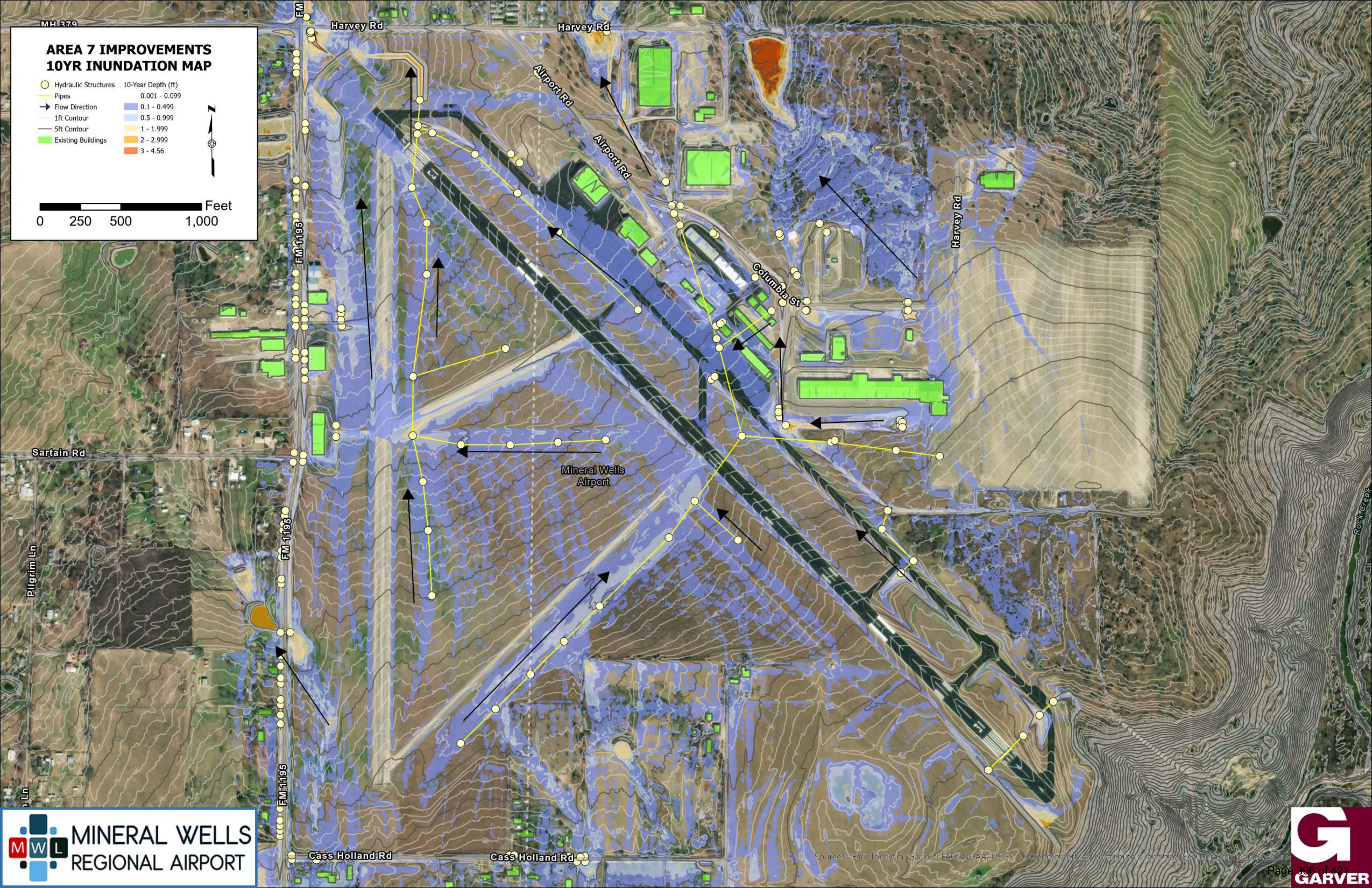

EXISTING 100YR INUNDATION MAP
Existing Buildings
Property_Line
Flow Direction
1ft Contours
5ft Contours
Existing Pipes
Existing Inlet/Outlet
Existing 100-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 5.235
N
0 250 500 1,000 Feet
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
Mineral Wells Airport
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
M W L
GARVER
Microsoft, Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors

Appendix E - Area 7 Improvements Inundation Maps

AREA 7 IMPROVEMENTS
01YR INUNDATION MAP
Hydraulic Structures
Pipes
5ft Contour
1ft Contour
Flow Direction
Existing Buildings
01-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.56
Feet
0
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Micros
GARVER



AREA 7 IMPROVEMENTS
05YR INUNDATION MAP
Hydraulic Structures
5ft Contour
1ft Contour
Pipes
Flow Direction
Existing Buildings
05-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.56
N
Feet
0
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS
REGIONAL AIRPORT
M W L
GARVER



AREA 7 IMPROVEMENTS
10YR INUNDATION MAP
Hydraulic Structures
Pipes
Flow Direction
1ft Contour
5ft Contour
Existing Buildings
10-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.56
N
Feet
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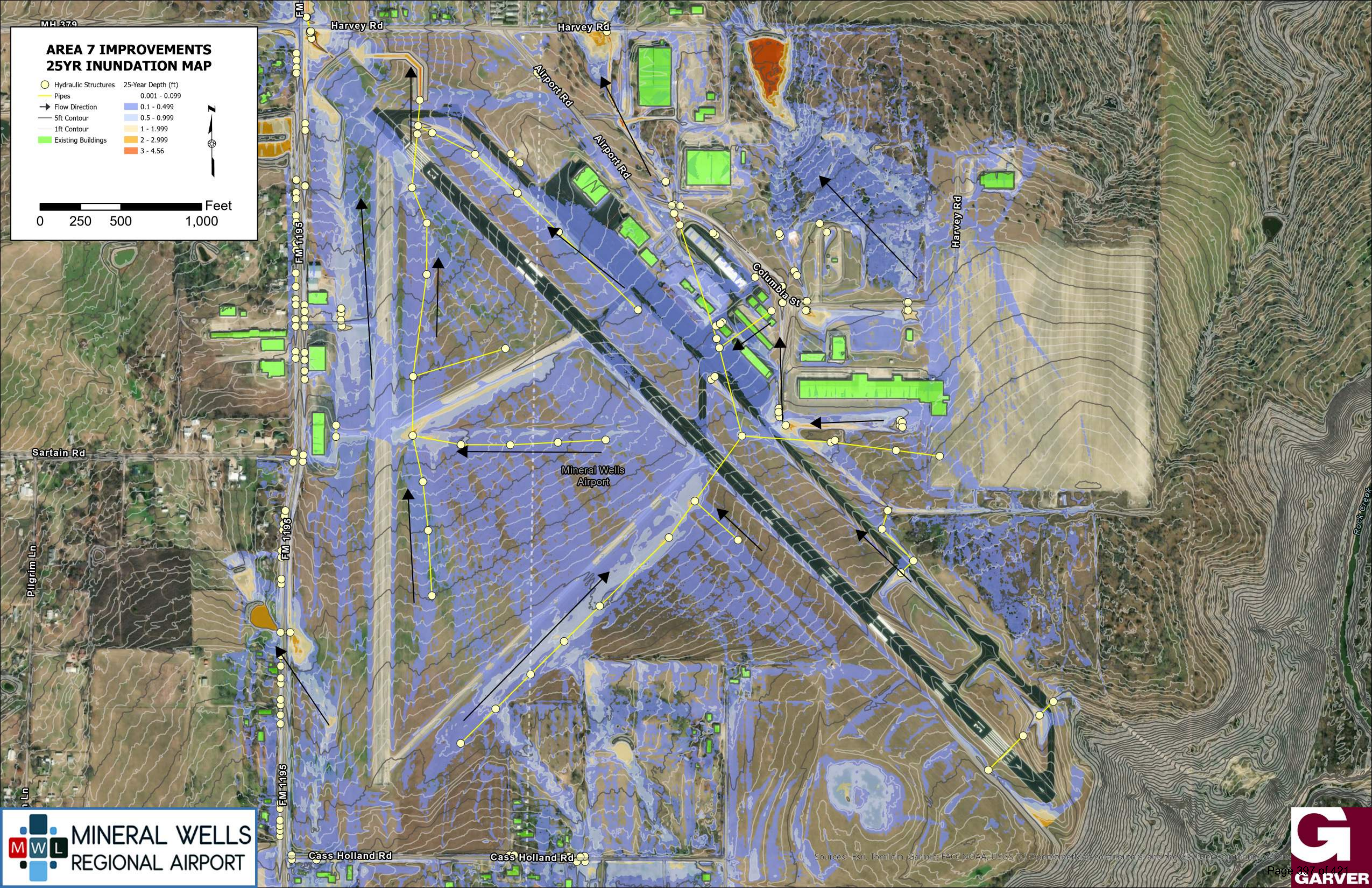
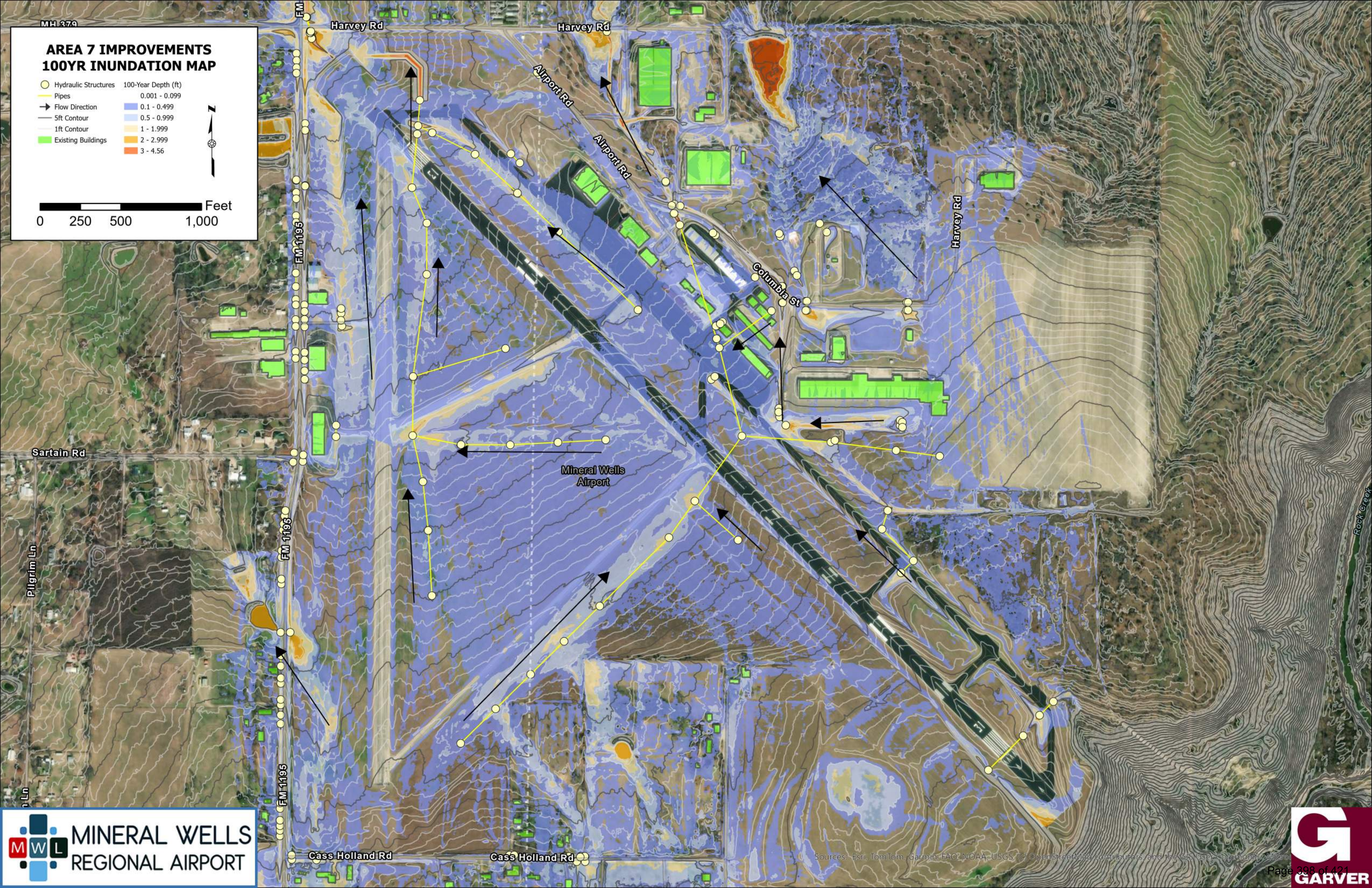
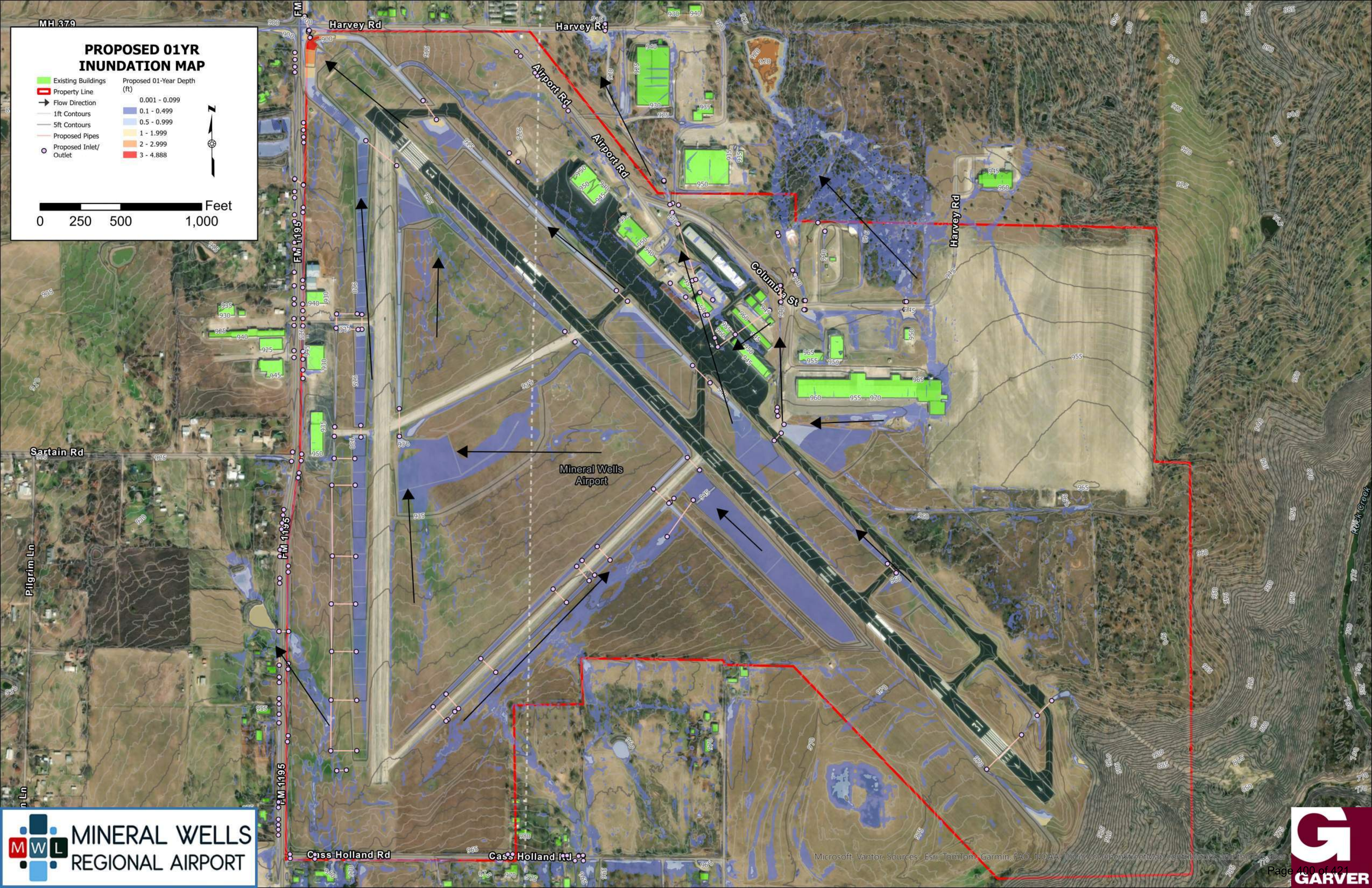
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS
REGIONAL AIRPORT
GARVER

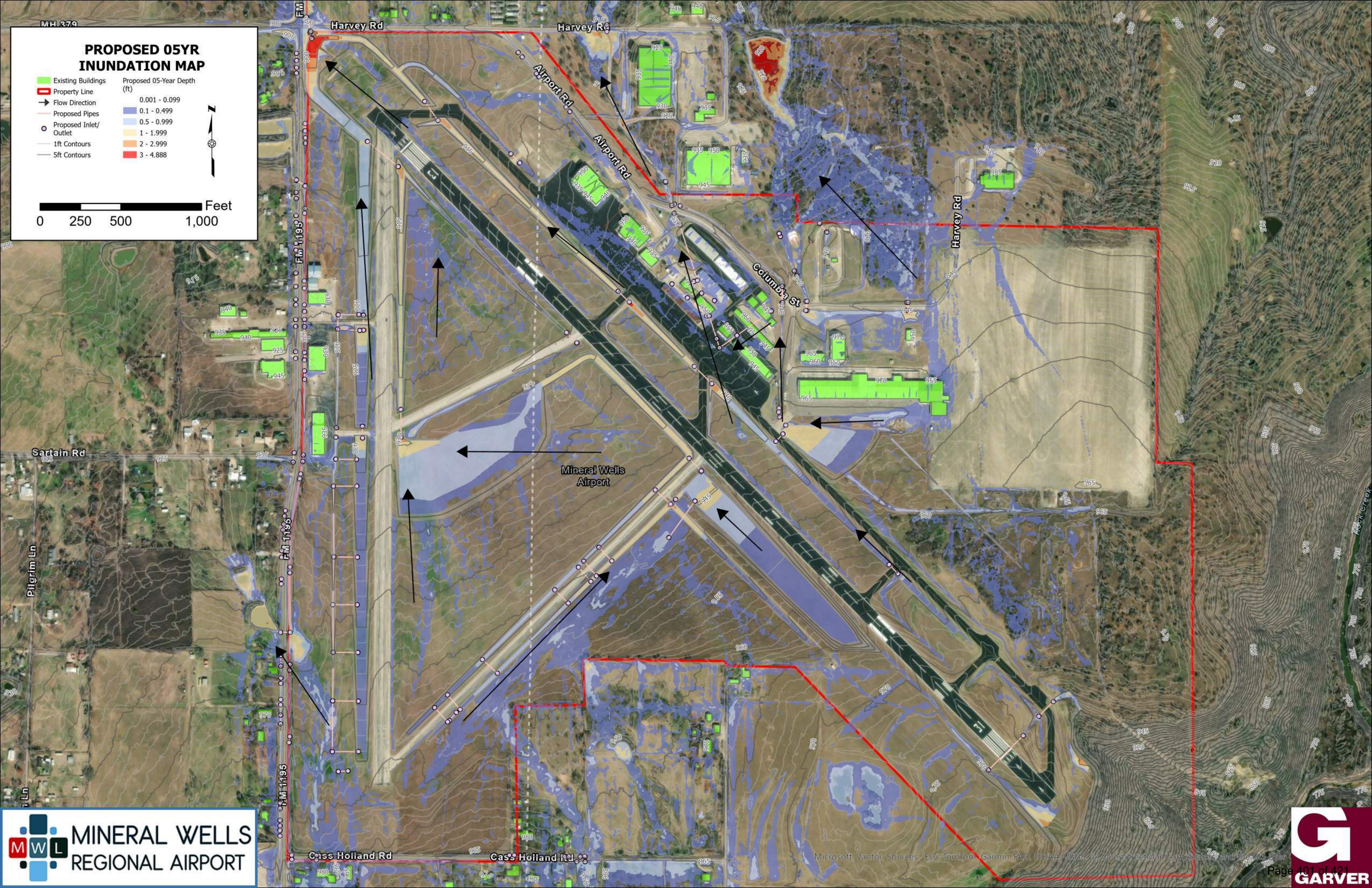

AREA 7 IMPROVEMENTS
25YR INUNDATION MAP
Hydraulic Structures
Pipes
Flow Direction
5ft Contour
1ft Contour
Existing Buildings
25-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.56
N
Feet
0 250 500 1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
M W L
GARVER



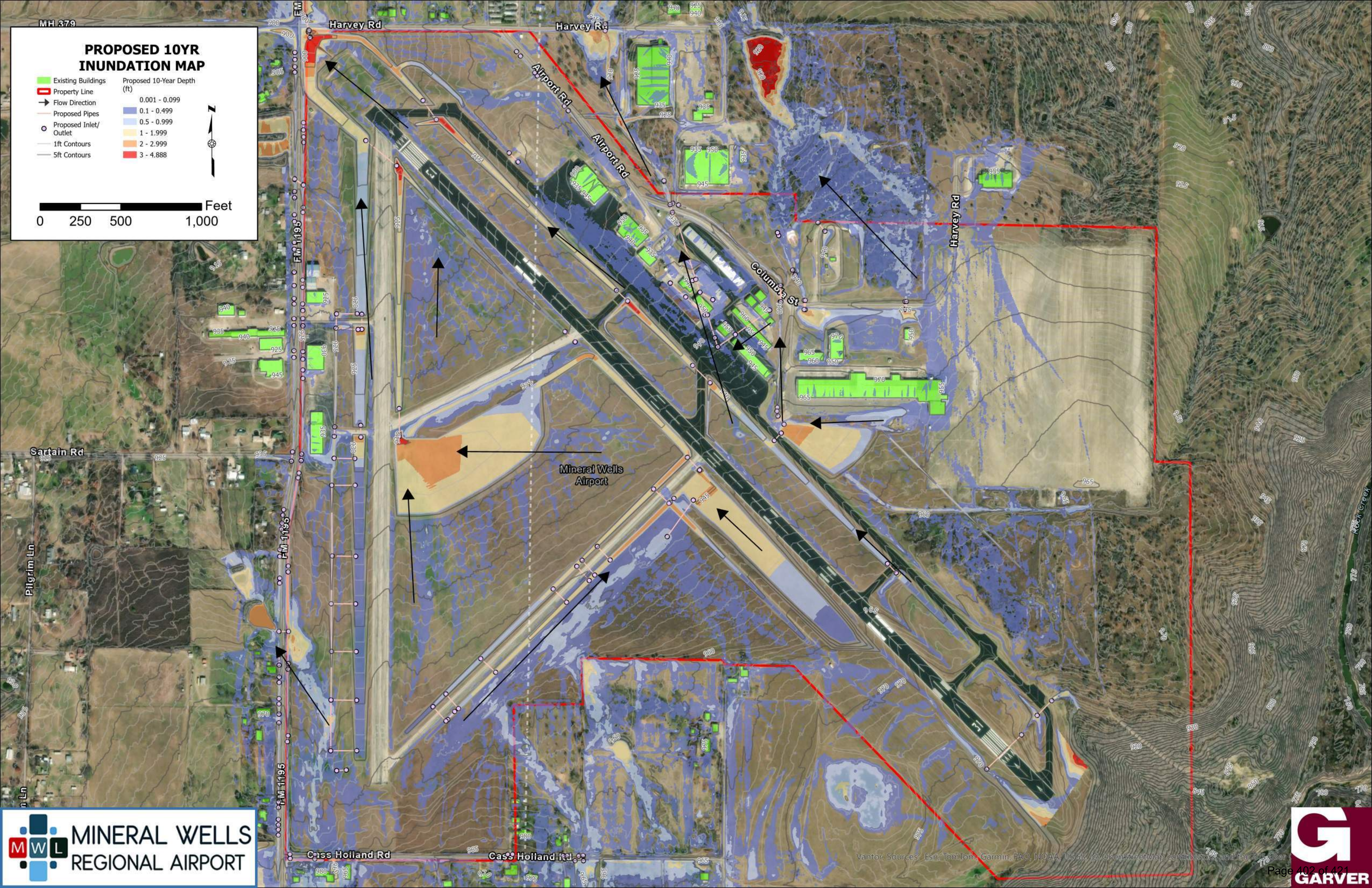
AREA 7 IMPROVEMENTS
100YR INUNDATION MAP
Hydraulic Structures
Pipes
Flow Direction
5ft Contour
1ft Contour
Existing Buildings
100-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.56
N
Feet
0 250 500 1,000
Harvey Rd
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
Mineral Wells Airport
Rock Creek
MWL
MINERAL WELLS REGIONAL AIRPORT
GARVER
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Appendix F - Interim Inundation Maps

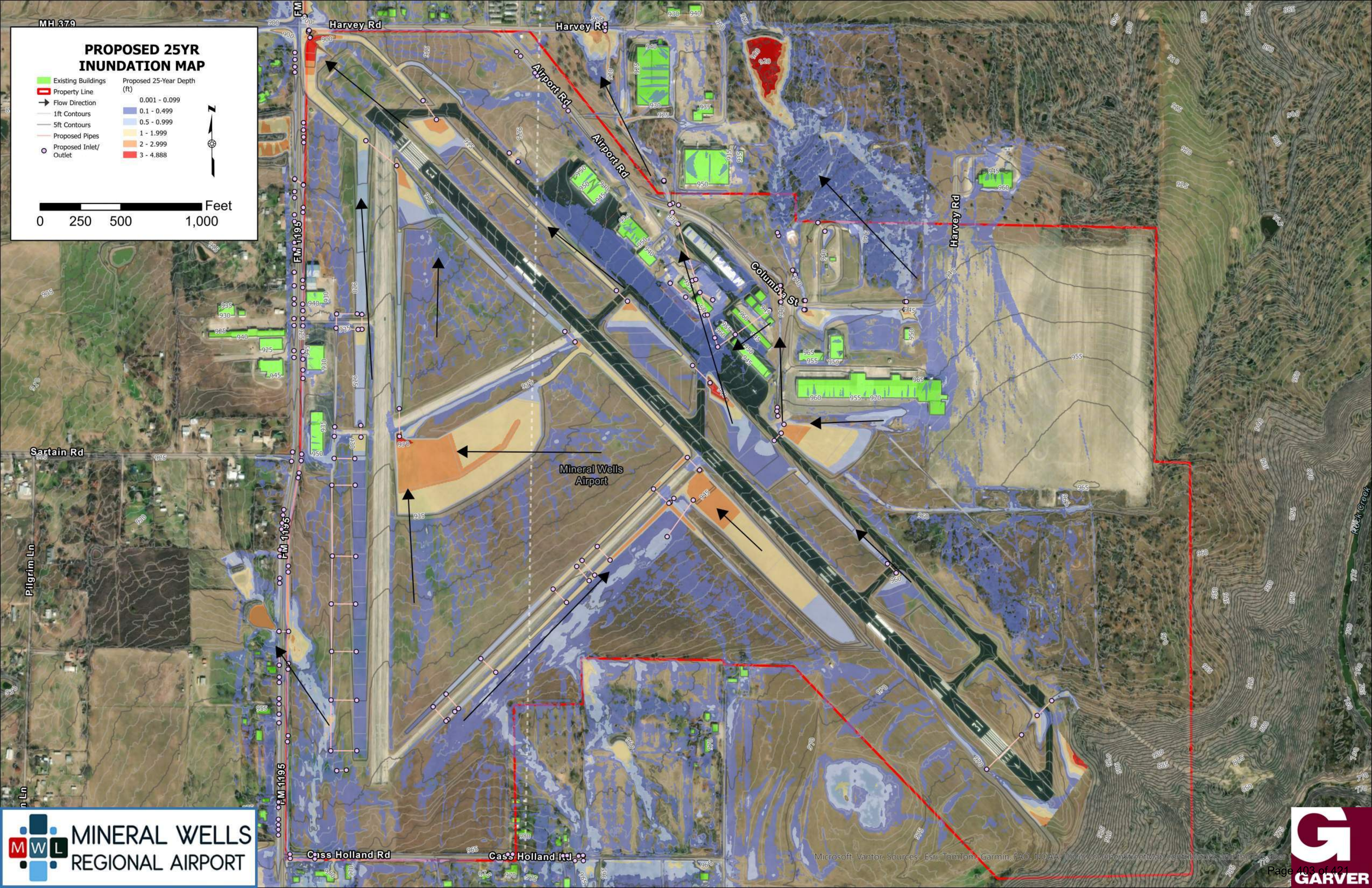

PROPOSED 01YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Inlet/ Outlet
Proposed 01-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0 250 500 1,000
Harvey Rd
Airport Rd
Columbia St
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Rock Creek
Mineral Wells Airport
MH 379
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER



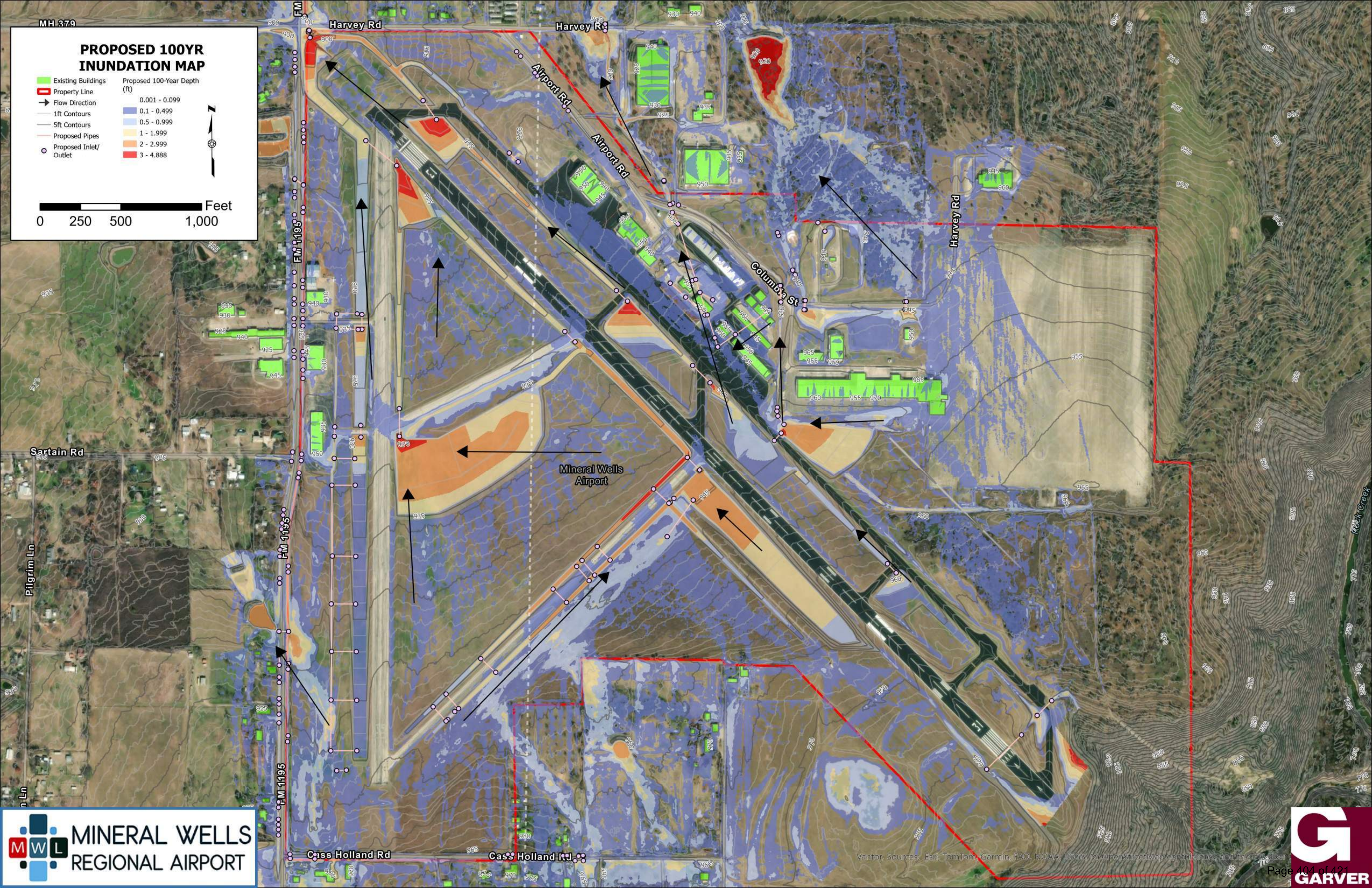
PROPOSED 05YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
Proposed Pipes
Proposed Inlet/ Outlet
1ft Contours
5ft Contours
Proposed 05-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0
250
500
1,000
Harvey Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Mineral Wells Airport
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER

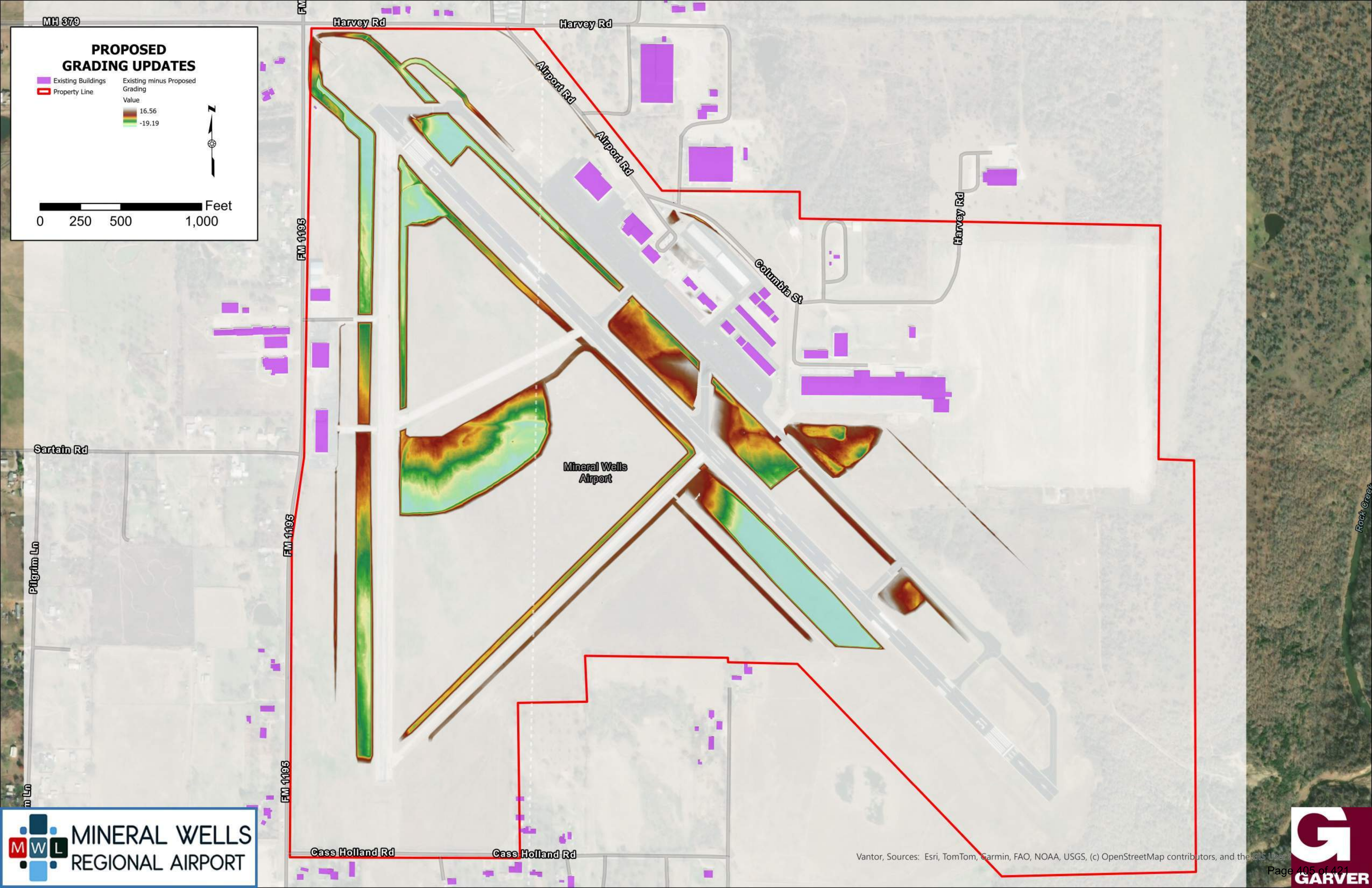


PROPOSED 10YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
Proposed Pipes
Proposed Inlet/ Outlet
1ft Contours
5ft Contours
Proposed 10-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0
250
500
1,000
Harvey Rd
Airport Rd
Columbia St
Sartain Rd
Cass Holland Rd
FM 1195
Pilgrim Ln
Mineral Wells Airport
MINERAL WELLS REGIONAL AIRPORT
M W L
GARVER



PROPOSED 25YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Inlet/ Outlet
Proposed 25-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER


PROPOSED 100YR INUNDATION MAP
Existing Buildings
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Inlet/ Outlet
Proposed 100-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0 250 500 1,000
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Cass Holland Rd
Cass Holland Rd
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
GARVER


PROPOSED GRADING UPDATES
Existing Buildings
Property Line
Existing minus Proposed Grading
Value
16.56
-19.19
N
Feet
0
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Rock Creek
Cass Holland Rd
Cass Holland Rd
MWL
MINERAL WELLS REGIONAL AIRPORT
Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User
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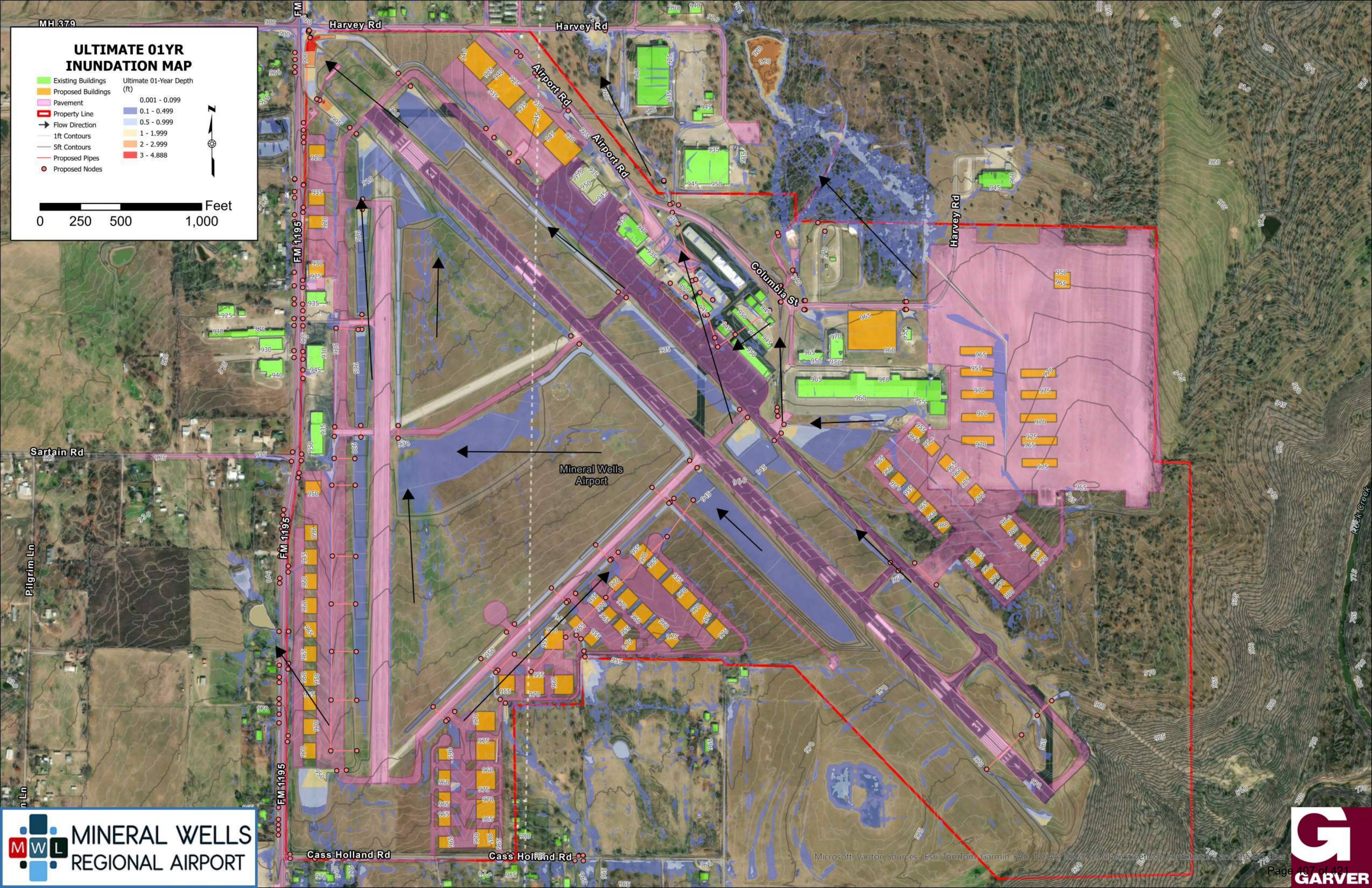
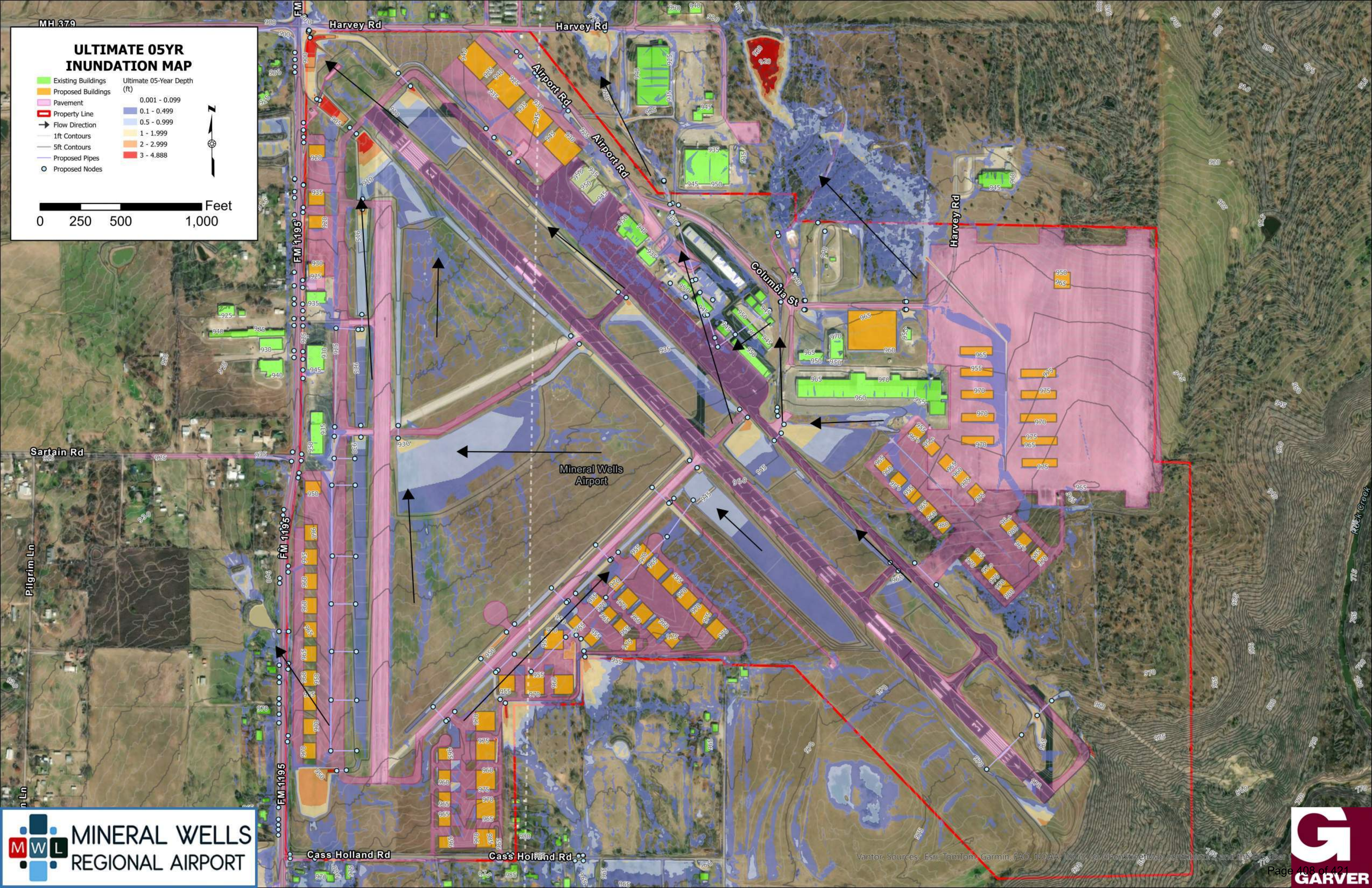
Appendix G - Ultimate Inundation Maps


ULTIMATE 01YR
INUNDATION MAP
Existing Buildings
Proposed Buildings
Pavement
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Nodes
Ultimate 01-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
Feet
0 250 500 1,000
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Harvey Rd
Columbia St
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
MH 379
Mineral Wells Airport
MINERAL WELLS
REGIONAL AIRPORT
MWL
GARVER


ULTIMATE 05YR INUNDATION MAP
Existing Buildings
Proposed Buildings
Pavement
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Nodes
Ultimate 05-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
Feet
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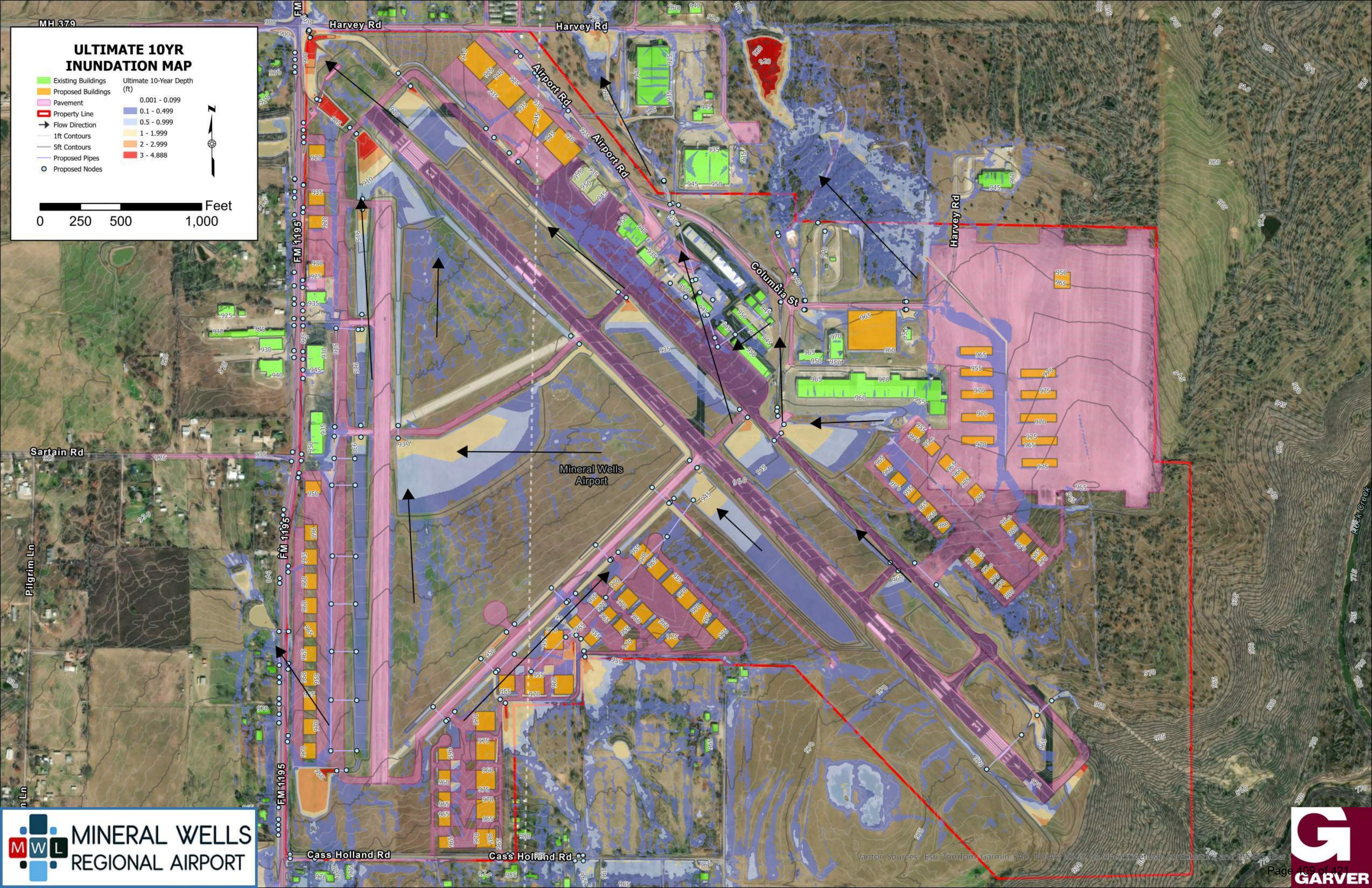
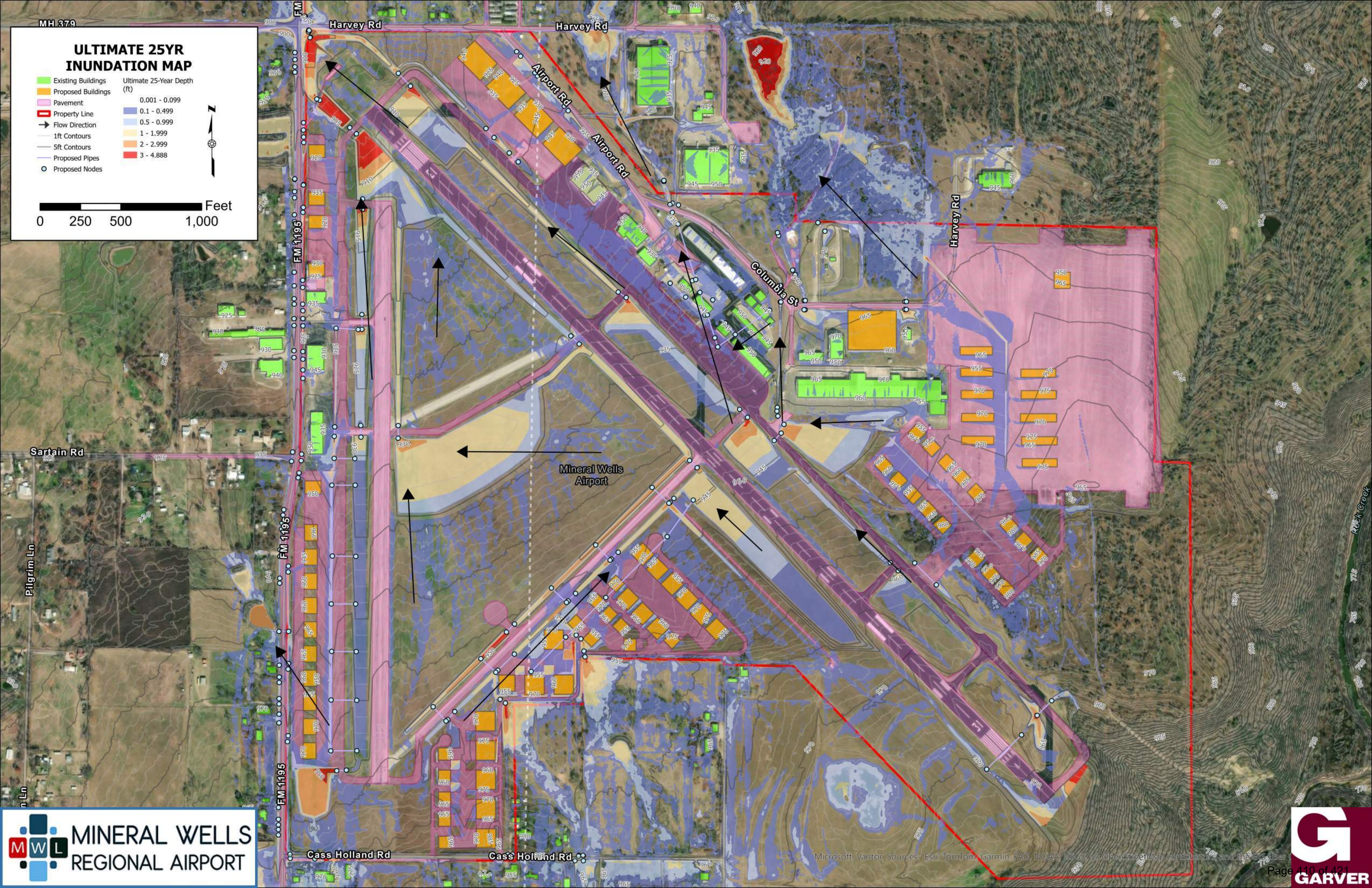
Harvey Rd
Airport Rd
Columbia St
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Rock Creek
Mineral Wells Airport
MINERAL WELLS REGIONAL AIRPORT
GARVER



ULTIMATE 10YR INUNDATION MAP
Existing Buildings
Proposed Buildings
Pavement
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Nodes
Ultimate 10-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
N
Feet
0 250 500 1,000
Harvey Rd
Airport Rd
Columbia St
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Mineral Wells Airport
MWL
MINERAL WELLS REGIONAL AIRPORT
GARVER


ULTIMATE 25YR INUNDATION MAP
Existing Buildings
Proposed Buildings
Pavement
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Nodes
Ultimate 25-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
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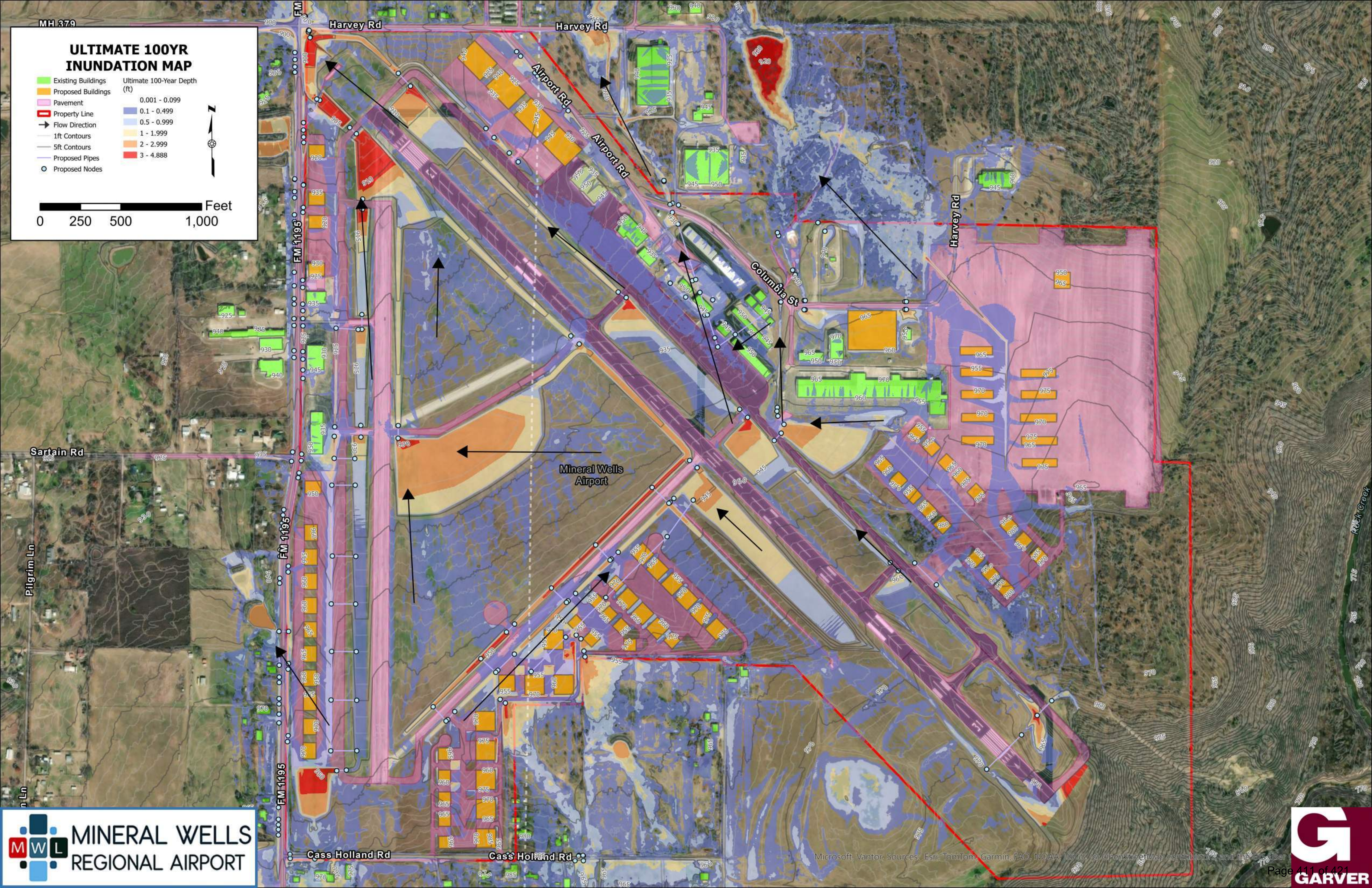
Harvey Rd
Airport Rd
Columbia St
Sartain Rd
FM 1195
Pilgrim Ln
Cass Holland Rd
Mineral Wells Airport
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER


ULTIMATE 100YR INUNDATION MAP
Existing Buildings
Proposed Buildings
Pavement
Property Line
Flow Direction
1ft Contours
5ft Contours
Proposed Pipes
Proposed Nodes
Ultimate 100-Year Depth (ft)
0.001 - 0.099
0.1 - 0.499
0.5 - 0.999
1 - 1.999
2 - 2.999
3 - 4.888
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Feet
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MH 379
Harvey Rd
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Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
Sartain Rd
Pilgrim Ln
Cass Holland Rd
Cass Holland Rd
Mineral Wells Airport
Rock Creek
MINERAL WELLS REGIONAL AIRPORT
MWL
GARVER

ULTIMATE GRADING UPDATES
Existing Buildings
Property Line
Existing minus Ultimate Grading
27.56
-19.19
N
Feet
0
250
500
1,000
MH 379
Harvey Rd
Harvey Rd
Airport Rd
Airport Rd
Columbia St
Harvey Rd
FM 1195
FM 1195
FM 1195
Sartain Rd
Pilgrim Ln
Mineral Wells Airport
Rock Creek
Cass Holland Rd
Cass Holland Rd
MINERAL WELLS REGIONAL AIRPORT
M W L
Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User
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Appendix H - Engineer's Opinion of Probable Cost

MINERAL WELLS REGIONAL AIRPORT (MWL)
DRAINAGE ANALYSIS REPORT
FINAL ENGINEERING REPORT
SUMMARY

DESIGN SERVICES		
DESCRIPTION	**=**	**TOTAL**
RUNWAY 13 END DRAINAGE REHABILITATION (AREA 7) DESIGN	=	**$110,000.00**
TOPOGRAPHICAL SURVEY	=	**$24,000.00**
GEOTECHNICAL INVESTIGATION	=	**$36,000.00**
TOTAL (DESIGN SERVICES)	=	**$170,000.00**

CONSTRUCTION PHASE SERVICES (CPS)					
DESCRIPTION	**OPINION**	**+**	**CONTINGENCY (APPROX. 20%)**	**=**	**TOTAL**
AREA 7 DRAINAGE RECONSTRUCTION	$697,440.75	+	$139,559.25	=	**$837,000.00**
CONSTRUCTION ADMINISTRATION				=	**$58,000.00**
RESIDENT PROJECT REPRESENTATIVE (RPR)				=	**$80,000.00**
MATERIALS TESTING				=	**$15,000.00**
CLOSEOUT SERVICES				=	**$10,000.00**
TOTAL (CONSTRUCTION PHASE SERVICES)				=	**$1,000,000.00**
TOTAL (DESIGN + CPS)				**=**	**$1,170,000.00**

MINERAL WELLS REGIONAL AIRPORT (MWL)
DRAINAGE ANALYSIS REPORT
FINAL ENGINEERING REPORT
RUNWAY 13 END DRAINAGE REHABILITATION

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	Engineer's Estimate of Probable Cost UNIT PRICE	AMOUNT
1	SS-120	CONSTRUCTION SAFETY AND SECURITY	L.S.	1	$35,000.00	$35,000.00
2	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	L.S.	1	$35,000.00	$35,000.00
3	C-102	TEMPORARY EROSION CONTROL	L.S.	1	$10,000.00	$10,000.00
4	C-105	MOBILIZATION (10%)	L.S.	1	$70,000.00	$70,000.00
5	P-101	ASPHALT PAVEMENT SECTION REMOVAL	S.Y.	175	$45.00	$7,875.00
6	P-101	CORRUGATED METAL PIPE REMOVAL	LF	65	$100.00	$6,500.00
7	P-101	REINFORCED CONCRETE PIPE REMOVAL	LF	150	$40.00	$6,000.00
8	P-101	INLET DEMO	EA	1	$2,000.00	$2,000.00
9	P-152	EXCAVATION	C.Y.	2,500	$65.00	$162,500.00
10	P-155	12" LIME-TREATED SUBGRADE	S.Y.	275	$30.00	$8,250.00
11	P-155	LIME	TON	7	$550.00	$4,083.75
12	P-620	RUNWAY AND TAXIWAY PAINTING, YELLOW (TYPE III REFLECTIVE MEDIA)	S.F.	14	$5.00	$70.00
13	P-620	RUNWAY AND TAXIWAY PAINTING, BLACK (NO REFLECTIVE MEDIA)	S.F.	28	$4.00	$112.00
14	D-701	24" REINFORCED CONCRETE PIPE	LF	150	$200.00	$30,000.00
15	D-701	2-48" REINFORCED CONCRETE PIPE	LF	160	$650.00	$104,000.00
16	D-751	6'x3' DOUBLE GRATE INLET STRUCTURE	EA	1	$25,000.00	$25,000.00
17	D-751	6'x6' JUNCTION BOX	EA	2	$30,000.00	$60,000.00
18	D-752	2-48" CONCRETE HEADWALL	EA	1	$30,000.00	$30,000.00
19	T-904	SODDING	S.Y.	2,500	$15.00	$37,500.00
20	Tx-247	AGGREGATE BASE COURSE (8")	S.Y.	220	$60.00	$13,200.00
21	Tx-341	ASPHALT PAVEMENT (4")	TON	45	$230.00	$10,350.00
22	L-108	ELECTRICAL WORK	EA	1	$40,000.00	$40,000.00

Total Engineer's Estimate = $697,440.75

MINERAL WELLS REGIONAL AIRPORT (MWL)
DRAINAGE ANALYSIS REPORT
FINAL ENGINEERING REPORT
TAXIWAY F DRAINAGE REHABILITATION

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	Engineer's Estimate of Probable Cost UNIT PRICE	AMOUNT
1	SS-120	CONSTRUCTION SAFETY AND SECURITY	L.S.	1	$70,000.00	$70,000.00
2	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	L.S.	1	$70,000.00	$70,000.00
3	C-102	TEMPORARY EROSION CONTROL	L.S.	1	$15,000.00	$15,000.00
4	C-105	MOBILIZATION (10%)	L.S.	1	$140,000.00	$140,000.00
5	P-101	CORRUGATED METAL PIPE REMOVAL	LF	2,100	$60.00	$126,000.00
6	P-101	INLET DEMO	EA	6	$1,750.00	$10,500.00
7	P-152	UNCLASSIFIED EXCAVATION	C.Y.	18,000	$45.00	$810,000.00
8	T-904	SODDING	S.Y.	11,000	$12.00	$132,000.00

Total Engineer's Estimate = $1,373,500.00

AGENDA ITEM COMMENTARY

ITEM TITLE

Consider and take appropriate action on a resolution for a Texas Water Development Board Grant and funding for the Master Water Plan.

INITIATOR/STAFF INFORMATION SOURCE

Howard Huffman, Executive Director of Public Works
Dylan Swoboda, Kimley-Horn

BACKGROUND

A resolution by the City of Mineral Wells requesting financial participation from the Texas Water Development Board; authorizing the filing of an application for financial participation; to have Kimley-Horn develop a Master Water Plan.

EXHIBITS

1. Resolution-TWDB WSIG.01

ITEM NUMBER 8.
MEETING DATE 6/16/2026

CITY OF MINERAL WELLS, TEXAS

RESOLUTION NO. 2026-24

A RESOLUTION OF THE CITY OF MINERAL WELLS, TEXAS AUTHORIZING THE SUBMISSION OF AN APPLICATION TO THE TEXAS WATER DEVELOPMENT BOARD; DESIGNATING AN AUTHORIZED REPRESENTATIVE; MAKING CERTAIN FINDINGS AND ASSURANCES; AND PROVIDING FOR RELATED MATTERS.

WHEREAS, the City of Mineral Wells, Texas (the "City"), desires to submit an application to the Texas Water Development Board ("TWDB") for financial assistance to support eligible water, wastewater, or related infrastructure improvements; and

WHEREAS, the City Council finds it to be in the best interest of the citizens of Mineral Wells to pursue such financial assistance; and

WHEREAS, the City Council has conducted a duly noticed public meeting in accordance with the Texas Open Meetings Act, Chapter 551, Texas Government Code, to consider this action.

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF MINERAL WELLS, TEXAS:

SECTION 1. APPLICATION AUTHORIZATION

The City Council hereby authorizes and approves the submission of an application to the Texas Water Development Board requesting financial assistance in an amount not to exceed **$21,000,000** for the purpose of: **Water Master Plan & Water System Improvements.**

SECTION 2. AUTHORIZED REPRESENTATIVE

Jason Weeks City Manager and Howard Huffman Executive Director of Public Works is hereby designated as the Authorized Representative of the City and is authorized to:

- Execute and submit the application
- Provide additional information as required
- Execute all documents necessary to secure and implement the financial assistance
- Act on behalf of the City in all matters related to the application

SECTION 3. PROFESSIONAL SERVICES

The following firms and individuals are hereby authorized to assist the City in preparing and submitting the application and representing the City before the TWDB:

- Engineer: **Kimley-Horn and Associates, Inc.**
- Staff Lead: **Dylan Swoboda, P.E.**

SECTION 4. FINDINGS AND ASSURANCES

The City Council hereby makes the following findings and assurances:

1. The application has been authorized in a properly posted public meeting in compliance with the Texas Open Meetings Act.
2. All information provided in the application is true and correct to the best knowledge and belief of the City.
3. The City has no pending or threatened litigation or proceedings that would materially affect its financial condition or ability to issue debt, except as disclosed in the application.
4. The City has no outstanding compliance issues with any federal, state, or local regulatory agency, except as disclosed in the application.
5. The City will comply with all applicable federal and state laws, rules, and regulations, including those of the TWDB.
6. The City will remain in compliance with all material contractual obligations.

SECTION 5. OPEN MEETINGS COMPLIANCE

The City Council hereby finds that:

- Proper notice of the meeting was given as required by law
- The meeting was open to the public
- All deliberations were conducted in accordance with Chapter 551, Texas Government Code

SECTION 6. EFFECTIVE DATE

This Resolution shall take effect immediately upon its passage and approval.

PASSED AND APPROVED THIS THE 16TH DAY OF JUNE, 2026.

CITY OF MINERAL WELLS, TEXAS

____
REGAN JOHNSON, Mayor

ATTEST:

____
SHARON MCFADDEN, City Clerk

AGENDA ITEM COMMENTARY

ITEM TITLE

§551.071(2): Consultation with Attorney on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with the Open Meetings Act, regarding (i) Millsap Water Supply Wholesale Water Contract.

INITIATOR/STAFF INFORMATION SOURCE

Howard Huffman, Executive Director of Public Works

BACKGROUND

EXHIBITS

ITEM NUMBER 10.a.
MEETING DATE 6/16/2026

AGENDA ITEM COMMENTARY

ITEM TITLE

§ 551.087: To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City and with which the City is conducting economic development negotiations; and/or to deliberate the offer of a financial or other incentive to the business prospect, regarding airport projects: (i) Project Flying Car, (ii) Project Produce and (iii) Project Prestige.

INITIATOR/STAFF INFORMATION SOURCE

BACKGROUND

EXHIBITS

ITEM NUMBER 10.b.
MEETING DATE 6/16/2026