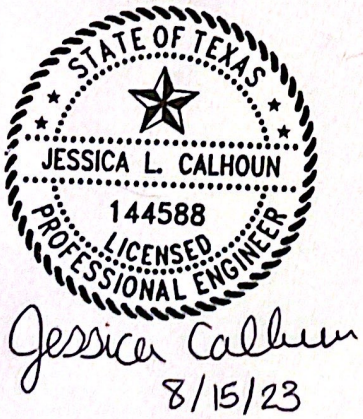
Forty Six Parkway

A distinguished project by:

Moore, Mitchell

Contributing Zone Plan Report



Jessica Calhoun
8/15/23

Bulverde, Texas
August 2023

Prepared by:

HMT
ENGINEERING & SURVEYING

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New Braunfels, TX 78130
TBPE-FIRM F-10961
TBPLS FIRM 10153600

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Forty Six Parkway					**2. Regulated Entity No.:**				
3. Customer Name: Mitchell Moore					**4. Customer No.:**				
5. Project Type: **(Please circle/check one)**	New		Modification		Extension		Exception		
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		2.22	
9. Application Fee:	$4,000		**10. Permanent BMP(s):**			Grassy Swales, Batch Detention			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**						
13. County:	Comal		**14. Watershed:**			Cibolo Creek			

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	X	___	___	___
Region (1 req.)	___	X	___	___	___
County(ies)	___	X	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	X Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	X Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.	
Jessica Calhoun Print Name of Customer/Authorized Agent	
Jessica Calhoun Signature of Customer/Authorized Agent	8/15/2023 Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

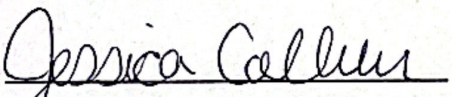
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Jessica Calhoun, P.E.

Date: 08/15/2023

Signature of Customer/Agent:



Regulated Entity Name: Forty Six Parkway

Project Information

1. County: Comal
2. Stream Basin: Cibolo Creek
3. Groundwater Conservation District (if applicable): Comal Trinity GCD
4. Customer (Applicant):

   Contact Person: Mitchell Moore
   Entity: Forty Six Parkway
   Mailing Address: 2303 Ranch Road 620 S., Ste. 160, Box 241
   City, State: Lakeway, TX Zip: 78734
   Telephone: 281-220-9042 Fax: _____
   Email Address: gomoore@att.net

5. Agent/Representative (If any):

Contact Person: Jessica Calhoun, P.E.
Entity: HMT Engineering & Surveying
Mailing Address: 290 S. Castell Avenue, Ste. 100
City, State: New Braunfels, TX Zip: 78130
Telephone: 830-625-8555 Fax: 830-625-8556
Email Address: jessica.calhoun@hmtnb.com

6. Project Location:

☒ The project site is located inside the city limits of Bulverde.
☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
☐ The project site is not located within any city's limits or ETJ.

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

Head southeast toward Judson Rd., turn right onto Judson Rd., turn left onto N. Loop 1604 E., then use the left lane to take the ramp to TX-1604 Loop W., after 4 miles exit to US-281 S. and merge onto US-281, in about 13 miles take the right ramp to New Braunfels, keep right to State Pk/Canyon Lk and merge onto TX-46 E., then turn left onto River Way, finally turn right onto Forty Six Pkwy.

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

9. ☒ **Attachment B - USGS Quadrangle Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

11. Existing project site conditions are noted below:

- ☐ Existing commercial site
- ☐ Existing industrial site
- ☐ Existing residential site
- ☒ Existing paved and/or unpaved roads
- ☐ Undeveloped (Cleared)
- ☒ Undeveloped (Undisturbed/Not cleared)
- ☐ Other: _____

12. The type of project is:

- ☐ Residential: # of Lots: _____
- ☐ Residential: # of Living Unit Equivalents: _____
- ☒ Commercial
- ☐ Industrial
- ☐ Other: _____

13. Total project area (size of site): 2.220 Acres

    Total disturbed area: 1.661 Acres

14. Estimated projected population: _____

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	***Sq. Ft.***	***Sq. Ft./Acre***	***Acres***
Structures/Rooftops	11,638	÷ 43,560 =	0.267
Parking	15,514	÷ 43,560 =	0.356
Other paved surfaces	20,833	÷ 43,560 =	0.478
Total Impervious Cover	47,985	÷ 43,560 =	1.102

Total Impervious Cover 1.102 **÷ Total Acreage** 2.220 **X 100 =** 49.640**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. Type of project:

    ☐ TXDOT road project.
    ☐ County road or roads built to county specifications.
    ☐ City thoroughfare or roads to be dedicated to a municipality.
    ☐ Street or road providing access to private driveways.

19. Type of pavement or road surface to be used:

    ☐ Concrete
    ☐ Asphaltic concrete pavement
    ☐ Other: _____

20. Right of Way (R.O.W.):

    Length of R.O.W.: _____ feet.
    Width of R.O.W.: _____ feet.
    L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

21. Pavement Area:

    Length of pavement area: _____ feet.
    Width of pavement area: _____ feet.
    L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

22. ☐ A rest stop will be included in this project.

    ☐ A rest stop will not be included in this project.

23. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

24. ☒ **Attachment E - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

25. ☐ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☒ N/A

26. Wastewater will be disposed of by:

☒ On-Site Sewage Facility (OSSF/Septic Tank):

☒ **Attachment F - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☐ Sewage Collection System (Sewer Lines):

The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:

☐ Existing.
☐ Proposed.

☒ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

    ☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

    ☐ All piping, hoses, and dispensers will be located inside the containment structure.
    ☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
    ☐ The piping will be aboveground
    ☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

    ☐ Interior dimensions (length, width, depth and wall and floor thickness).
    ☐ Internal drainage to a point convenient for the collection of any spillage.
    ☐ Tanks clearly labeled
    ☐ Piping clearly labeled

☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    ☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    ☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

34. ☒ The Site Plan must have a minimum scale of 1" = 400'.

    Site Plan Scale: 1" = 20'.

35. 100-year floodplain boundaries:

    ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☒ No part of the project site is located within the 100-year floodplain.

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Panel 48091C0220F effective 02/02/2009.

36. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

    ☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot contour intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☐ Surface waters (including wetlands).

    ☒ N/A

43. ☐ Locations where stormwater discharges to surface water.

    ☒ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

    ☒ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

    ☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

    ☐ N/A

48. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

    ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

    ☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____.

    ☐ N/A

49. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

    ☐ N/A

50. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
☒ The site will not be used for low density single-family residential development.

51. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ **Attachment I - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
☒ The site will not be used for multi-family residential developments, schools, or small business sites.

52. ☒ **Attachment J - BMPs for Upgradient Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

53. ☒ **Attachment K - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

54. ☐ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☒ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

    ☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
    ☒ Contains a discussion of record keeping procedures

    ☐ N/A

57. ☐ **Attachment O - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

58. ☐ **Attachment P - Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that result in water quality degradation.

    ☒ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be

responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

60. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

Administrative Information

61. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

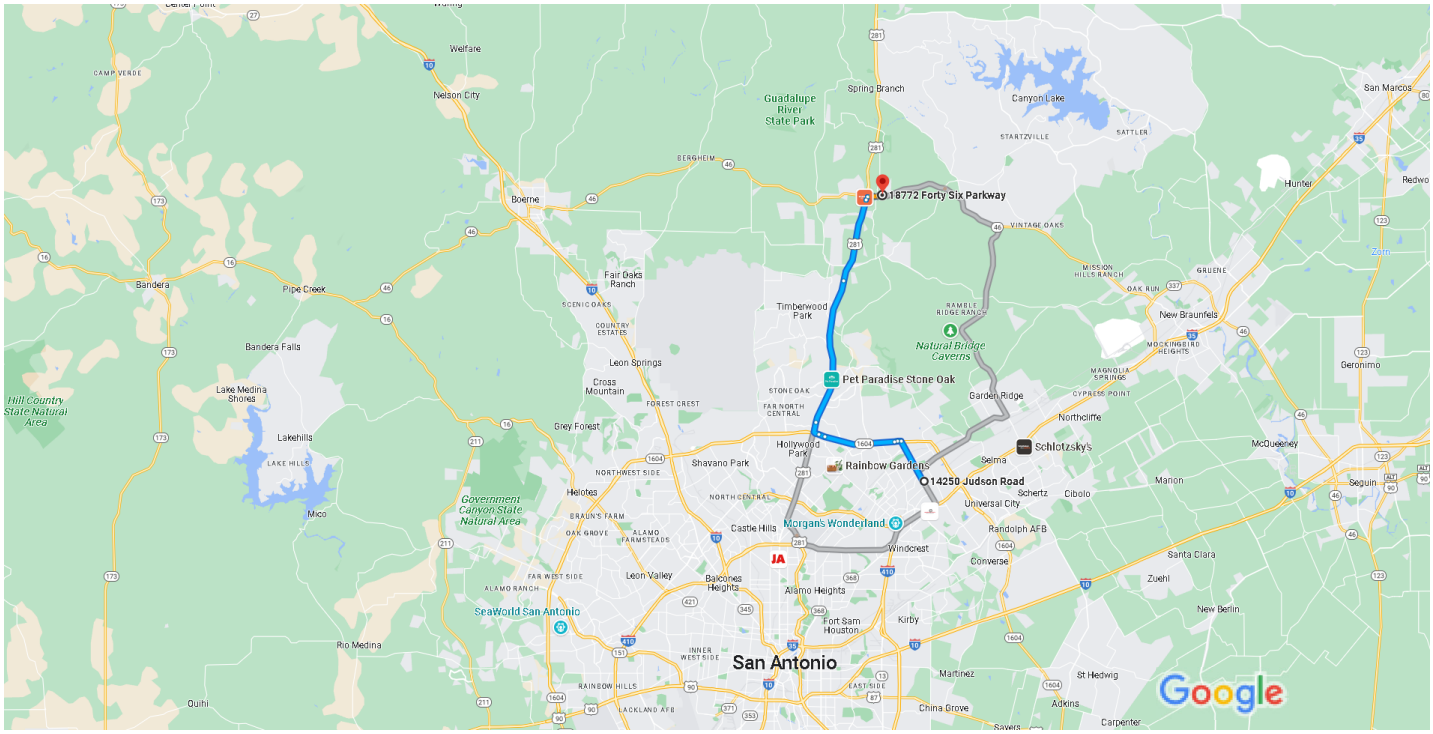
63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☒ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

Google Maps

14250 Judson Rd, San Antonio, TX 78233 to 18772 Forty Six Pkwy, Spring Branch, TX 78070

Drive 22.0 miles, 28 min



Map data ©2023 Google 2 mi

14250 Judson Rd
San Antonio, TX 78233

Get on TX-1604 Loop W from Judson Rd

7 min (3.0 mi)

1. Head southeast toward Judson Rd

95 ft

2. Turn right toward Judson Rd

85 ft

3. Turn right onto Judson Rd

Pass by AutoZone Auto Parts (on the right in 0.6 mi)

2.6 mi

4. Use the left lane to turn left onto N Loop 1604 E

0.2 mi

5. Use the left lane to take the ramp onto TX-1604 Loop W

0.2 mi

Continue on TX-1604 Loop W. Take US-281 S to River Way in Bulverde

19 min (18.7 mi)

6. Merge onto TX-1604 Loop W

3.9 mi

7. Use the right 2 lanes to take the US-281 S exit toward Airport/San Antonio

0.3 mi

8. Slight right

0.9 mi

9. Merge onto US-281 S/U.S. Hwy 281 N

Continue to follow US-281 S

8.2 mi

10. Continue straight onto US-281 N

4.6 mi

11. Use the right lane to take the ramp to New Braunfels

0.2 mi

12. Keep right at the fork, follow signs for State Pk/Canyon Lk and merge onto TX-46 E

0.6 mi

Drive to Forty Six Pkwy

1 min (0.2 mi)

13. Turn left onto River Way

128 ft

14. Turn right onto Forty Six Pkwy

Destination will be on the left

0.2 mi

18772 Forty Six Pkwy
Spring Branch, TX 78070

HORIZONTAL SCALE 1:8000
0 1000 2000 4000

SHEET A	DATE: JULY 2022 DRAWN BY: ZAH DESIGNED BY: RPS CHECKED BY: RPS REVIEWED BY: RPS PROJECT NO.: 509.001	FORTY SIX PARKWAY	**ATTACHMENT A - USGS/EDWARDS RECHARGE ZONE MAP** **CIVIL SITE CONSTRUCTION PLANS**	7/26/2022	HMT ENGINEERING & SURVEYING 200 S. CASTELL AVE., STE. 100 NEW BRAUNFELS, TX 78130 HMTNB.COM P(830)625-8555*F(830)625-8556 TBPE FIRM F-10961 TBPLS FIRM 1053600

CONTRIBUTING ZONE PLAN
ATTACHMENT C
Project Narrative

The proposed Forty Six Parkway project is located at 18772 Forty Six Parkway, Bulverde, TX 78070. The site is located within the City of Bulverde. The project site covers a total of 2.22 acres. The project site is located near the top of a watershed (Cibolo Creek) and has a small offsite area draining to the site. The offsite is 6,828 square feet (0.157 acres) with 2,479 square feet (0.057 acres) of impervious cover. Currently, the site is primarily undeveloped with a recently built roadway running through the site.

Mitchell Moore is proposing a small commercial development. This development will include the construction of 11,638 square feet (0.267 acres) of structures, 15,514 square feet (0.356 acres) of parking, and 20,833 square feet (0.478 acres) of other paved surfaces. These improvements create an increase of 47,985 square feet (1.102 acres) of impervious cover. There was no previous impervious cover and the proposed conditions the impervious cover is 1.10 acres or 49.640% at full development of the site. There are no areas to be demolished. Permanent BMPs for this site will include two Grassy Swales and a Batch Detention Basin.

CONTRIBUTING ZONE PLAN
ATTACHMENT D
Factors Affecting Water Quality

The Forty Six Parkway Commercial Development includes the construction of 47,985 square feet (1.102 acres) of impervious cover of structures, driveways, and roadway. The factor affecting water quality is runoff sediment transport from construction work being performed and upon completion from the commercial area. The runoff from the site may include contaminates from the parking lot located on site. The runoff will travel down a grassy swale to a batch extended detention or directly to batch detention. This will reduce sedimentation and contaminates in runoff to the downstream areas. This will so velocities to reduce sedimentation off site.

CONTRIBUTING ZONE PLAN
ATTACHMENT E
Volume and Character of Stormwater

The Forty Six Parkway Commercial Development site cover 2.220 acres. The Existing Drainage Area Map and Proposed Drainage Area Map can be found on Sheet C2.0 and C2.1, respectively.

The proposed development will increase the impervious cover to be 1.102 acres or 49.64% at full development of the site. The 49.64% Impervious cover will require permanent BMPS. These will include grassy swales and batch extended detention. Additionally, temporary BMPS have been designed, using the current Technical Guidance Manual, to treat stormwater during construction so that the water quality entering any surface water or ground water is not adversely affected.

The existing and proposed runoff from the site was determined using the Rational Method and the Bulverde Drainage Manual. The existing Composite Value (C) for the undeveloped site is a weighted average of 0.58. The proposed conditions C is a weighted average of 0.74 for impervious (roofs, driveways, and paved road with open ditches), good condition lawns, woods, and meadows. The rainfall frequency values were taken from the NOAA Atlas 14. The Existing and Proposed calculations resulting flows are attached below.

COMAL COUNTY

ENGINEER'S OFFICE

August 15, 2023

Ms. Jessica Calhoun, P.E.
HMT Engineering & Surveying
290 S. Castell Avenue, Suite 100
New Braunfels, TX 78130

Re: 18772 Forty Six Parkway Suitability Letter within Comal County Texas

Dear Ms. Calhoun:

In accordance with TAC §213.24(8)(B), Comal County has found that the entire referenced site is suitable for the use of private sewage facilities and will meet the requirements for on-site sewage facilities.

If you have any questions or need additional information, please contact our office.

Sincerely,

Robert Boyd, P.E.
Comal County Assistant Engineer

cc: Donna Eccleston, Comal County Commissioner, Precinct No. 1

195 David Jonas Dr, New Braunfels, Texas, 78132 – Phone (830) 608-2090

Greg W. Johnson, P.E.

170 Hollow Oak
New Braunfels, Texas 78132
830/905-2778

August 12, 2023

Comal County Office of Environmental Health
195 David Jonas Drive
New Braunfels, Texas 78132-3760

RE: Soil survey & OSSF compatibility
Mitchell K. Moore & Christopher M. Godwin
18772 Forty Six Parkway
River Crossing, Unit 4, Lot 822
Comal County, Texas

TYPE SOILS AND DRAINAGE

This location was surveyed for soil types and their compatibility with development and installation of a septic systems for office buildings. Tested soils have moderate clay content and are a part of the Bracket-Rock outcrop-Real complex, steep (BtG). Profile consists of a brown clay loam with medium blocky structure to 10" over weak to massive limestone.

OSSF TYPES

Since the site has limited depth soils with a moderate clay content with fair soil absorption characteristics, two types of septic systems are suitable. Recommended On Site Sewage Facilities (OSSF) for this site are aerobic treatment plants with spray or drip irrigation. Adequate space is available for either of the referenced OSSF's and their respective replacement area.

The water service lot must be routed in such a way to provide a minimum of 10' separation from any part of the OSSF.

Respectfully yours,

08/12/2023

Greg W. Johnson, P.E, F#2585

STATE OF TEXAS
GREG W. JOHNSON
67587
REGISTERED
PROFESSIONAL ENGINEER

OSSF Sizing

Water usage and field requirements:

Q = 300 GPD
Q = 360 GPD
Q= 480 GPD

Drip Irrigation

A = Q/Ra Ra = 0.2 g/sf (Type III Soil)
A = 300/0.2 = 1500 sf.
A = 360/0.2 = 1800 sf.
A = 480/0.2 = 2400 sf.

Aerobic Treatment Plant (Spray Irrigation)

A = Q / Ri Ri = 0.064 g/sf
A = 300/0.064 = 4688 sf.
A = 360/0.064 = 5625 sf.
A = 480/0.064 = 7500 sf.

ON-SITE SEWERAGE FACILITY
SOIL EVALUATION REPORT INFORMATION

Date Soil Survey Performed: April 11, 2023

Site Location: 18772 FORTY SIX PARKWAY / RIVER CROSSING, UNIT 4, LOT 822 (Proposed Lot 822A-1 & 822A-2)

Proposed Excavation Depth: n/a

Requirements:

At least two soil excavations must be performed on the site, at opposite ends of the proposed disposal area.
Locations of soil boring or dug pits must be shown on the site drawing.
For subsurface disposal, soil evaluations must be performed to a depth of at least two feet below the proposed excavation depth. For surface disposal, the surface horizon must be evaluated.
Describe each soil horizon and identify any restrictive features on the form. Indicate depths where features appear.

SOIL BORING NUMBER 1-3

Depth (Feet)	Texture Class	Soil Texture	Gravel Analysis	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
0 – 10"	III	CLAY LOAM	N/A	NONE OBSERVED	LIMESTONE @ 10"	BROWN
1						
2						
3						
4						
5						

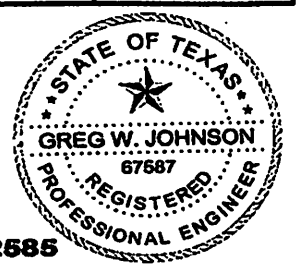
SOIL BORING NUMBER 4-6

Depth (Feet)	Texture Class	Soil Texture	Gravel Analysis	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
0	SAME	AS	ABOVE			
1						
2						
3						
4						
5						

I certify that the findings of this report are based on my field observations and are accurate to the best of my ability.

Greg W. Johnson, P.E. 67587-F2585, S.E. 11561

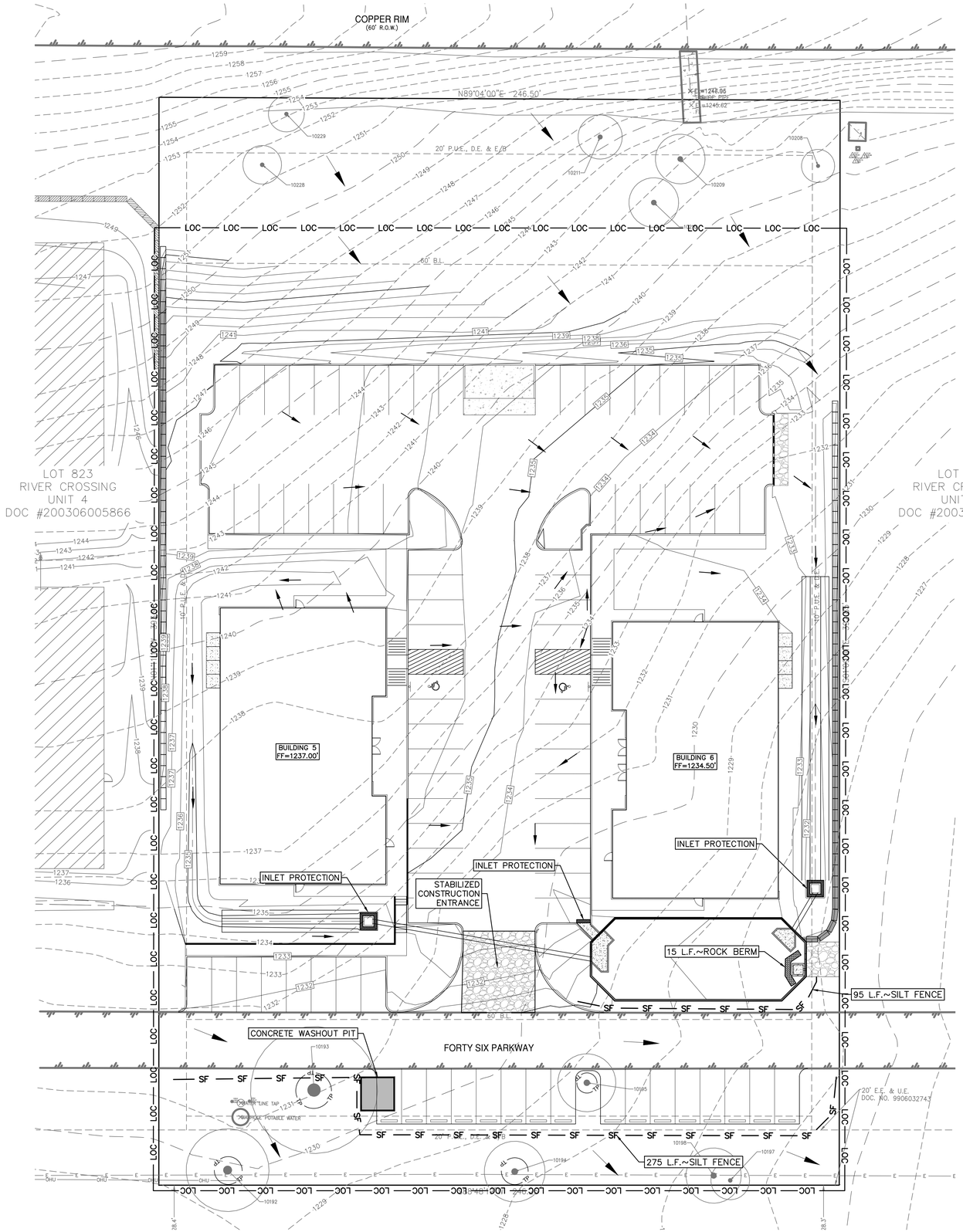
04/11/2023
Date

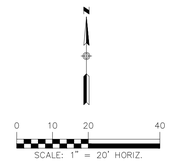


FIRM #2585

CONTRIBUTING ZONE PLAN
ATTACHMENT J
BMPs for Upgradient Stormwater

The upgradient stormwater for Forty Six Parkway flows to the parking lot at the back of the site which is then moved through the grassy swale and batch detention area. The offsite area is 6,828 square feet (0.157 acres) with 2,479 square feet (0.057 acres) of impervious cover.





LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- BUILDING SETBACK LINE
- UTILITY EASEMENT
- DRAINAGE EASEMENT
- DRAINAGE FLOW DIRECTION
- SILT FENCE
- LIMIT OF CONSTRUCTION
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION
- ROCK BERM

NOTES:

1. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENT) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

2. SILT FENCE AT PROPERTY LINE MAY BE SHOWN GRAPHICALLY OFFSET FROM PROPERTY LINE TO AVOID OVERLAP OF LINEWORK. CONTRACTOR SHALL NOT INSTALL EROSION CONTROL MEASURES BEYOND LIMITS OF CONSTRUCTION REGARDLESS OF GRAPHIC REPRESENTATION.

3. LOC SHOWN GRAPHICALLY TO REPRESENT BOUNDARY LIMITS. IT SHALL ALWAYS BE ASSUMED THE PROPERTY LINE WILL BE THE ULTIMATE LIMITS AND CONSTRUCTION SHALL NOT BE PERFORMED OUTSIDE OF PROPERTY LINE WITHOUT WRITTEN PERMISSION FROM THE OWNER/ENGINEER

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600

HMT
ENGINEERING & SURVEYING

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED
PROFESSIONAL ENGINEER

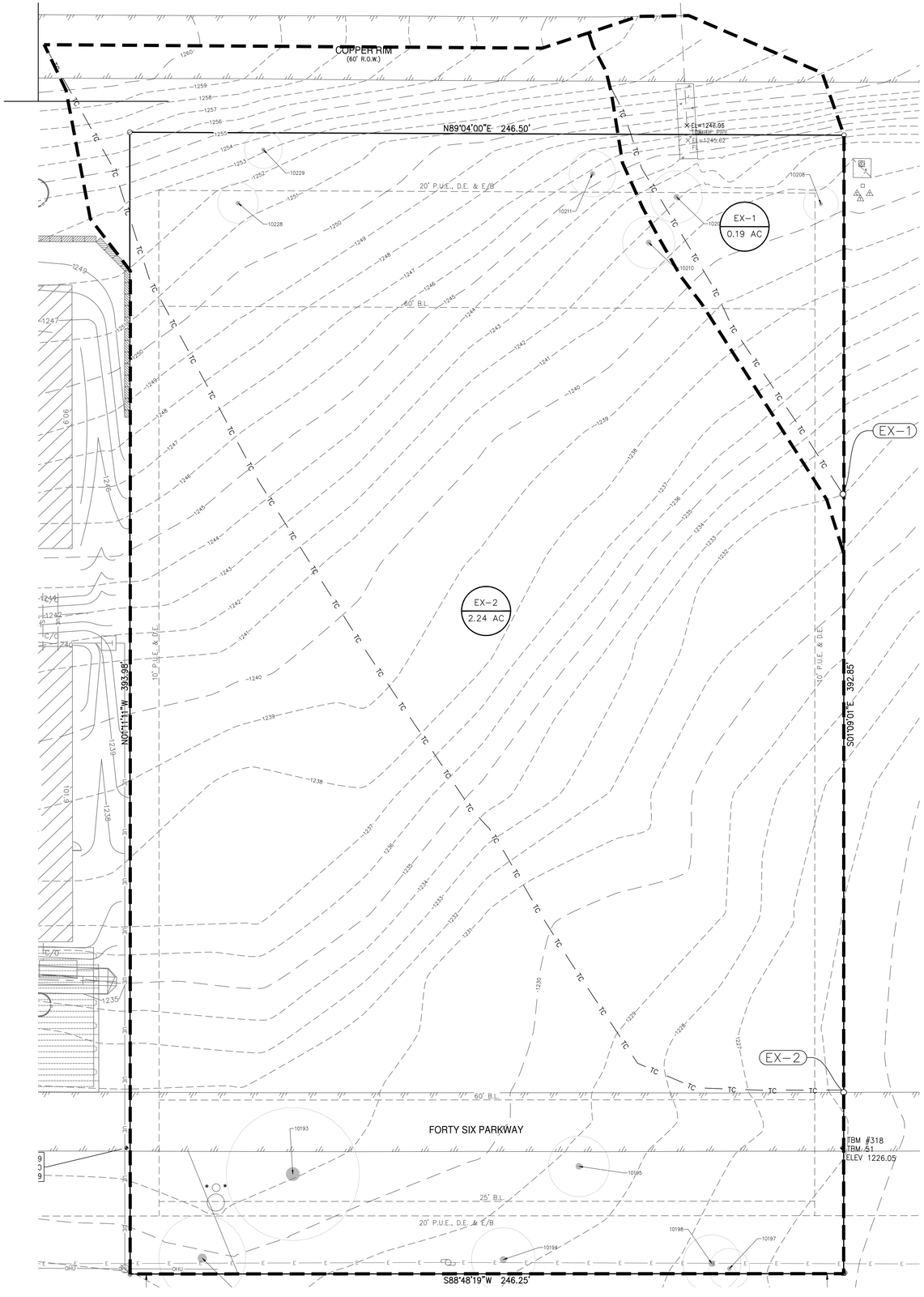
EROSION CONTROL PLAN

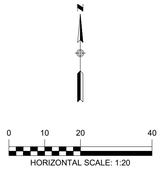
FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

DATE:	AUGUST 2023
DRAWN BY:	MP
DESIGNED BY:	ESP
REVIEWED BY:	ESP
HMT PROJECT NO.:	509.001

SHEET
C3.0





LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- B.L. BUILDING SETBACK LINE
- U.E. UTILITY EASEMENT
- D.E. DRAINAGE EASEMENT
- DRAINAGE AREA
- TC TC TIME OF CONCENTRATION
- A-1 POINT OF CONCENTRATION
- DRAINAGE FLOW DIRECTION
- DA / ACRES DRAINAGE AREA LABEL

Table 1 Existing Hydrology Calculations (Mod. Rational Method)

Point of Concentration	Area ID	Area (ac)	T_c (min)	C-Value	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
EX-1	EX-1	0.19	5	0.58	7.10	8.99	10.32	11.78	14.68	0.63	0.72	0.80	0.91	1.08
EX-2	EX-2	2.24	7	0.56	6.35	8.07	9.28	10.61	13.21	6.52	7.60	8.41	9.62	11.51
					Total Runoff (Routed through Hydrographs)					**6.90**	**8.03**	**8.89**	**10.16**	**12.16**

290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600
HMT ENGINEERING & SURVEYING

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED
PROFESSIONAL ENGINEER

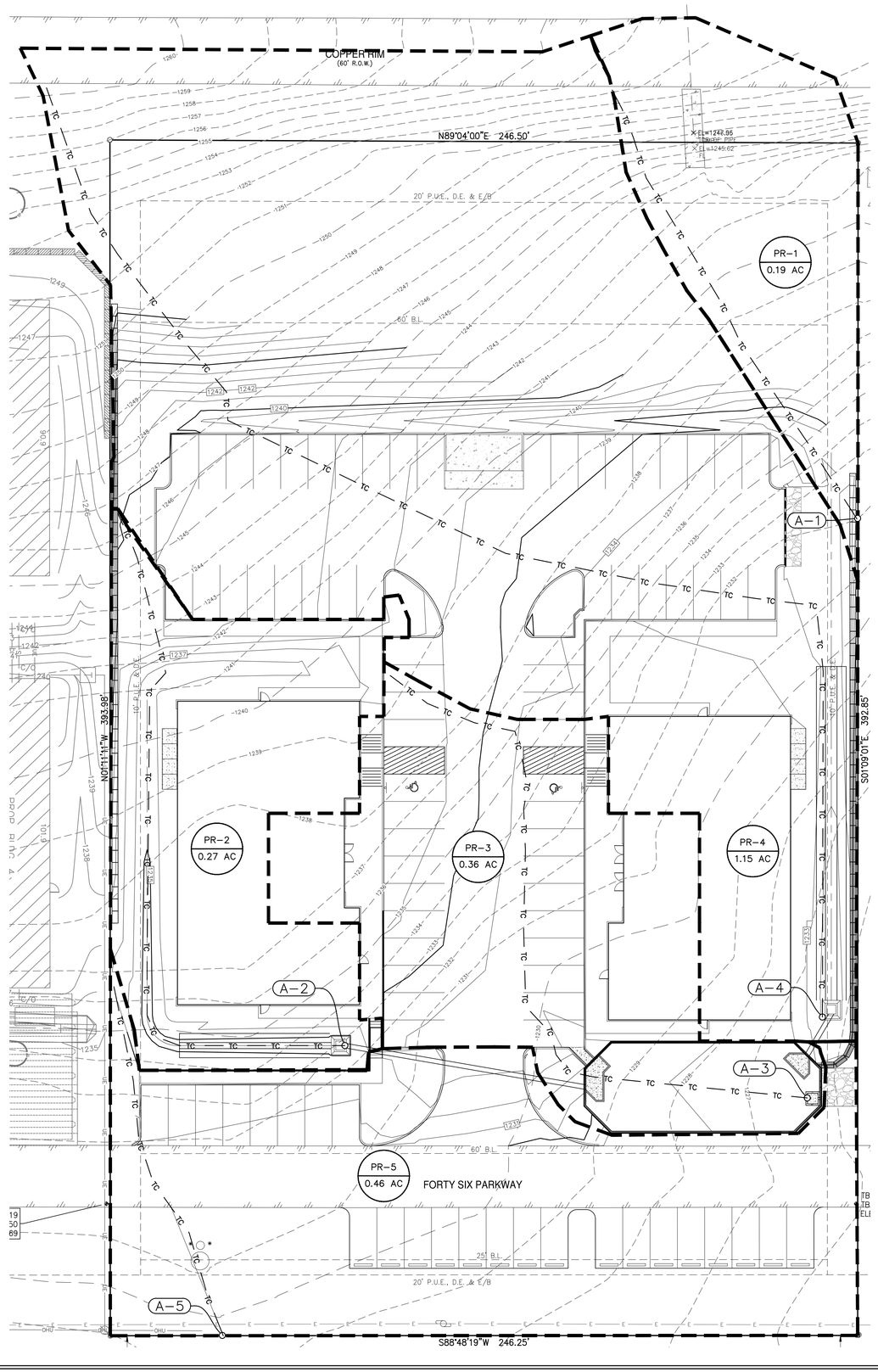
EXISTING DRAINAGE MAP

FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

DATE: AUGUST 2023
DRAWN BY: MP
DESIGNED BY: ESP
REVIEWED BY: ESP
HMT PROJECT NO.: 509.001

SHEET
C2.0



LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- B.L. BUILDING SETBACK LINE
- U.E. UTILITY EASEMENT
- D.E. DRAINAGE EASEMENT
- DRAINAGE AREA
- TC — TC TIME OF CONCENTRATION
- A–1 POINT OF CONCENTRATION
- DRAINAGE FLOW DIRECTION
- DA / ACRES DRAINAGE AREA LABEL

Table 2 Proposed Hydrology Calculations (Mod. Rational Method/Pre-Detention)

Point of Concentration	Area ID	Area (ac)	T_c (min)	C-Value	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
A-1	PR-1	0.19	5	0.58	7.10	8.99	10.32	11.78	14.68	0.63	0.72	0.80	0.91	1.08
A-2	PR-2	0.27	5	0.77	7.10	8.99	10.32	11.78	14.68	1.17	1.35	1.49	1.69	2.02
A-3	PR-3	0.36	5	0.89	7.10	8.99	10.32	11.78	14.68	1.80	2.08	2.29	2.61	3.12
A-4	PR-4	1.15	6	0.72	6.70	8.50	9.77	11.16	13.90	4.50	5.22	5.76	6.58	7.86
A-5	PR-5	0.46	5	0.76	7.10	8.99	10.32	11.78	14.68	1.94	2.24	2.46	2.81	3.35
					Total Runoff (Routed through Hydrographs)					**9.29**	**10.74**	**11.84**	**13.50**	**16.11**

Table 3 Proposed Hydrology Calculations (Mod. Rational Method/Post-Detention)

Point of Concentration	Area ID	Area (ac)	T_c (min)	C-Value	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
A-1	PR-1	0.19	5	0.58	7.10	8.99	10.32	11.78	14.68	0.63	0.72	0.80	0.91	1.08
A-5	PR-5	0.46	5	0.76	7.10	8.99	10.32	11.78	14.68	1.94	2.24	2.46	2.81	3.35
A-2-4	PR 2-4	-	-	-	-	-	-	-	-	3.25	3.90	4.40	5.18	6.49
					Total Runoff (Routed through Hydrographs)					**4.39**	**5.24**	**5.91**	**6.94**	**8.61**

Table 4 - Comparison Table

Point of Concentration	Area ID	Description	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
EX-1-5	EX 1-5	Pre-Development Flowrates	6.90	8.03	8.89	10.16	12.16
A-1-5	PR 1-5	Post-Development Post-Detention + Bypass Flowrates	4.39	5.24	5.91	6.94	8.61
Δ		Post-Development minus Pre-Development	-2.51	-2.79	-2.98	-3.22	-3.55
Δ (%)			63.62%	65.26%	66.48%	68.31%	70.81%

HMT
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290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED
PROFESSIONAL ENGINEER

PROPOSED DRAINAGE MAP

FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

DATE: AUGUST 2023
DRAWN BY: MP
DESIGNED BY: ESP
REVIEWED BY: ESP
HMT PROJECT NO.: 509.001

SHEET
C2.1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

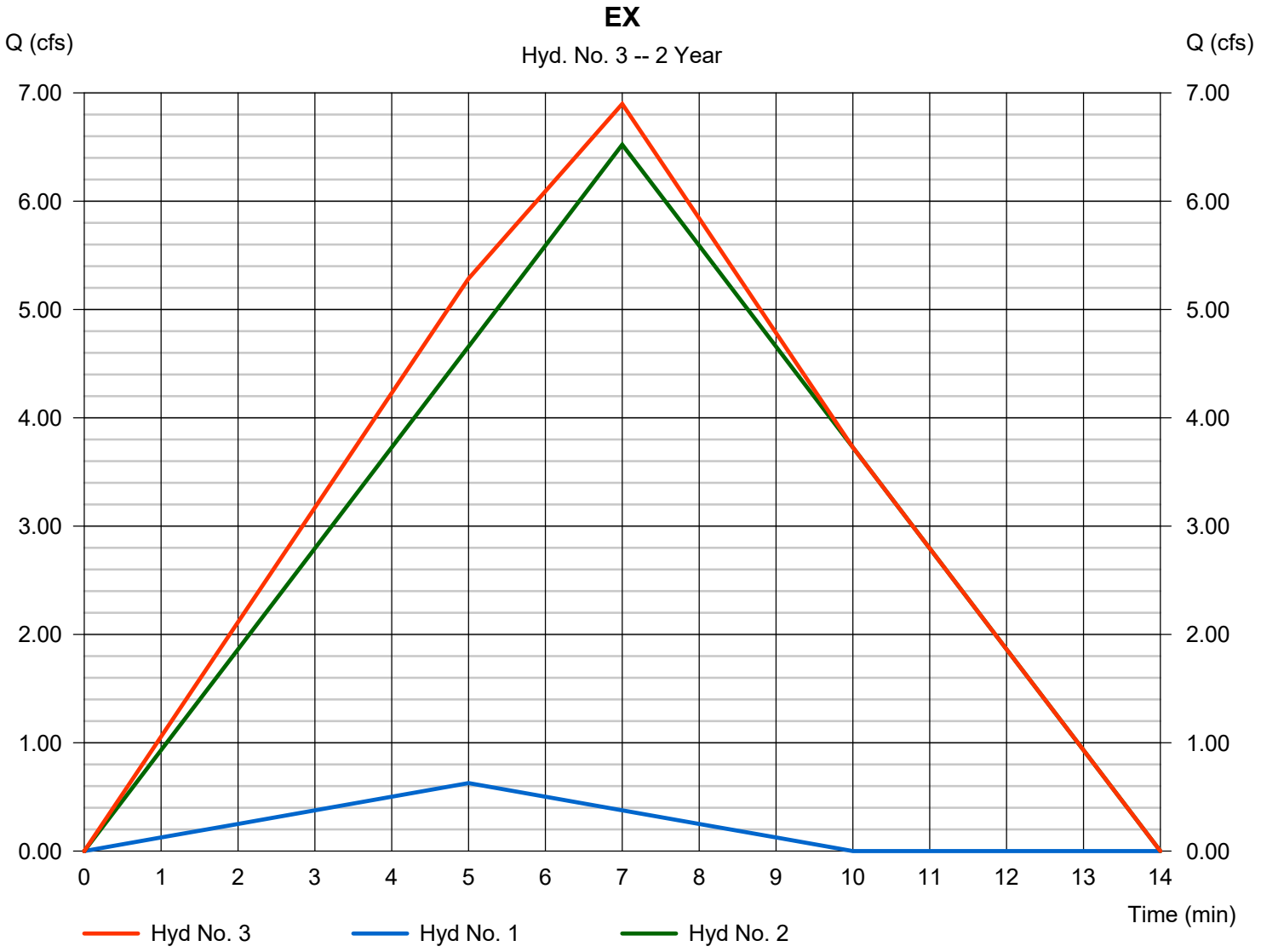
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.627	1	5	188	------	------	------	EX-1
2	Mod. Rational	6.522	1	7	2,739	------	------	------	EX-2
3	Combine	6.898	1	7	2,927	1, 2	------	------	EX
5	Mod. Rational	0.627	1	5	188	------	------	------	PR-1
6	Mod. Rational	1.168	1	5	350	------	------	------	PR-2
7	Mod. Rational	1.804	1	5	541	------	------	------	PR-3
8	Mod. Rational	4.499	1	6	1,620	------	------	------	PR-4
9	Mod. Rational	1.938	1	5	581	------	------	------	PR-5
10	Combine	6.877	1	6	2,511	6, 7, 8,	------	------	PR to Pond
11	Reservoir	3.248	1	9	2,506	10	1228.99	1,544	Pond
12	Combine	4.388	1	7	3,275	5, 9, 11	------	------	Pond + Bypass
14	Combine	9.287	1	5	3,281	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 3

EX

Hydrograph type	=	Combine	Peak discharge	=	6.898 cfs
Storm frequency	=	2 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	2,927 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	2.430 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

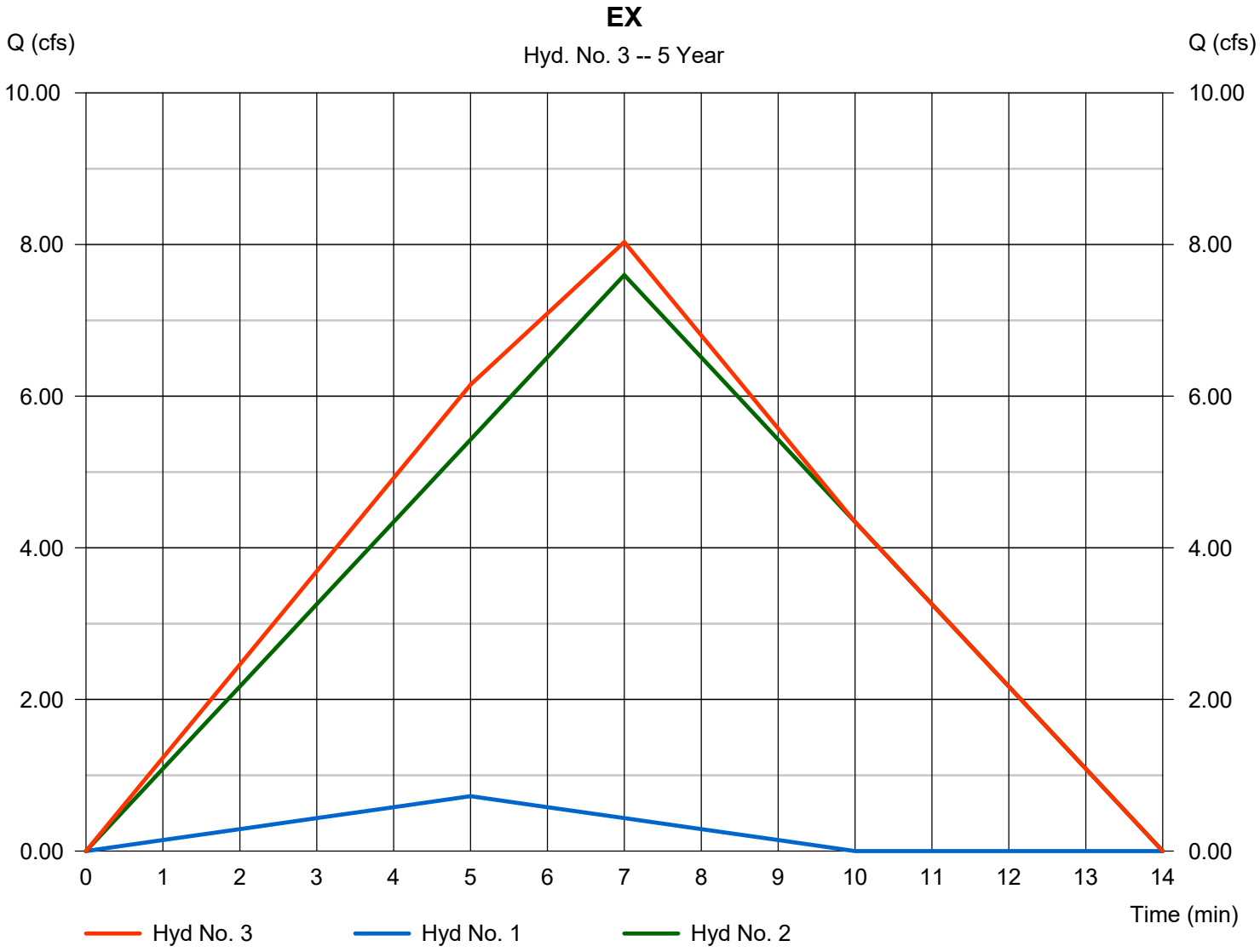
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.724	1	5	217	------	------	------	EX-1
2	Mod. Rational	7.598	1	7	3,191	------	------	------	EX-2
3	Combine	8.032	1	7	3,408	1, 2	------	------	EX
5	Mod. Rational	0.724	1	5	217	------	------	------	PR-1
6	Mod. Rational	1.348	1	5	404	------	------	------	PR-2
7	Mod. Rational	2.081	1	5	624	------	------	------	PR-3
8	Mod. Rational	5.218	1	6	1,878	------	------	------	PR-4
9	Mod. Rational	2.236	1	5	671	------	------	------	PR-5
10	Combine	7.962	1	6	2,907	6, 7, 8,	------	------	PR to Pond
11	Reservoir	3.899	1	9	2,902	10	1229.09	1,741	Pond
12	Combine	5.243	1	7	3,790	5, 9, 11	------	------	Pond + Bypass
14	Combine	10.74	1	5	3,795	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 3

EX

Hydrograph type	= Combine	Peak discharge	= 8.032 cfs
Storm frequency	= 5 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 3,408 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.430 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

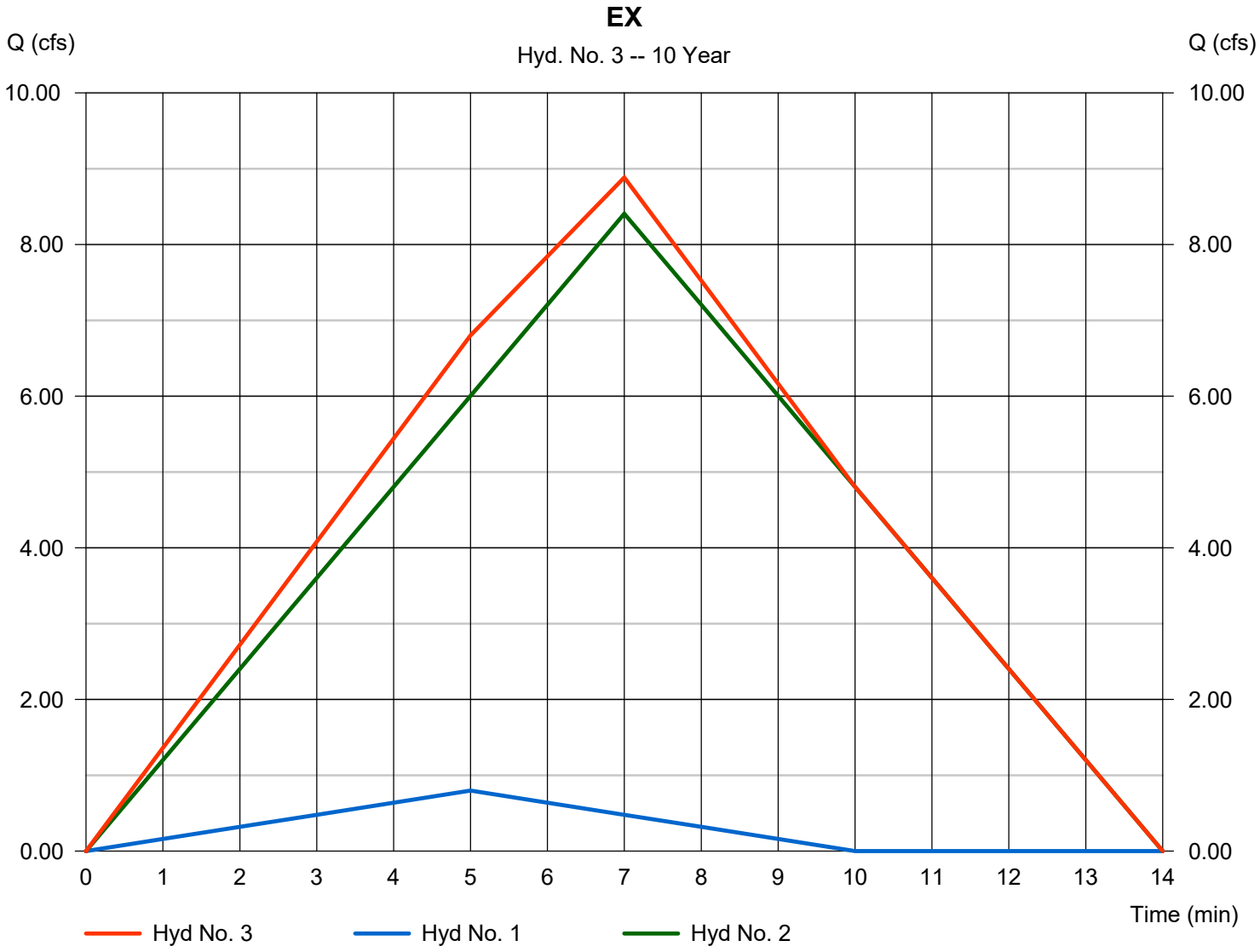
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.798	1	5	239	------	------	------	EX-1
2	Mod. Rational	8.406	1	7	3,531	------	------	------	EX-2
3	Combine	8.885	1	7	3,770	1, 2	------	------	EX
5	Mod. Rational	0.798	1	5	239	------	------	------	PR-1
6	Mod. Rational	1.485	1	5	446	------	------	------	PR-2
7	Mod. Rational	2.293	1	5	688	------	------	------	PR-3
8	Mod. Rational	5.761	1	6	2,074	------	------	------	PR-4
9	Mod. Rational	2.464	1	5	739	------	------	------	PR-5
10	Combine	8.784	1	6	3,208	6, 7, 8,	------	------	PR to Pond
11	Reservoir	4.402	1	9	3,202	10	1229.15	1,886	Pond
12	Combine	5.910	1	7	4,181	5, 9, 11	------	------	Pond + Bypass
14	Combine	11.84	1	5	4,186	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 3

EX

Hydrograph type	= Combine	Peak discharge	= 8.885 cfs
Storm frequency	= 10 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 3,770 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.430 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

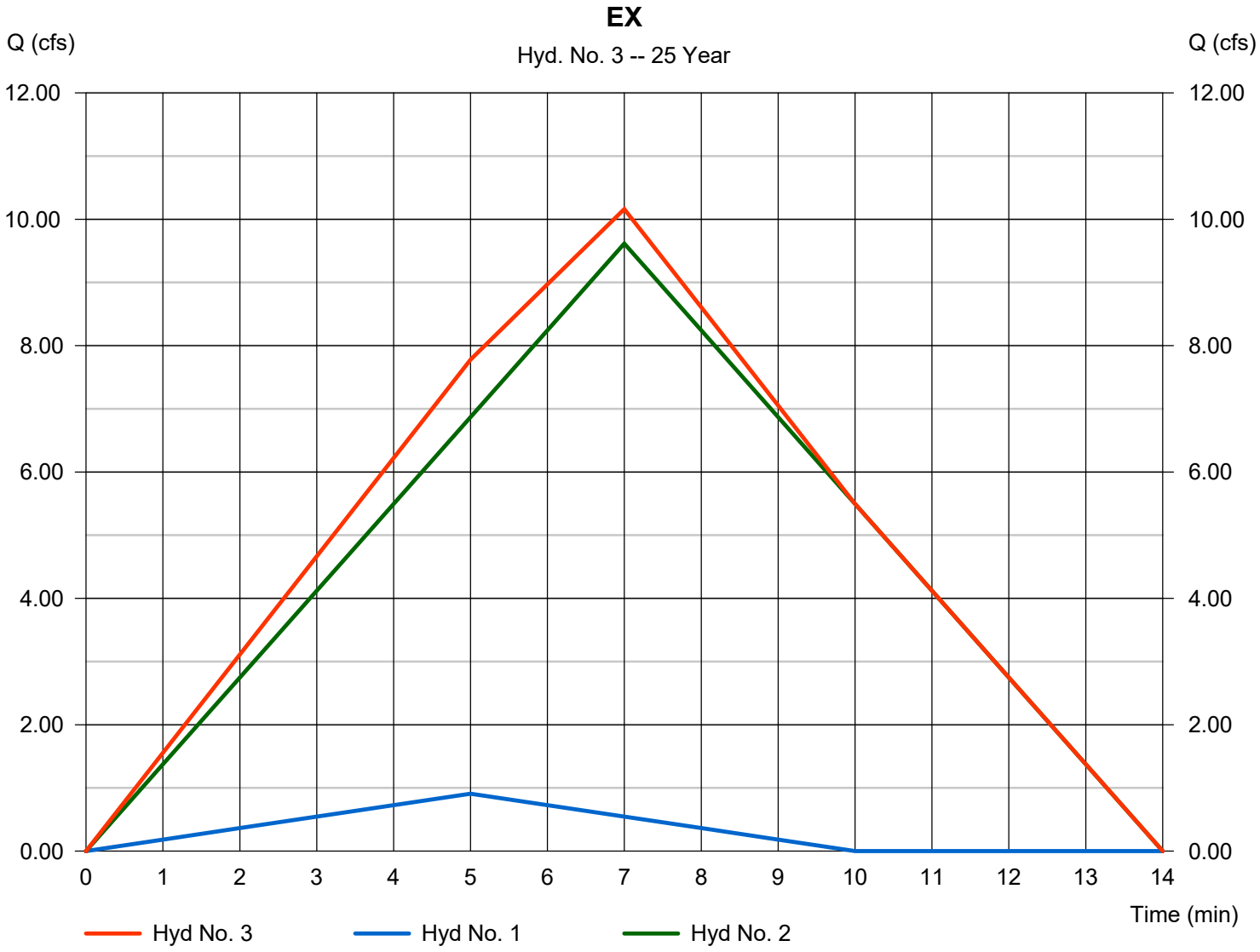
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.909	1	5	273	------	------	------	EX-1
2	Mod. Rational	9.616	1	7	4,039	------	------	------	EX-2
3	Combine	10.16	1	7	4,311	1, 2	------	------	EX
5	Mod. Rational	0.909	1	5	273	------	------	------	PR-1
6	Mod. Rational	1.692	1	5	508	------	------	------	PR-2
7	Mod. Rational	2.613	1	5	784	------	------	------	PR-3
8	Mod. Rational	6.578	1	6	2,368	------	------	------	PR-4
9	Mod. Rational	2.807	1	5	842	------	------	------	PR-5
10	Combine	10.02	1	6	3,660	6, 7, 8,	------	------	PR to Pond
11	Reservoir	5.184	1	8	3,654	10	1229.26	2,101	Pond
12	Combine	6.941	1	7	4,769	5, 9, 11	------	------	Pond + Bypass
14	Combine	13.50	1	5	4,775	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 3

EX

Hydrograph type	=	Combine	Peak discharge	=	10.16 cfs
Storm frequency	=	25 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	4,311 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	2.430 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

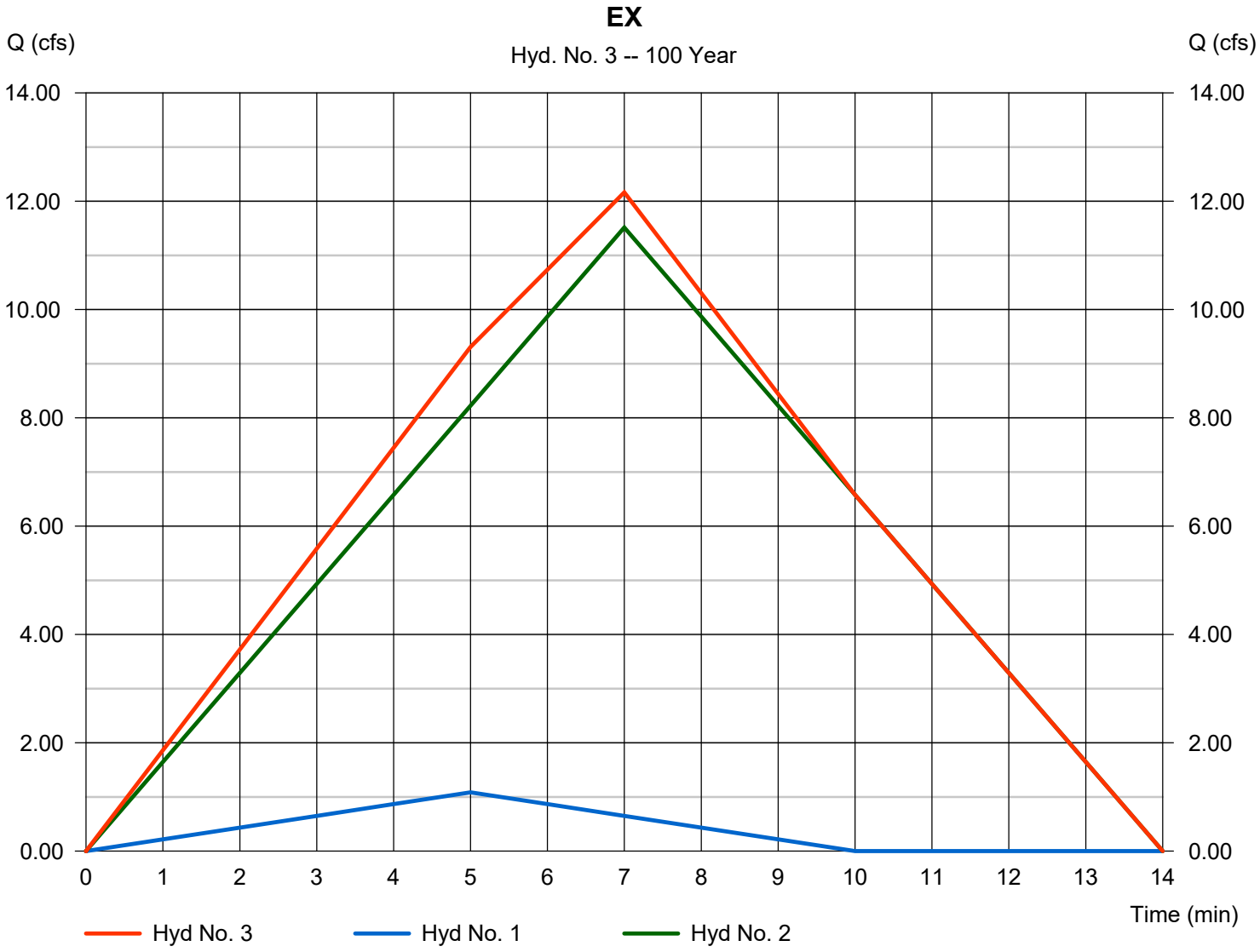
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	1.084	1	5	325	------	------	------	EX-1
2	Mod. Rational	11.51	1	7	4,836	------	------	------	EX-2
3	Combine	12.16	1	7	5,161	1, 2	------	------	EX
5	Mod. Rational	1.084	1	5	325	------	------	------	PR-1
6	Mod. Rational	2.018	1	5	605	------	------	------	PR-2
7	Mod. Rational	3.115	1	5	935	------	------	------	PR-3
8	Mod. Rational	7.860	1	6	2,830	------	------	------	PR-4
9	Mod. Rational	3.347	1	5	1,004	------	------	------	PR-5
10	Combine	11.97	1	6	4,370	6, 7, 8,	------	------	PR to Pond
11	Reservoir	6.486	1	8	4,364	10	1229.42	2,435	Pond
12	Combine	8.608	1	7	5,693	5, 9, 11	------	------	Pond + Bypass
14	Combine	16.11	1	5	5,699	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 3

EX

Hydrograph type	=	Combine	Peak discharge	=	12.16 cfs
Storm frequency	=	100 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	5,161 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	2.430 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

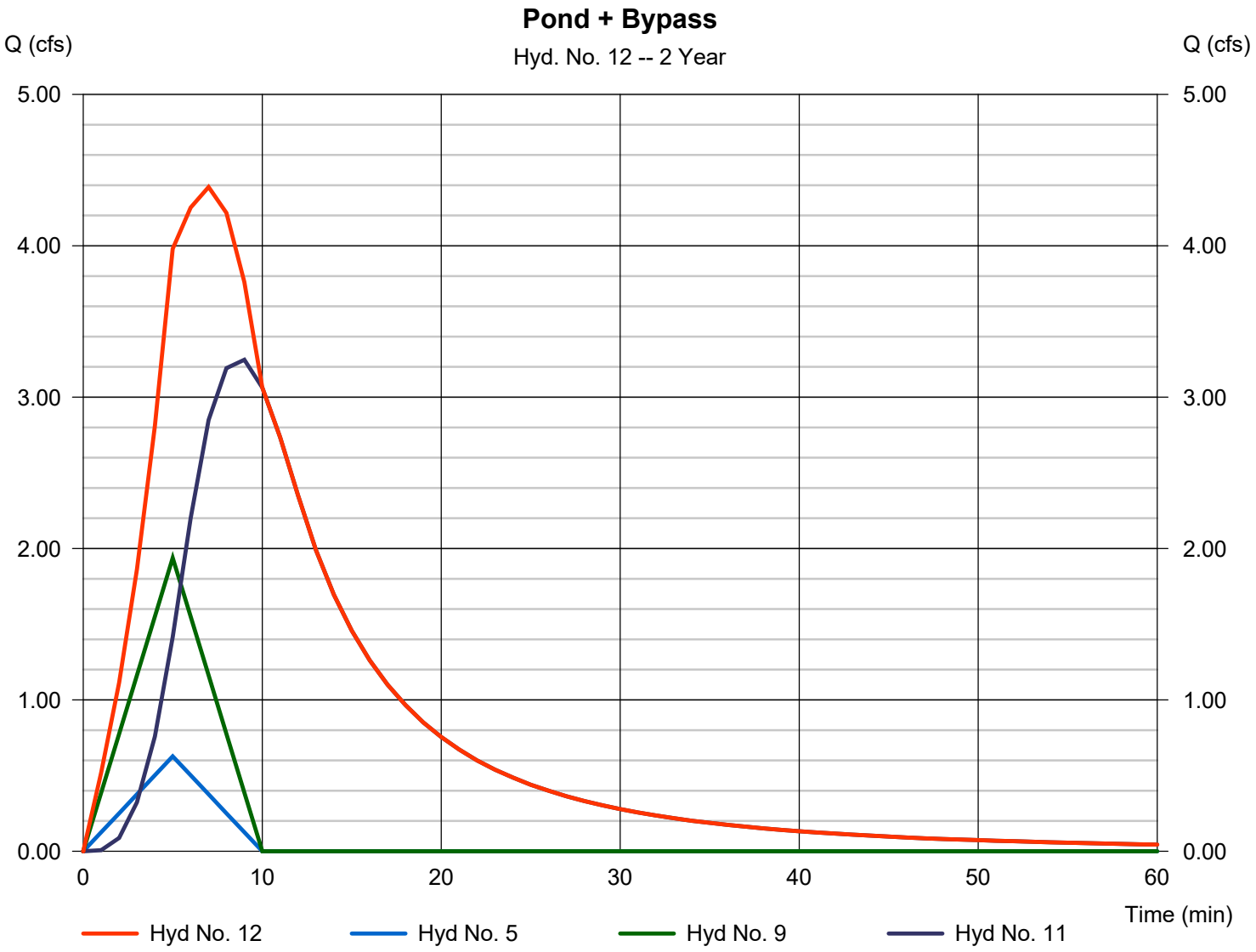
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.627	1	5	188	------	------	------	EX-1
2	Mod. Rational	6.522	1	7	2,739	------	------	------	EX-2
3	Combine	6.898	1	7	2,927	1, 2	------	------	EX
5	Mod. Rational	0.627	1	5	188	------	------	------	PR-1
6	Mod. Rational	1.168	1	5	350	------	------	------	PR-2
7	Mod. Rational	1.804	1	5	541	------	------	------	PR-3
8	Mod. Rational	4.499	1	6	1,620	------	------	------	PR-4
9	Mod. Rational	1.938	1	5	581	------	------	------	PR-5
10	Combine	6.877	1	6	2,511	6, 7, 8,	------	------	PR to Pond
11	Reservoir	3.248	1	9	2,506	10	1228.99	1,544	Pond
12	Combine	4.388	1	7	3,275	5, 9, 11	------	------	Pond + Bypass
14	Combine	9.287	1	5	3,281	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 12

Pond + Bypass

Hydrograph type	= Combine	Peak discharge	= 4.388 cfs
Storm frequency	= 2 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 3,275 cuft
Inflow hyds.	= 5, 9, 11	Contrib. drain. area	= 0.650 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

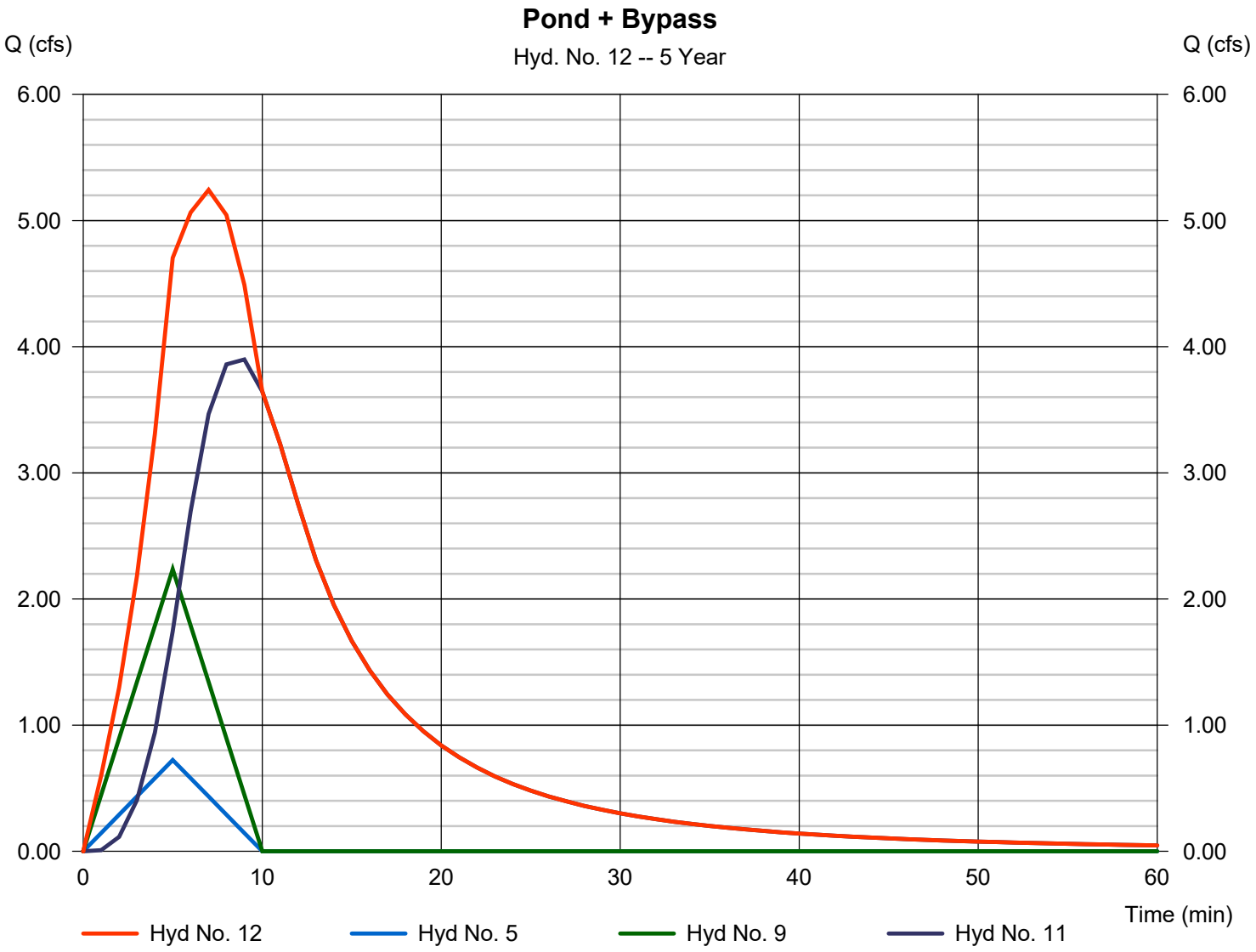
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.724	1	5	217	------	------	------	EX-1
2	Mod. Rational	7.598	1	7	3,191	------	------	------	EX-2
3	Combine	8.032	1	7	3,408	1, 2	------	------	EX
5	Mod. Rational	0.724	1	5	217	------	------	------	PR-1
6	Mod. Rational	1.348	1	5	404	------	------	------	PR-2
7	Mod. Rational	2.081	1	5	624	------	------	------	PR-3
8	Mod. Rational	5.218	1	6	1,878	------	------	------	PR-4
9	Mod. Rational	2.236	1	5	671	------	------	------	PR-5
10	Combine	7.962	1	6	2,907	6, 7, 8,	------	------	PR to Pond
11	Reservoir	3.899	1	9	2,902	10	1229.09	1,741	Pond
12	Combine	5.243	1	7	3,790	5, 9, 11	------	------	Pond + Bypass
14	Combine	10.74	1	5	3,795	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 12

Pond + Bypass

Hydrograph type	= Combine	Peak discharge	= 5.243 cfs
Storm frequency	= 5 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 3,790 cuft
Inflow hyds.	= 5, 9, 11	Contrib. drain. area	= 0.650 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

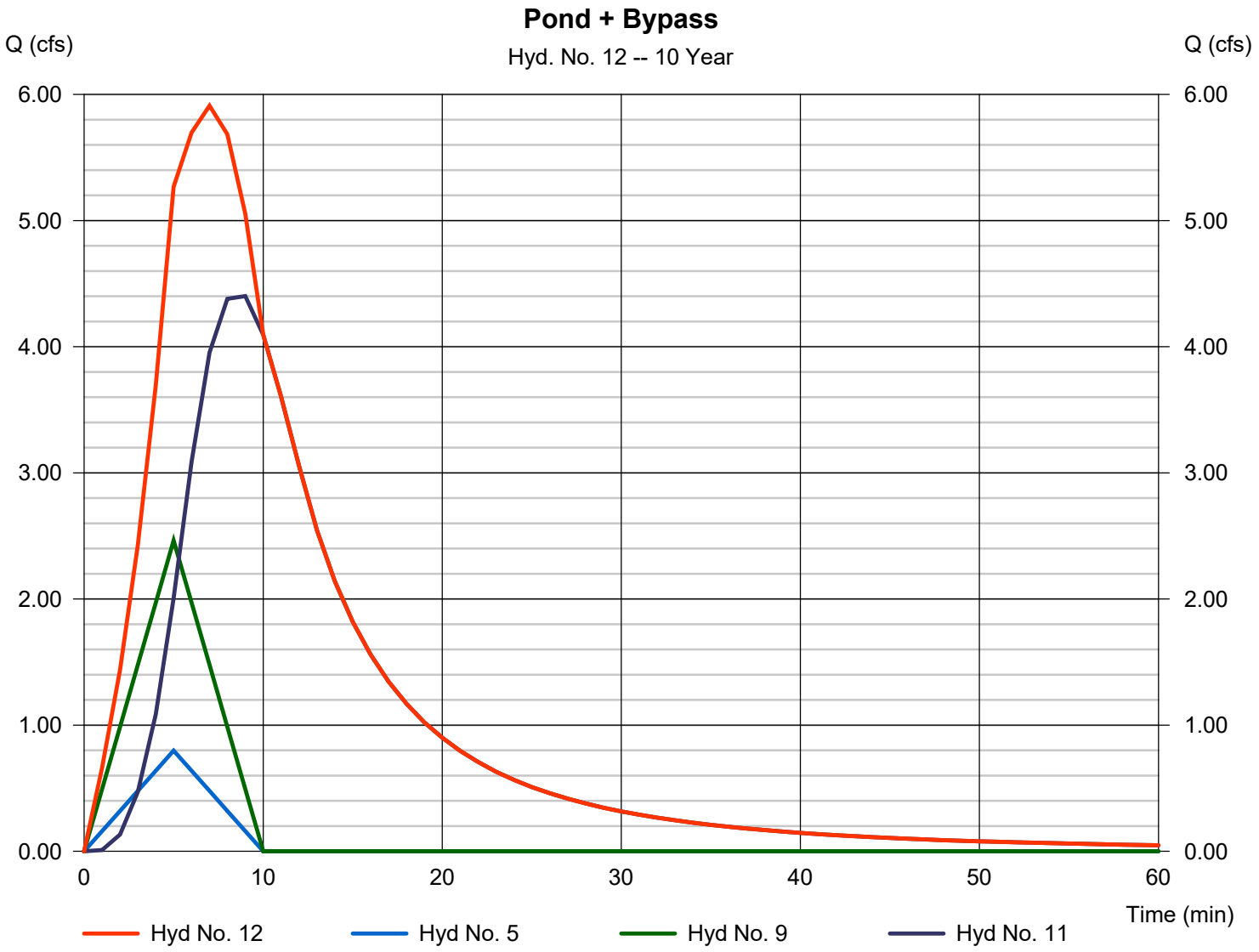
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.798	1	5	239	------	------	------	EX-1
2	Mod. Rational	8.406	1	7	3,531	------	------	------	EX-2
3	Combine	8.885	1	7	3,770	1, 2	------	------	EX
5	Mod. Rational	0.798	1	5	239	------	------	------	PR-1
6	Mod. Rational	1.485	1	5	446	------	------	------	PR-2
7	Mod. Rational	2.293	1	5	688	------	------	------	PR-3
8	Mod. Rational	5.761	1	6	2,074	------	------	------	PR-4
9	Mod. Rational	2.464	1	5	739	------	------	------	PR-5
10	Combine	8.784	1	6	3,208	6, 7, 8,	------	------	PR to Pond
11	Reservoir	4.402	1	9	3,202	10	1229.15	1,886	Pond
12	Combine	5.910	1	7	4,181	5, 9, 11	------	------	Pond + Bypass
14	Combine	11.84	1	5	4,186	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 12

Pond + Bypass

Hydrograph type	= Combine	Peak discharge	= 5.910 cfs
Storm frequency	= 10 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 4,181 cuft
Inflow hyds.	= 5, 9, 11	Contrib. drain. area	= 0.650 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

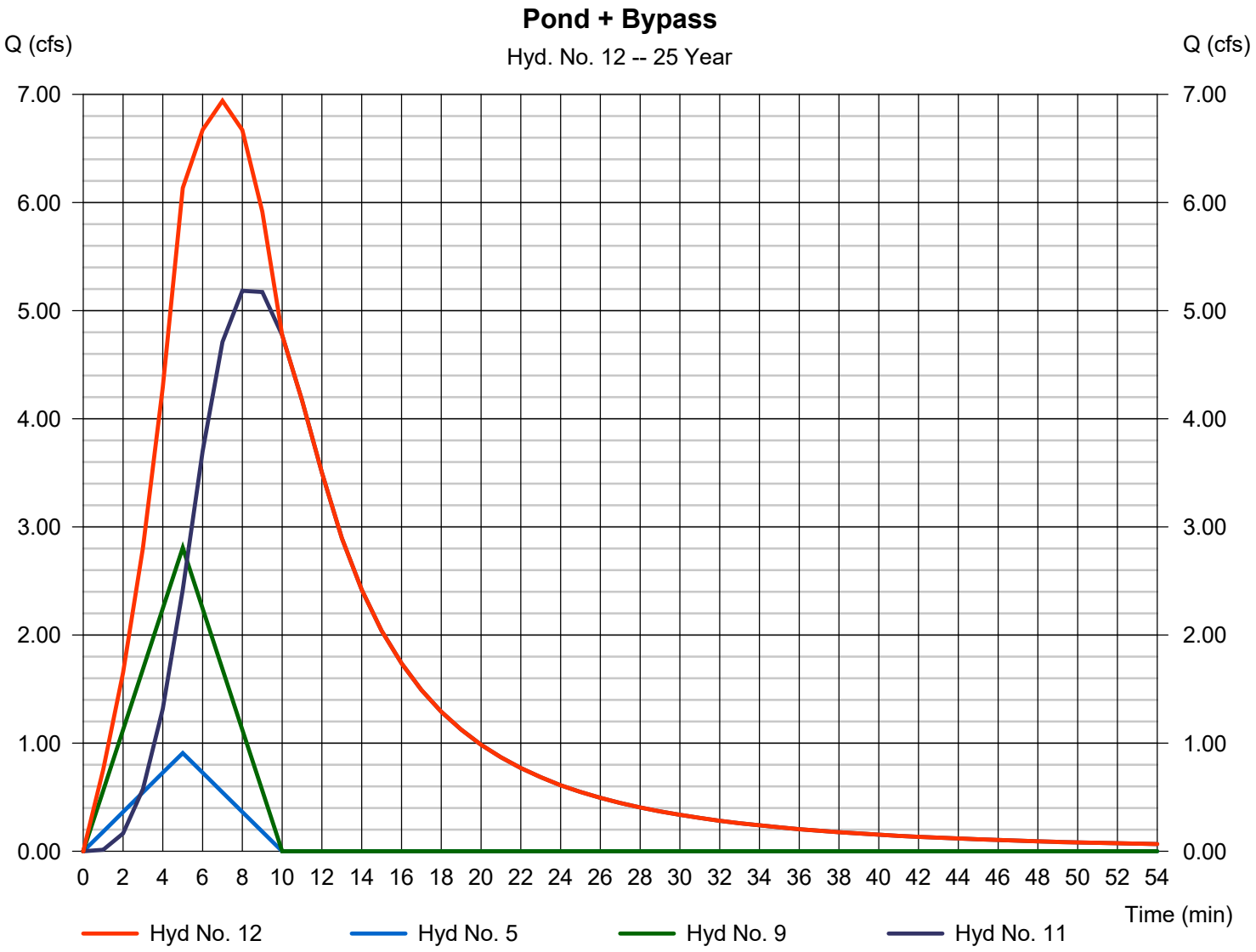
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	0.909	1	5	273	------	------	------	EX-1
2	Mod. Rational	9.616	1	7	4,039	------	------	------	EX-2
3	Combine	10.16	1	7	4,311	1, 2	------	------	EX
5	Mod. Rational	0.909	1	5	273	------	------	------	PR-1
6	Mod. Rational	1.692	1	5	508	------	------	------	PR-2
7	Mod. Rational	2.613	1	5	784	------	------	------	PR-3
8	Mod. Rational	6.578	1	6	2,368	------	------	------	PR-4
9	Mod. Rational	2.807	1	5	842	------	------	------	PR-5
10	Combine	10.02	1	6	3,660	6, 7, 8,	------	------	PR to Pond
11	Reservoir	5.184	1	8	3,654	10	1229.26	2,101	Pond
12	Combine	6.941	1	7	4,769	5, 9, 11	------	------	Pond + Bypass
14	Combine	13.50	1	5	4,775	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 12

Pond + Bypass

Hydrograph type	=	Combine	Peak discharge	=	6.941 cfs
Storm frequency	=	25 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	4,769 cuft
Inflow hyds.	=	5, 9, 11	Contrib. drain. area	=	0.650 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

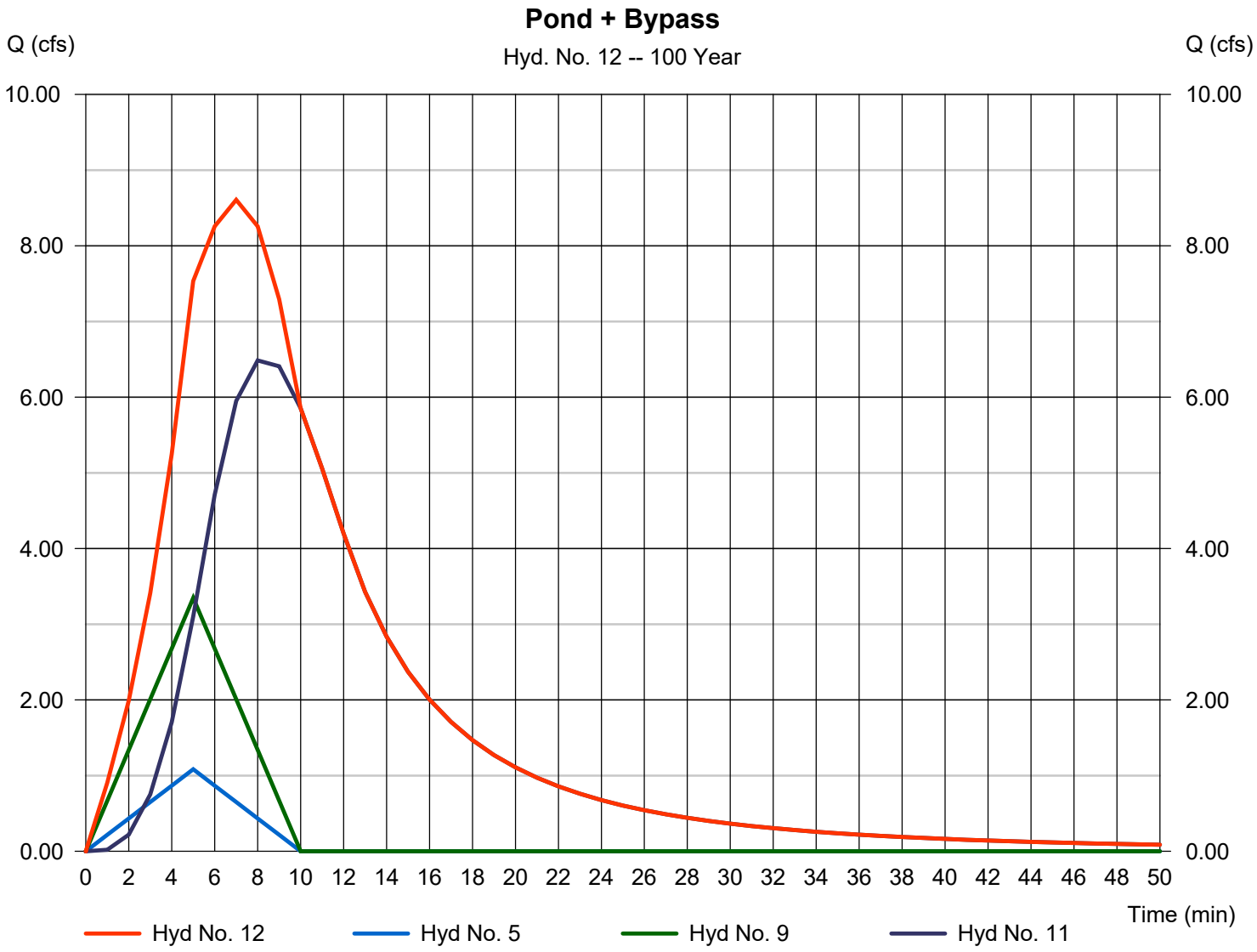
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Mod. Rational	1.084	1	5	325	------	------	------	EX-1
2	Mod. Rational	11.51	1	7	4,836	------	------	------	EX-2
3	Combine	12.16	1	7	5,161	1, 2	------	------	EX
5	Mod. Rational	1.084	1	5	325	------	------	------	PR-1
6	Mod. Rational	2.018	1	5	605	------	------	------	PR-2
7	Mod. Rational	3.115	1	5	935	------	------	------	PR-3
8	Mod. Rational	7.860	1	6	2,830	------	------	------	PR-4
9	Mod. Rational	3.347	1	5	1,004	------	------	------	PR-5
10	Combine	11.97	1	6	4,370	6, 7, 8,	------	------	PR to Pond
11	Reservoir	6.486	1	8	4,364	10	1229.42	2,435	Pond
12	Combine	8.608	1	7	5,693	5, 9, 11	------	------	Pond + Bypass
14	Combine	16.11	1	5	5,699	5, 6, 7, 8, 9,	------	------	PR Pre Detention

Hydrograph Report

Hyd. No. 12

Pond + Bypass

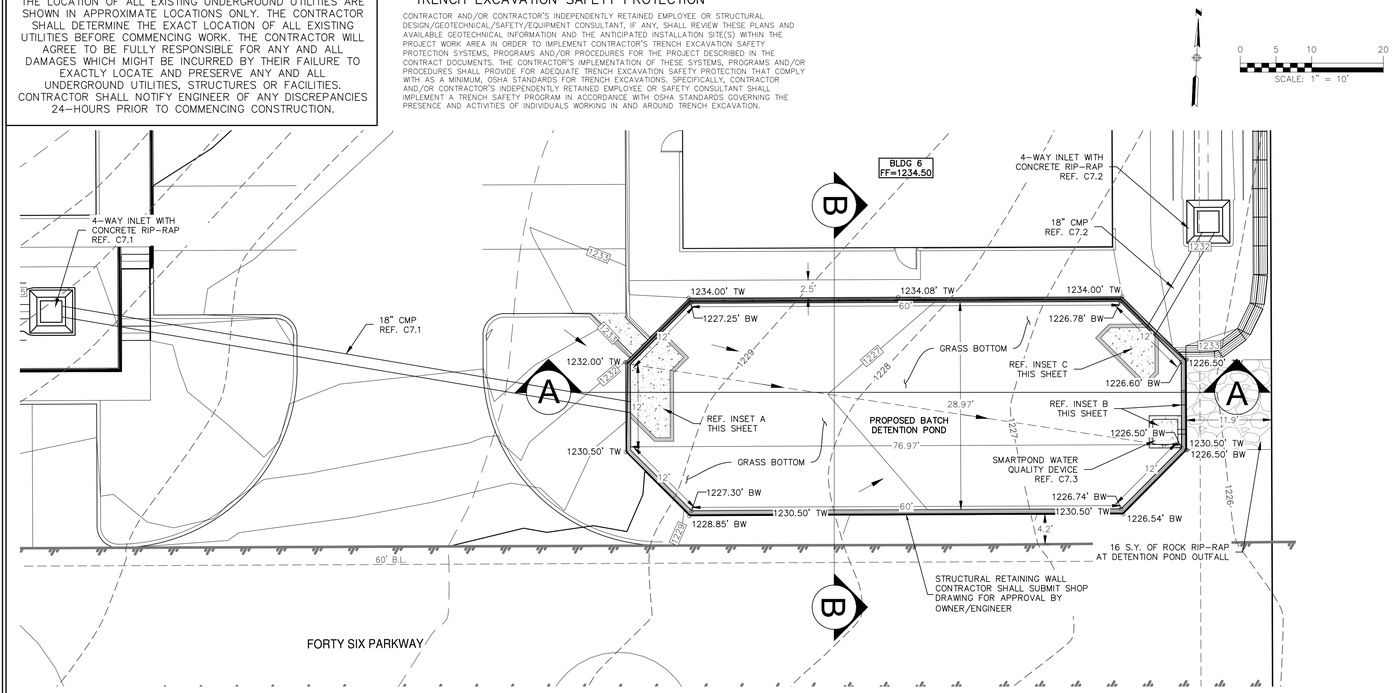
Hydrograph type	= Combine	Peak discharge	= 8.608 cfs
Storm frequency	= 100 yrs	Time to peak	= 7 min
Time interval	= 1 min	Hyd. volume	= 5,693 cuft
Inflow hyds.	= 5, 9, 11	Contrib. drain. area	= 0.650 ac

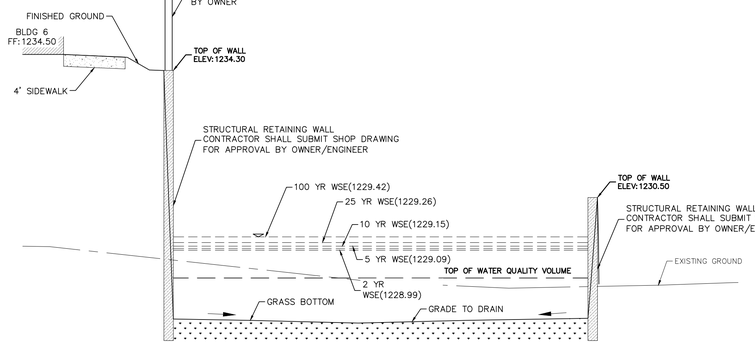


THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24–HOURS PRIOR TO COMMENCING CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.





SECTION B–B
N.T.S.

STORM EVENT	Q(CFS)	WSEL	VOLUME
2–YR	3.25	1228.99	1,544
5–YR	3.90	1229.08	1,741
10–YR	4.40	1229.16	1,886
25–YR	5.18	1229.26	2,101
100–YR	6.49	1229.42	2,435

POND STAGE STORAGE			
ELEVATION	STAGE(FT)	AREA(S.F.)	STORAGE(C.F.)
1226.5	-	-	-
1227.0	0.5	1154	198
1227.5	1	2085	996
1228.0	1.5	2085	2039
1228.5	2	2085	3081
1229.0	2.5	2085	4124
1229.5	3	2085	5166
1230.0	3.5	2085	6208
1230.5	4	2085	7251

WATER QUALITY VOLUME
REQUIRED: 2,325 C.F.
PROVIDED: 2,500 C.F.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TSS REMOVAL CALCULATIONS
CALCULATIONS FROM RG–348

1. REQUIRED LOAD REDUCTION FROM THE TOTAL PROJECT:

PAGE 3–29 EQUATION 3.3: $L_M = 27.2\ (A_N \times P)$

L_M = REQUIRED TSS REMOVAL
A_N = NET INCREASE IN IMPERVIOUS AREA FOR PROJECT
P = AVERAGE ANNUAL PRECIPITATION, INCHES

SITE DATA: DETERMINE REQUIRED LOAD REMOVAL BASED ON THE ENTIRE PROJECT

COUNTY = COMAL
TOTAL PROJECT ARE INCLUDED IN PLAN = 2.22 ACRES
PREDEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 0.00 ACRES
TOTAL POST–DEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 1.13 ACRES
TOTAL POST–DEVELOPMENT IMPERVIOUS COVER FRACTION = 0.51
P = 33 INCHES
TOTAL L_M REQUIRED FOR THIS PLAN = 1,014 lbs

2. DRAINAGE BASIN PARAMETERS (PROVIDED FOR EACH BASIN)

DRAINAGE BASIN/OUTFALL AREA NO. = 3

TOTAL DRAINAGE BASIN / OUTFALL AREA = 1.83 ACRES
PREDEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.00 ACRES
POST–DEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.93 ACRES
POST–DEVELOPMENT IMPERVIOUS FRACTION WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.51
L_M = 835 lbs

3. INDICATE THE PROPOSED BMP CODE FOR THIS BASIN

PROPOSED BMP = BATCH DETENTION BASIN
REMOVAL EFFICIENCY = 91 PERCENT

4. CALCULATE MAXIMUM TSS LOAD REMOVED (L_R) FOR THIS DRAINAGE BASIN BY THE SELECTED BMP TYPE:

RG 348 PAGE 3–33 EQUATION 3.7: L_R = (BMP EFFICIENCY) x P x (A_I x 34.6 + A_P x 0.54)

A_C = TOTAL ON–SITE DRAINAGE AREA IN THE BMP CATCHMENT AREA
A_I = IMPERVIOUS AREA PROPOSED IN THE BMP CATCHMENT
A_P = PERVIOUS AREA REMAINING IN THE BMP CATCHMENT
L_R = TSS LOAD REMOVED BY THE PROPOSED BMP

BATCH DETENTION

A_C = 1.67 ACRES
A_I = 0.87 ACRES
A_P = 0.80 ACRES
L_R = 917 lbs

5. CALCULATE FRACTION OF ANNUAL RUNOFF TO TREAT THE DRAINAGE BASIN / OUTFALL AREA

BATCH DETENTION

DESIRED $L_{M\ THIS\ BASIN}$ = 655 lbs
F = 0.71

6. CALCULATE CAPTURE VOLUME REQUIRED BY THE BMP TYPE FOR THIS DRAINAGE BASIN / OUTFALL AREA.

BATCH DETENTION

RAINFALL DEPTH = 0.80 INCHES
POST–DEVELOPMENT RUNOFF COEFFICIENT = 0.37
ON–SITE WATER QUALITY VOLUME = 1800 CUBIC FEET

OFF–SITE AREA DRAINING TO BMP = 0.16 ACRES
OFF–SITE IMPERVIOUS COVER DRAINING TO BMP = 0.06 ACRES
IMPERVIOUS FRACTION OF OFF–SITE AREA = 0.38
OFF–SITE RUNOFF COEFFICIENT = 0.29
OFF–SITE WATER QUALITY VOLUME = 138 CUBIC FEET
STORAGE FOR SEDIMENT = 388

TOTAL CAPTURE VOLUME = 2,325 CUBIC FEET

22. BATCH DETENTION BASIN

REQUIRED WATER QUALITY VOLUME FOR BATCH DETENTION BASIN = 2,325 CUBIC FEET

MAINTENANCE NOTES:
BATCH DETENTION BASINS MAY HAVE SOMEWHAT HIGHER MAINTENANCE REQUIREMENTS THAN AN EXTENDED DETENTION BASIN SINCE THEY ARE ACTIVE STORMWATER CONTROLS. THE MAINTENANCE ACTIVITIES ARE IDENTICAL TO THOSE OF EXTENDED DETENTION BASINS WITH THE ADDITION OF MAINTENANCE AND INSPECTIONS OF THE AUTOMATIC CONTROLLER AND THE VALVE AT THE OUTLET.

INSPECTIONS: INSPECTIONS SHOULD TAKE PLACE A MINIMUM OF TWICE A YEAR. ONE INSPECTION SHOULD TAKE PLACE DURING WET WEATHER TO DETERMINE IF THE BASIN IS MEETING THE TARGET DETENTION TIME OF 12 HOURS AND A DRAWDOWN TIME OF NO MORE THAN 48 HOURS. THE REMAINING INSPECTIONS SHOULD OCCUR BETWEEN STORM EVENTS SO THAT MANUAL OPERATION OF THE VALVE AND CONTROLLER CAN BE VERIFIED. THE LEVEL SENSOR IN THE BASIN SHOULD BE INSPECTED AND ANY DEBRIS OR SEDIMENT IN THE AREA SHOULD BE REMOVED. THE OUTLET STRUCTURE AND THE TRASH SCREEN SHOULD BE INSPECTED FOR SIGNS OF CLOGGING. DEBRIS AND SEDIMENT SHOULD BE REMOVED FROM THE ORIFICE AND OUTLET(S) AS DESCRIBED IN PREVIOUS SECTIONS. DEBRIS OBSTRUCTING THE VALVE SHOULD BE REMOVED. DURING EACH INSPECTION, EROSION AREAS INSIDE AND DOWNSTREAM OF THIS BMP SHOULD BE IDENTIFIED AND REPAIRED/REVEGETATED IMMEDIATELY.

MOWING THE BASIN: BASIN SIDE–SLOPES, AND EMBANKMENT OF THE BASIN MUST BE MOWED TO PREVENT WOODY GROWTH AND CONTROL WEEDS. A MULCHING MOWER SHOULD BE USED, OR THE GRASS CLIPPINGS SHOULD BE CAUGHT AND REMOVED. MOWING SHOULD TAKE PLACE AT LEAST TWICE A YEAR, OR MORE FREQUENTLY IF VEGETATION EXCEEDS 18 INCHES IN HEIGHT. MORE FREQUENT MOWING TO MAINTAIN AESTHETIC APPEAL MAY BE NECESSARY IN LANDSCAPED AREAS.

LITTER AND DEBRIS REMOVAL: LITTER AND DEBRIS REMOVAL SHOULD TAKE PLACE AT LEAST TWICE A YEAR, AS PART OF THE PERIODIC MOWING OPERATIONS AND INSPECTIONS. DEBRIS AND LITTER SHOULD BE REMOVED FROM THE SURFACE OF THE BASIN. PARTICULAR ATTENTION SHOULD BE PAID TO FLOATABLE DEBRIS AROUND THE OUTLET STRUCTURE. THE OUTLET SHOULD BE CHECKED FOR POSSIBLE CLOGGING OR OBSTRUCTIONS AND ANY DEBRIS REMOVED.

EROSION CONTROL: THE BASIN SIDE SLOPES AND EMBANKMENT ALL MAY PERIODICALLY SUFFER FROM SLUMPING AND EROSION. TO CORRECT THESE PROBLEMS, CORRECTIVE ACTION, SUCH AS REGRADING AND REVEGETATION, MAY BE NECESSARY. CORRECTION OF EROSION CONTROL SHOULD TAKE PLACE WHENEVER REQUIRED BASED ON THE PERIODIC INSPECTIONS.

NUISANCE CONTROL: STANDING WATER OR SOGGY CONDITIONS MAY OCCUR IN THE BASIN. SOME STANDING WATER MAY OCCUR AFTER A STORM EVENT SINCE THE VALVE MAY CLOSE WITH 2 TO 3 INCHES OF WATER IN THE BASIN. SOME FLOW INTO THE BASIN MAY ALSO OCCUR BETWEEN STORMS DUE TO SPRING FLOW AND RESIDENTIAL WATER USE THAT ENTERS THE STORM SEWER SYSTEM. TWICE A YEAR, THE FACILITY SHOULD BE EVALUATED IN TERMS OF NUISANCE CONTROL (INSECTS, WEEDS, ODORS, ALGAE, ETC.).

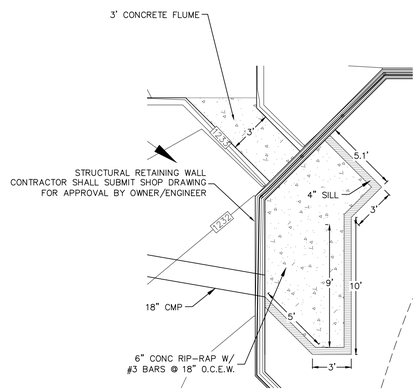
STRUCTURAL REPAIRS AND REPLACEMENT: WITH EACH INSPECTION, ANY DAMAGE TO STRUCTURAL ELEMENTS OF THE BASIN (PIPES, CONCRETE DRAINAGE STRUCTURES, RETAINING WALLS, ETC.) SHOULD BE IDENTIFIED AND REPAIRED IMMEDIATELY. AN EXAMPLE OF THIS TYPE OF REPAIR CAN INCLUDE PATCHING OF CRACKED CONCRETE, SEALING OF VOIDS, REMOVAL OF VEGETATION FROM CRACKS AND JOINTS. THE VARIOUS INLET/OUTLET STRUCTURES IN A BASIN WILL EVENTUALLY DETERIORATE AND MUST BE REPLACED.

SEDIMENT REMOVAL: A PROPERLY DESIGNED BATCH DETENTION BASIN WILL ACCUMULATE QUANTITIES OF SEDIMENT OVER TIME. THE ACCUMULATED SEDIMENT CAN DETRACT FROM THE APPEARANCE OF THE FACILITY AND REDUCE THE POLLUTANT REMOVAL PERFORMANCE OF THE FACILITY. THE SEDIMENT ALSO TENDS TO ACCUMULATE NEAR THE OUTLET STRUCTURE AND CAN INTERFERE WITH THE LEVEL SENSOR OPERATION. SEDIMENT SHALL BE REMOVED FROM THE BASIN AT LEAST EVERY 5 YEARS, WHEN SEDIMENT DEPTH EXCEEDS 6 INCHES, WHEN THE SEDIMENT INTERFERES WITH THE LEVEL SENSOR OR WHEN THE BASIN DOES NOT DRAIN WITHIN 48 HOURS. CARE SHOULD BE TAKEN NOT TO COMPROMISE THE BASIN LINING DURING MAINTENANCE.

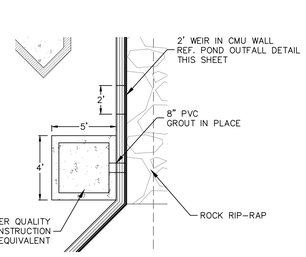
LOGIC CONTROLLER: THE LOGIC CONTROLLER SHOULD BE INSPECTED AS PART OF THE TWICE YEARLY INVESTIGATIONS. VERIFY THAT THE EXTERNAL INDICATORS (ACTIVE, CYCLE IN PROGRESS) ARE
OPERATING PROPERLY BY TURNING THE CONTROLLER OFF AND ON, AND BY INITIATING A CYCLE BY TRIGGERING THE LEVEL SENSOR IN THE BASIN. THE VALVE SHOULD BE MANUALLY OPENED AND CLOSED USING THE OPEN/CLOSE SWITCH TO VERIFY VALVE OPERATION AND TO ASSIST IN INSPECTING THE VALVE FOR DEBRIS. THE SOLAR PANEL SHOULD BE INSPECTED AND ANY DUST OR DEBRIS ON THE PANEL SHOULD BE CAREFULLY REMOVED. THE CONTROLLER AND ALL OTHER CIRCUITRY AND WIRING SHOULD BE INSPECTED FOR SIGNS OF CORROSION, DAMAGE FROM INSECTS, WATER LEAKS, OR OTHER DAMAGE. AT THE END OF THE INSPECTION, THE CONTROLLER SHOULD BE RESET.

SAFETY PRECAUTIONS – A SIGN SHALL BE POSTED IN A CLEAR VISIBLE PLACE ON THE FENCE NEAR THE ENTRY WITH THE FOLLOWING INFORMATION:

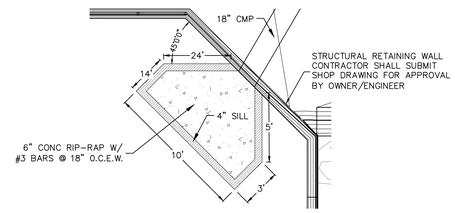
TCEQ REGIONAL OFFICE – 210–490–3096
MITCHELL MOORE – ###–###–####



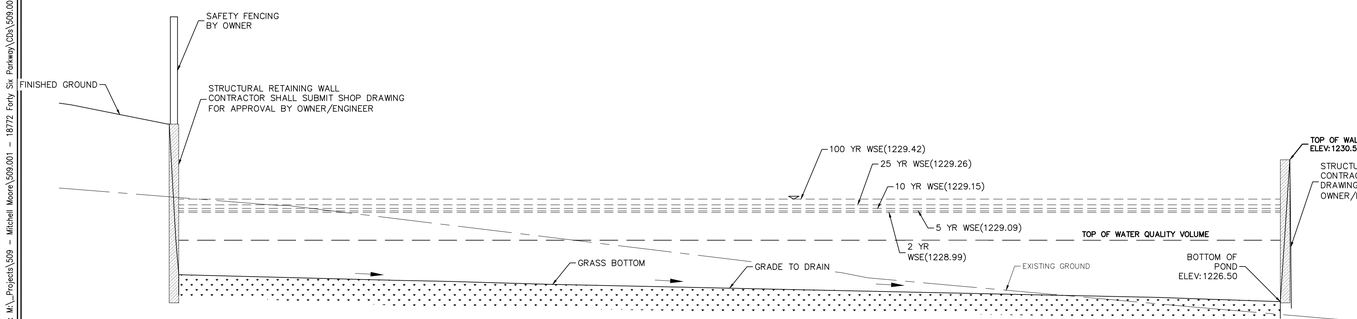
INSET A
SCALE 1":5'



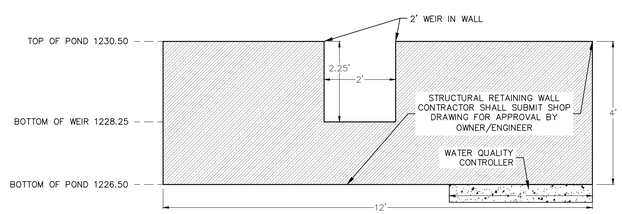
INSET B
SCALE 1":5'



INSET C
SCALE 1":5'



SECTION A–A
N.T.S.



POND OUTFALL DETAIL
N.T.S.

290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F–10961
TBPLS FIRM 1053600
HMT ENGINEERING & SURVEYING

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED PROFESSIONAL ENGINEER

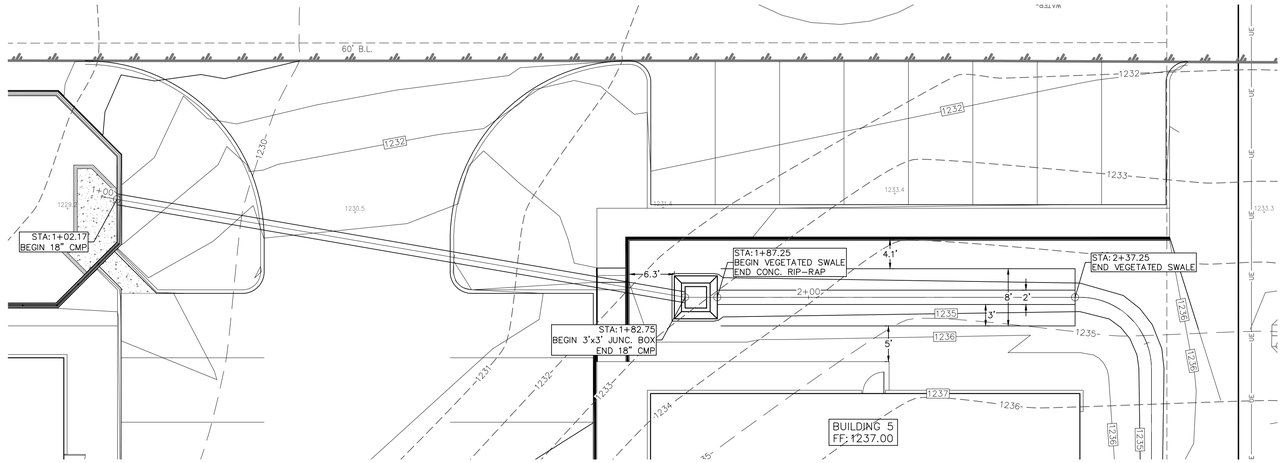
BATCH DETENTION POND PLAN
PERMANENT STORMWATER BMP'S
FORTY SIX PARKWAY
BULVERDE, TEXAS

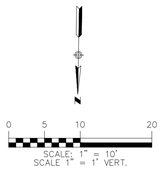
NO.	REVISION DESCRIPTION	REVISION DATE

DATE: AUGUST 2023
DRAWN BY: MP
DESIGNED BY: ESP
REVIEWED BY: ESP
HMT PROJECT NO.: 509.001

SHEET
C7.0

Drawing Name: M:_Projects\509 – Mitchell Moore\509.001 – 18772 Forty Six Parkway\02b\509.001–POND.dwg User: mattr–p Aug 10, 2023 – 6:01pm





TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TSS REMOVAL CALCULATIONS
CALCULATIONS FROM RG-348

1. REQUIRED LOAD REDUCTION FROM THE TOTAL PROJECT:

PAGE 3-29 EQUATION 3.3: $L_M = 27.2\ (A_N \times P)$

L_M = REQUIRED TSS REMOVAL

A_N = NET INCREASE IN IMPERVIOUS AREA FOR PROJECT

P = AVERAGE ANNUAL PRECIPITATION, INCHES

SITE DATA: DETERMINE REQUIRED LOAD REMOVAL BASED ON THE ENTIRE PROJECT

COUNTY = COMAL

TOTAL PROJECT ARE INCLUDED IN PLAN = 2.22 ACRES

PREDEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 0.00 ACRES

TOTAL POST-DEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 1.13 ACRES

TOTAL POST-DEVELOPMENT IMPERVIOUS COVER FRACTION = 0.51

P = 33 INCHES

TOTAL L_M REQUIRED FOR THIS PLAN = 1,014 lbs

2. DRAINAGE BASIN PARAMETERS (PROVIDED FOR EACH BASIN)

DRAINAGE BASIN/OUTFALL AREA NO. = 1

TOTAL DRAINAGE BASIN / OUTFALL AREA = 0.21 ACRES

PREDEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.00 ACRES

POST-DEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.10 ACRES

0.48

L_M = 90 lbs

POST-DEVELOPMENT IMPERVIOUS FRACTION WITHIN DRAINAGE BASIN / OUTFALL AREA =

3. INDICATE THE PROPOSED BMP CODE FOR THIS BASIN

PROPOSED BMP = GRASSY SWALE

REMOVAL EFFICIENCY = 70 PERCENT

4. CALCULATE MAXIMUM TSS LOAD REMOVED (L_R) FOR THIS DRAINAGE BASIN BY THE SELECTED BMP TYPE:

RG 348 PAGE 3-33 EQUATION 3.7: $L_R = (\text{BMP EFFICIENCY}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

A_C = TOTAL ON-SITE DRAINAGE AREA IN THE BMP CATCHMENT AREA

A_I = IMPERVIOUS AREA PROPOSED IN THE BMP CATCHMENT

A_P = PERVIOUS AREA REMAINING IN THE BMP CATCHMENT

L_R = TSS LOAD REMOVED BY THE PROPOSED BMP

GRASSY SWALE 1

A_C = 0.21 ACRES

A_I = 0.10 ACRES

A_P = 0.11 ACRES

L_R = 81 lbs

5. CALCULATE FRACTION OF ANNUAL RUNOFF TO TREAT THE DRAINAGE BASIN / OUTFALL AREA

GRASSY SWALE 1

DESIRED $L_{M\ THIS\ BASIN}$ = 81 lbs

F = 1.00

6. CALCULATE CAPTURE VOLUME REQUIRED BY THE BMP TYPE FOR THIS DRAINAGE BASIN / OUTFALL AREA.

GRASSY SWALE 1

RAINFALL DEPTH = 4.00 INCHES

POST-DEVELOPMENT RUNOFF COEFFICIENT = 0.34

ON-SITE WATER QUALITY VOLUME = 1051 CUBIC FEET

OFF-SITE AREA DRAINING TO BMP = 0 ACRES

OFF-SITE IMPERVIOUS COVER DRAINING TO BMP = 0 ACRES

IMPERVIOUS FRACTION OF OFF-SITE AREA = 0

OFF-SITE RUNOFF COEFFICIENT = 0

OFF-SITE WATER QUALITY VOLUME = 0 CUBIC FEET

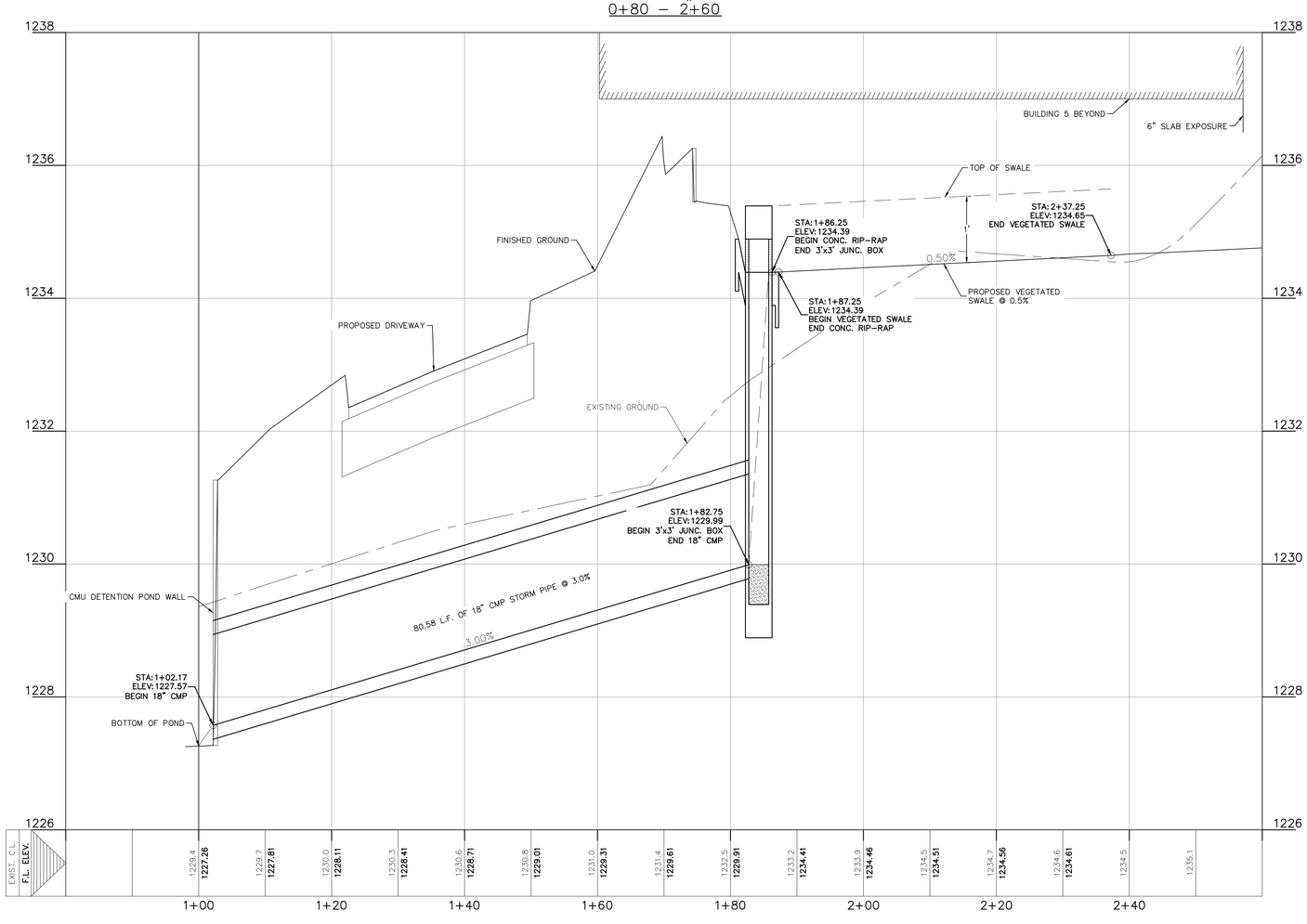
STORAGE FOR SEDIMENT = 210

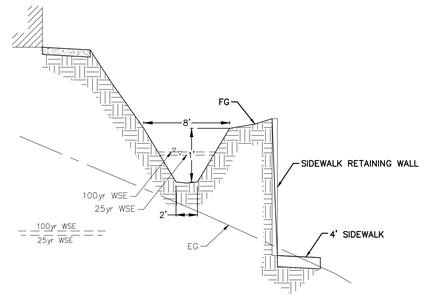
TOTAL CAPTURE VOLUME = 1,261 CUBIC FEET

MAINTENANCE NOTES:

1. AN INTEGRATED PEST MANAGEMENT (IPM) PLAN SHOULD BE DEVELOPEDFOR VEGETATED AREAS. THIS PLAN SHOULD SPECIFY HOW PROBLEM INSECTS AND WEEDS WILL BECONTROLLED WITH MINIMAL OR NO USE OF INSECTICIDES AND HERBICIDES.
2. LAWN MOWING SHOULD BE PERFORMED ROUTINELY, AS NEEDED, THROUGHOUT THE GROWING SEASON. GRASS HEIGHT SHOULD NOT EXCEED 18 INCHES. GRASS CUTTINGS SHOULD BE COLLECTED AND DISPOSED OF OFFSITE, OR A MULCHING MOWER CAN BE USED. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES; HOWEVER, HERBICIDE USE SHOULD BE KEPT TO A MINIMUM (URBONAS ET AL., 1992). HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS.
3. TRASH TENDS TO ACCUMULATE IN SWALE AREAS, PARTICULARLY ALONG HIGHWAYS. ANY SWALE STRUCTURES (I.E. CHECK DAMS) SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN TWO TIMES PER YEAR
4. SEDIMENT ACCUMULATING NEAR CULVERTS AND IN CHANNELS NEEDS TO BE REMOVED WHEN THEY BUILD UP TO 3 INCHES AT ANY SPOT, OR COVER VEGETATION. EXCESS SEDIMENT SHOULD BE REMOVED BY HAND OR WITH FLAT-BOTTOMED SHOVELS. IF AREAS ARE ERODED, THEY SHOULD BE FILLED, COMPACTED, AND RESEEDED SO THAT THE FINAL GRADE IS LEVEL WITH THE BOTTOM OF THE SWALE. SEDIMENT REMOVAL SHOULD BE PERFORMED PERIODICALLY, AS DETERMINED THROUGH INSPECTION.
5. A HEALTHY DENSE GRASS SHOULD BE MAINTAINED IN THE CHANNEL AND SIDE SLOPES. GRASS DAMAGED DURING THE SEDIMENT REMOVAL PROCESS SHOULD BE PROMPTLY REPLACED USING THE SAME SEED MIX USED DURING SWALE ESTABLISHMENT. IF POSSIBLE, FLOW SHOULD BE DIVERTED FROM THE DAMAGED AREAS UNTIL THE GRASS IS FIRMLY ESTABLISHED.

SWALE #1
0+80 – 2+60





1 SWALE #1 TYPICAL SECTION

N.T.S.

290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600
HMT
ENGINEERING & SURVEYING

8/10/23

STATE OF TEXAS
ERIC S. PLY
123317
LICENSED
PROFESSIONAL ENGINEER

VEGEGATED SWALE 1
PERMANENT STORMWATER BMP'S
FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

DATE: AUGUST 2023

DRAWN BY: MP

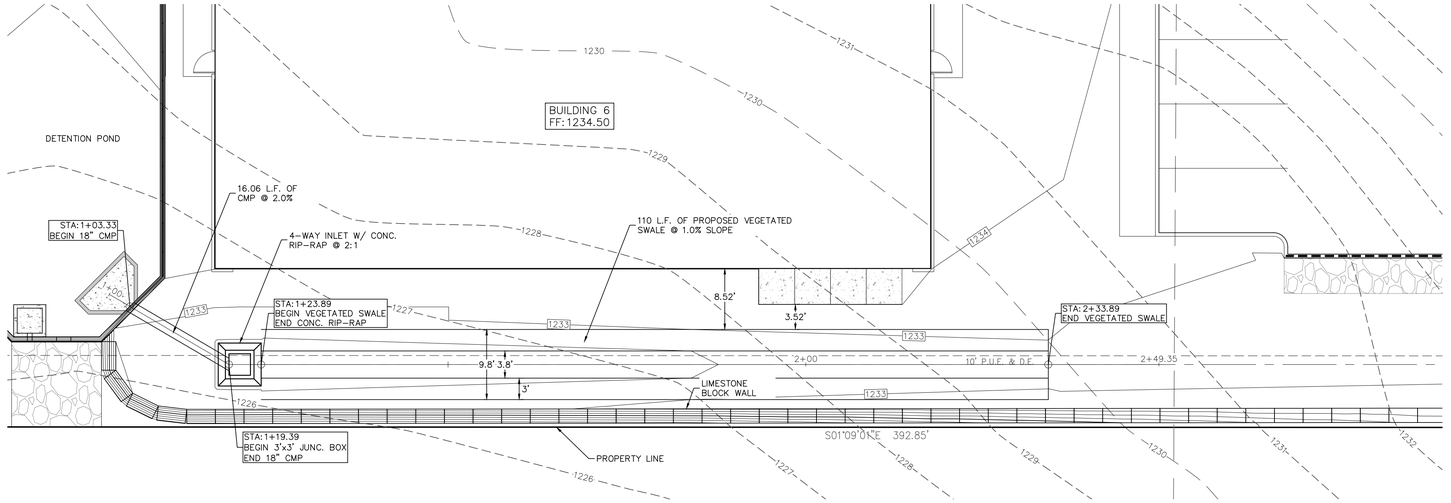
DESIGNED BY: ESP

REVIEWED BY: ESP

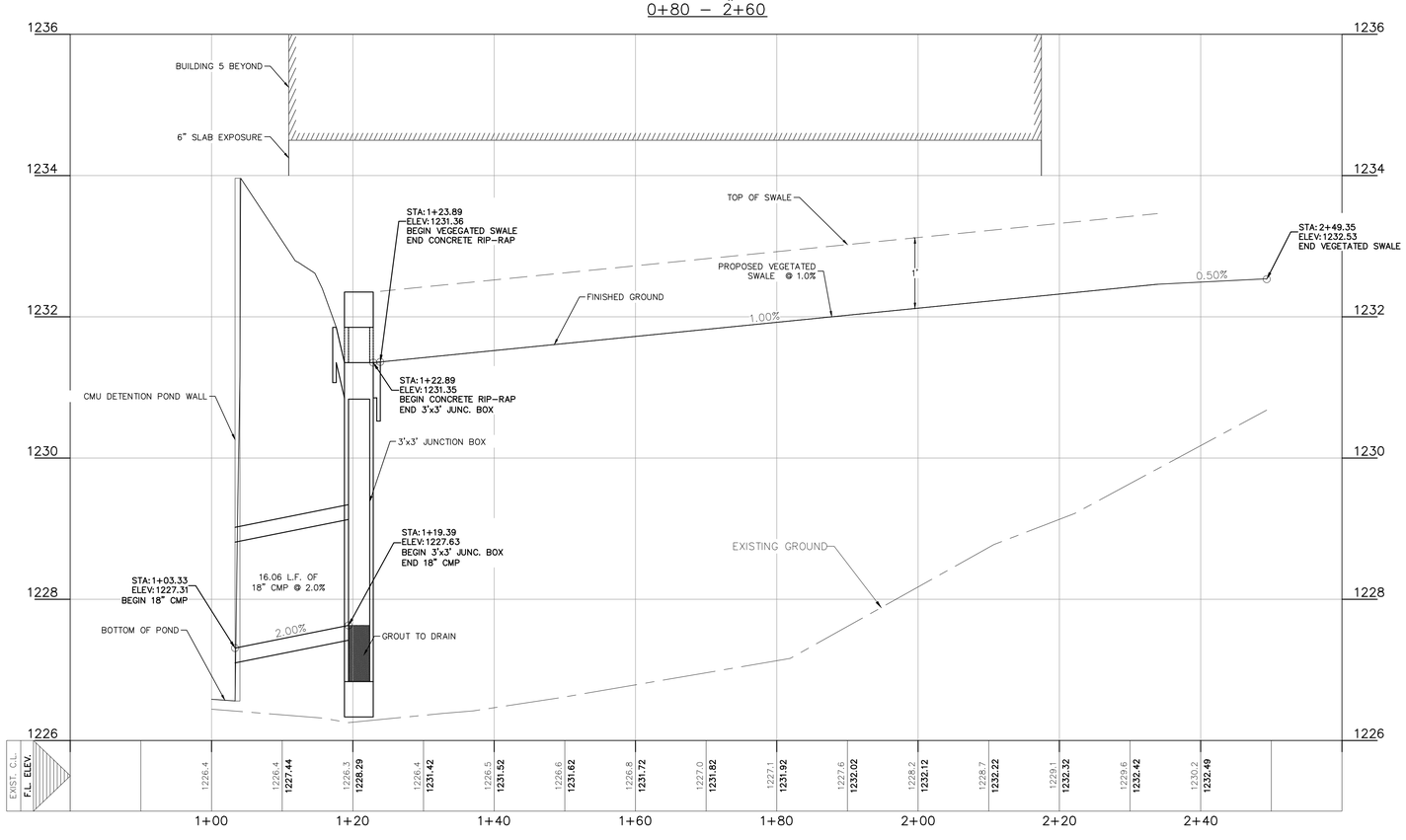
HMT PROJECT NO.: 509.001

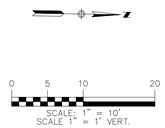
SHEET

C7.1



SWALE #2
0+80 – 2+60





TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TSS REMOVAL CALCULATIONS
CALCULATIONS FROM RG-348

1. REQUIRED LOAD REDUCTION FROM THE TOTAL PROJECT:

PAGE 3-29 EQUATION 3.3: $L_M = 27.2\ (A_N \times P)$

L_M = REQUIRED TSS REMOVAL
A_N = NET INCREASE IN IMPERVIOUS AREA FOR PROJECT
P = AVERAGE ANNUAL PRECIPITATION, INCHES

SITE DATA: DETERMINE REQUIRED LOAD REMOVAL BASED ON THE ENTIRE PROJECT

COUNTY = COMAL
TOTAL PROJECT ARE INCLUDED IN PLAN = 2.22 ACRES
PREDEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 0.00 ACRES
TOTAL POST-DEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 1.13 ACRES
TOTAL POST-DEVELOPMENT IMPERVIOUS COVER FRACTION = 0.51
P = 33 INCHES
TOTAL L_M REQUIRED FOR THIS PLAN = 1,014 lbs

2. DRAINAGE BASIN PARAMETERS (PROVIDED FOR EACH BASIN)

DRAINAGE BASIN/OUTFALL AREA NO. = 2

TOTAL DRAINAGE BASIN / OUTFALL AREA = 1.04 ACRES
PREDEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.00 ACRES
POST-DEVELOPMENT IMPERVIOUS AREA WITHIN DRAINAGE BASIN / OUTFALL AREA = 0.40 ACRES
0.38
L_M = 359 lbs

3. INDICATE THE PROPOSED BMP CODE FOR THIS BASIN

PROPOSED BMP = GRASSY SWALE
POST-DEVELOPMENT IMPERVIOUS FRACTION WITHIN DRAINAGE BASIN / OUTFALL AREA = REMOVAL EFFICIENCY = 70 PERCENT

4. CALCULATE MAXIMUM TSS LOAD REMOVED (L_R) FOR THIS DRAINAGE BASIN BY THE SELECTED BMP TYPE:

RG 348 PAGE 3-33 EQUATION 3.7: $L_R = (\text{BMP EFFICIENCY}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

A_C = TOTAL ON-SITE DRAINAGE AREA IN THE BMP CATCHMENT AREA
A_I = IMPERVIOUS AREA PROPOSED IN THE BMP CATCHMENT
A_P = PERVIOUS AREA REMAINING IN THE BMP CATCHMENT
L_R = TSS LOAD REMOVED BY THE PROPOSED BMP

GRASSY SWALE 2

A_C = 0.88 ACRES
A_I = 0.34 ACRES
A_P = 0.54 ACRES
L_R = 278 lbs

5. CALCULATE FRACTION OF ANNUAL RUNOFF TO TREAT THE DRAINAGE BASIN / OUTFALL AREA

GRASSY SWALE 2

278 lbs
1.00

6. CALCULATE CAPTURE VOLUME REQUIRED BY THE BMP TYPE FOR THIS DRAINAGE BASIN / OUTFALL AREA.

GRASSY SWALE 2

RAINFALL DEPTH = 4.00 INCHES
POST-DEVELOPMENT RUNOFF COEFFICIENT = 0.30
ON-SITE WATER QUALITY VOLUME = 3838 CUBIC FEET

OFF-SITE AREA DRAINING TO BMP = 0.16 ACRES
OFF-SITE IMPERVIOUS COVER DRAINING TO BMP = 0.06 ACRES
IMPERVIOUS FRACTION OF OFF-SITE AREA = 0.38
OFF-SITE RUNOFF COEFFICIENT = 0.29
OFF-SITE WATER QUALITY VOLUME = 685 CUBIC FEET
STORAGE FOR SEDIMENT = 905

TOTAL CAPTURE VOLUME = 5,428 CUBIC FEET

MAINTENANCE NOTES:

1. AN INTEGRATED PEST MANAGEMENT (IPM) PLAN SHOULD BE DEVELOPEDFOR VEGETATED AREAS. THIS PLAN SHOULD SPECIFY HOW PROBLEM INSECTS AND WEEDS WILL BECONTROLLED WITH MINIMAL OR NO USE OF INSECTICIDES AND HERBICIDES.
2. LAWN MOWING SHOULD BE PERFORMED ROUTINELY, AS NEEDED, THROUGHOUT THE GROWING SEASON. GRASS HEIGHT SHOULD NOT EXCEED 18 INCHES. GRASS CUTTINGS SHOULD BE COLLECTED AND DISPOSED OF OFFSITE, OR A MULCHING MOWER CAN BE USED. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES; HOWEVER, HERBICIDE USE SHOULD BE KEPT TO A MINIMUM (URBONAS ET AL., 1992). HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS.
3. TRASH TENDS TO ACCUMULATE IN SWALE AREAS, PARTICULARLY ALONG HIGHWAYS. ANY SWALE STRUCTURES (I.E. CHECK DAMS) SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN TWO TIMES PER YEAR
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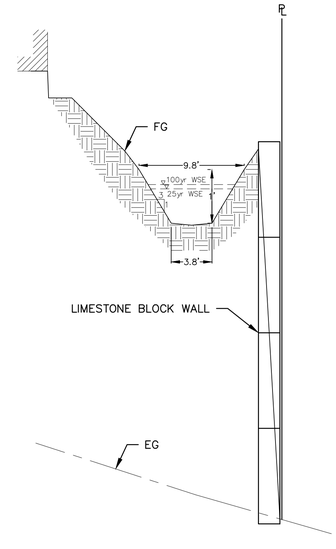


1 SWALE #2 TYPICAL SECTION
N.T.S.

290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600
HMT
ENGINEERING & SURVEYING

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED
PROFESSIONAL ENGINEER

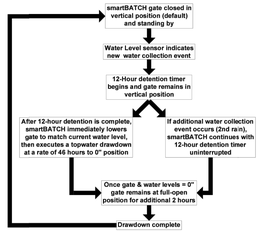
VEGEGATED SWALE 2
PERMANENT STORMWATER BMP'S
FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

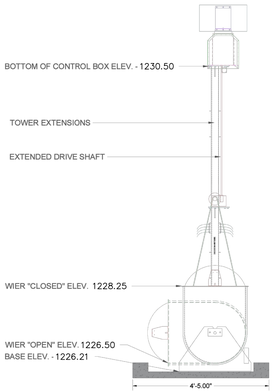
DATE: AUGUST 2023
DRAWN BY: MP
DESIGNED BY: ESP
REVIEWED BY: ESP
HMT PROJECT NO.: 509.001

SHEET
C7.2

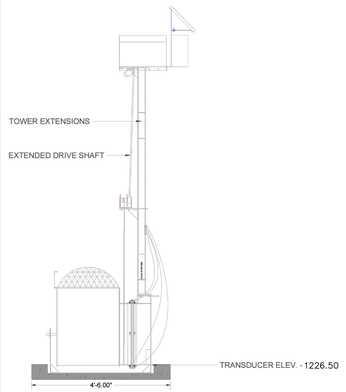
PROGRAMMABLE LOGIC FLOW CHART



FRONT VIEW



SIDE VIEW



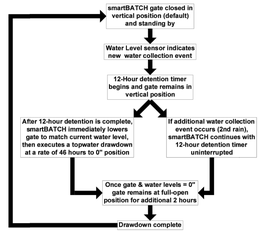
smartPOND
Automated Stormwater Control.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

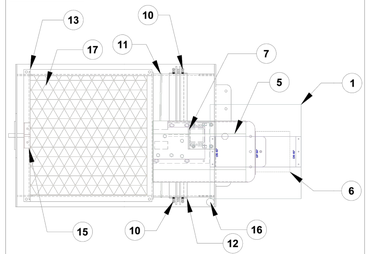
smartPOND Elevations - Outlet Structure #1

PROJECT NAME:
BIG SKY PHASE 2
ADDRESS:
Dripping Springs, Texas
DATE:
7/23/2020
SCALE: **N.T.S** SHEET NO: **----**

PROGRAMMABLE LOGIC FLOW CHART

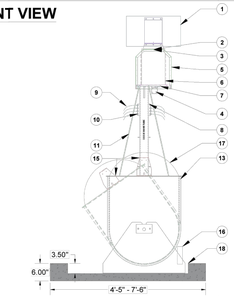


TOP VIEW

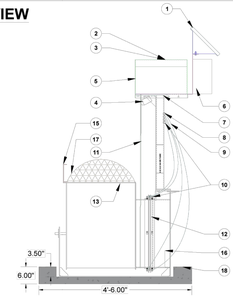


Parts List	
Item	smartBATCH Components
1	12 V SOLAR PANEL WITH 30 WATT CHARGING CAPACITY
2	ANTENNA (NOT DISPLAYED)
3	CELL DATA MODEM (NOT DISPLAYED)
4	CAMERA
5	WEATHERPROOF ELECTRONIC BOX
6	CONTROL BOX
7	PEDESTAL
8	REMOTE GREASE MANIFOLD
9	GREASE TUBES
10	GREASE FITTINGS
11	¼" Galvanized Cables
12	24" Rotary Valve
13	24" Drum
14	Outlet Pipe (Size TBD By Engineer, Max 24")
15	Inclinometer
16	Level Transducer
17	Beehive Grate
18	6" Concrete Pad (By Others, Size Varies)

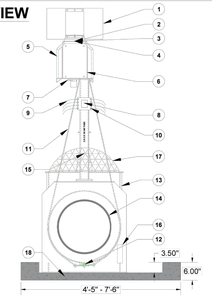
FRONT VIEW



SIDE VIEW



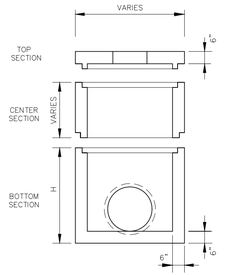
BACK VIEW

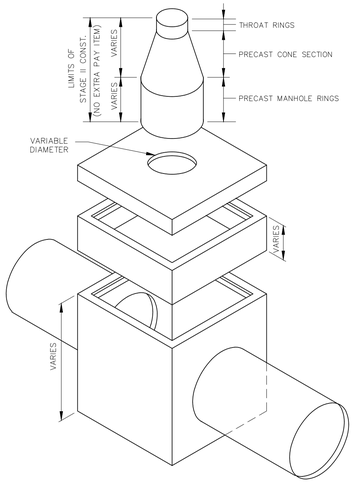


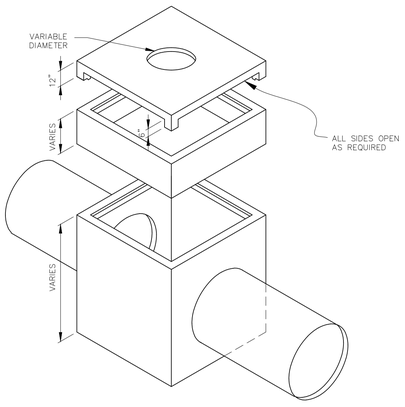
smartPOND
Automated Stormwater Control.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

CONVERGENT WATER TECHNOLOGIES





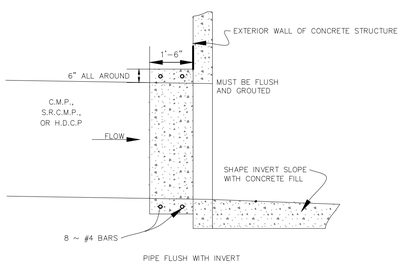


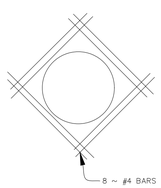
TYPICAL 4-WAY INLET DETAIL

NOTES:

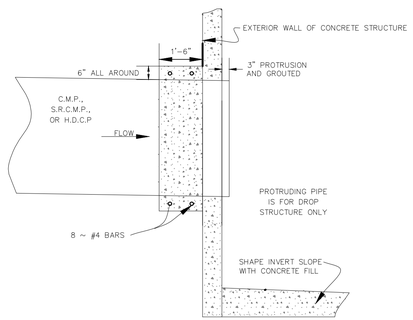
1. REFERENCE RESPECTIVE DRAIN PLAN & PROFILE FOR TYPE AND SIZE
2. STANDARD STRUCTURAL DESIGN IS BASED ON AASHTO HS 20 WHEEL LOADING
3. MATERIAL SPECIFICATIONS:
   CONCRETE TO HAVE 28 DAY COMPRESSIVE STRENGTH OF 4500 P.S.I.
   REINFORCING TO COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70; BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS
4. STRUCTURE TO LIE ON COMPACTED GRANULAR BASE TO INSURE UNIFORM DISTRIBUTION OF SOIL PRESSURES
5. SHAPE INVERT WITH 2500 P.S.I. CONCRETE FILL AS REQUIRED (NO EXTRA PAY ITEM)
6. COORDINATE PIPE OPENINGS WITH MANUFACTURER
7. PRECAST BOXES BY OLDCASTLE OR APPROVED EQUAL

TYPICAL DETAIL





CONCRETE COLLAR DETAIL



290 S. CASTELL AVE., STE. 100
NEW BRAUNFELS, TX 78130
TBPE FIRM F-10961
TBPLS FIRM 1053600

HMT
ENGINEERING & SURVEYING

8/10/23
STATE OF TEXAS
ERIC S. PLY
123317
LICENSED PROFESSIONAL ENGINEER

STORM DETAILS

FORTY SIX PARKWAY
BULVERDE, TEXAS

NO.	REVISION DESCRIPTION	REVISION DATE

DATE: AUGUST 2023
DRAWN BY: MP
DESIGNED BY: ESP
REVIEWED BY: ESP
HMT PROJECT NO.: 509.001

SHEET
C7.3

Drawing Name: M:_Projects\509 - Mitchell Moore\509.001 - 18772 Forty Six Parkway\03s\509.001-POND.dwg User: matt-p Aug 10, 2023 - 6:02pm

TSS Removal Calculations

Overall Project

Texas Commission on Environmental Quality					
TSS Removal Calculations 04-20-2009			**Project Name:**	Forty Six Parkway	
			Date Prepared:	8/14/2023	
Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.					
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.					
Characters shown in red are data entry fields.					
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.					
1. The Required Load Reduction for the total project:		Calculations from RG-348		Pages 3-27 to 3-30	
	Page 3-29 Equation 3.3:	$L_M = 27.2(A_N \times P)$			
where:	$L_{M\ TOTAL\ PROJECT}$ =	Required TSS removal resulting from the proposed development = 80% of increased load			
	A_N =	Net increase in impervious area for the project			
	P =	Average annual precipitation, inches			
Site Data:	Determine Required Load Removal Based on the Entire Project				
	County =	Comal			
	Total project area included in plan * =	2.22	acres		
	Predevelopment impervious area within the limits of the plan * =	0.00	acres		
	Total post-development impervious area within the limits of the plan* =	1.13	acres		
	Total post-development impervious cover fraction * =	0.51			
	P =	33	inches		
	$L_{M\ TOTAL\ PROJECT}$ =	1014	lbs.		
* **The values entered in these fields should be for the total project area.**					
	Number of drainage basins / outfalls areas leaving the plan area =	3			

Permanent BMP 1 (Grassy Swale 1)

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**1**	
Total drainage basin/outfall area =	**0.21**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.10**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.48**	
$L_{M\ THIS\ BASIN}$ =	**90**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	**Grassy Swale**	
Removal efficiency =	**70**	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C =	Total On-Site drainage area in the BMP catchment area
A_I =	Impervious area proposed in the BMP catchment area
A_P =	Pervious area remaining in the BMP catchment area
L_R =	TSS Load removed from this catchment area by the proposed BMP

A_C =	**0.21**	acres
A_I =	**0.10**	acres
A_P =	**0.11**	acres
L_R =	**81**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	**81**	lbs.
F =	**1.00**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall a Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**4.00**	inches
Post Development Runoff Coefficient =	**0.34**	
On-site Water Quality Volume =	**1051**	cubic feet

Calculations from RG-3 Pages 3-36 to 3-37

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**210**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**1261**	cubic feet

15. Grassy Swales (2- East Side)	Designed as Required in RG-348		Pages 3-51 to 3-54
Design parameters for the swale:			
Drainage Area to be Treated by the Swale = A =	0.21	acres	
Impervious Cover in Drainage Area =	0.10	acres	
Rainfall intensity = i =	1.1	in/hr	
Swale Slope =	0.005	ft/ft	
Side Slope (z) =	3		
Design Water Depth = y =	0.33	ft	
Weighted Runoff Coefficient = C =	0.53		
A_{CS} = cross-sectional area of flow in Swale =	0.99	sf	
P_W = Wetted Perimeter =	4.09	feet	
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W =	0.24	feet	
n = Manning's roughness coefficient =	0.2		
15A. Using the Method Described in the RG-348			
Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$			
$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ =	2.00	feet	
Q = CiA =	0.12	cfs	
To calculate the flow velocity in the swale:			
V (Velocity of Flow in the swale) = Q/A_{CS} =	0.12	ft/sec	
To calculate the resulting swale length:			
L = Minimum Swale Length = V (ft/sec) * 300 (sec) =	36.89	feet	

Permanent BMP 2 (Grassy Swale 2)

2. Drainage Basin Parameters (This information should be provided for each basin):		
Drainage Basin/Outfall Area No. =	**2**	
Total drainage basin/outfall area =	**1.04**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.40**	acres
ost-development impervious fraction within drainage basin/outfall area =	**0.38**	
$L_{M\ THIS\ BASIN}$ =	**359**	lbs.
3. Indicate the proposed BMP Code for this basin.		
Proposed BMP =	**Grassy Swale**	
Removal efficiency =	**70**	percent
4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.		
RG-348 Page 3-33 Equation 3.7: L_R =	(BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)	
where: A_C =	Total On-Site drainage area in the BMP catchment area	
A_I =	Impervious area proposed in the BMP catchment area	
A_P =	Pervious area remaining in the BMP catchment area	
L_R =	TSS Load removed from this catchment area by the proposed BMP	
A_C =	**0.88**	acres
A_I =	**0.34**	acres
A_P =	**0.54**	acres
L_R =	**278**	lbs
5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area		
Desired $L_{M\ THIS\ BASIN}$ =	**278**	lbs.
F =	**1.00**	
6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall a		Calculations from RG-348 Pages 3-34 to 3-36
Rainfall Depth =	**4.00**	inches
Post Development Runoff Coefficient =	**0.30**	
On-site Water Quality Volume =	**3838**	cubic feet
	Calculations from RG-348 Pages 3-36 to 3-37	
Off-site area draining to BMP =	**0.16**	acres
Off-site Impervious cover draining to BMP =	**0.06**	acres
Impervious fraction of off-site area =	**0.38**	
Off-site Runoff Coefficient =	**0.29**	
Off-site Water Quality Volume =	**685**	cubic feet
Storage for Sediment =	**905**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**5428**	cubic feet

15. Grassy Swales (2- East Side)		Designed as Required in RG-348 Pages 3-51 to 3-54		
	Design parameters for the swale:			
	Drainage Area to be Treated by the Swale = A =	1.04	acres	
	Impervious Cover in Drainage Area =	0.40	acres	
	Rainfall intensity = i =	1.1	in/hr	
	Swale Slope =	0.01	ft/ft	
	Side Slope (z) =	3		
	Design Water Depth = y =	0.33	ft	
	Weighted Runoff Coefficient = C =	0.49		
	A_{CS} = cross-sectional area of flow in Swale =	1.57	sf	
	P_W = Wetted Perimeter =	5.86	feet	
	R_H = hydraulic radius of flow cross-section = A_{CS}/P_W =	0.27	feet	
	n = Manning's roughness coefficient =	0.2		
15A. Using the Method Described in the RG-348				
	Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$			
	$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ =	3.77	feet	
	Q = CiA =	0.56	cfs	
To calculate the flow velocity in the swale:				
	V (Velocity of Flow in the swale) = Q/A_{CS} =	0.36	ft/sec	
To calculate the resulting swale length:				
	L = Minimum Swale Length = V (ft/sec) * 300 (sec) =	106.52	feet	length

Permanent BMP 3 (Batch Extended Detention)

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**3**	
Total drainage basin/outfall area =	**1.83**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.93**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.51**	
$L_{M\ THIS\ BASIN}$ =	**835**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	**Batch Detention Basin**	
Removal efficiency =	**91**	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C =	Total On-Site drainage area in the BMP catchment area
A_I =	Impervious area proposed in the BMP catchment area
A_P =	Pervious area remaining in the BMP catchment area
L_R =	TSS Load removed from this catchment area by the proposed BMP

A_C =	**1.67**	acres
A_I =	**0.87**	acres
A_P =	**0.80**	acres
L_R =	**917**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	**655**	lbs.
F =	**0.71**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall a Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**0.80**	inches
Post Development Runoff Coefficient =	**0.37**	
On-site Water Quality Volume =	**1800**	cubic feet

Calculations from RG-3 Pages 3-36 to 3-37

Off-site area draining to BMP =	**0.16**	acres
Off-site Impervious cover draining to BMP =	**0.06**	acres
Impervious fraction of off-site area =	**0.38**	
Off-site Runoff Coefficient =	**0.29**	
Off-site Water Quality Volume =	**138**	cubic feet
Storage for Sediment =	**388**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**2325**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

22. Batch Detention Basin Designed as Required in RG-348 Pg. 28, Addendum

Required Water Quality Volume for batch detention basin =	**2325**	cubic feet

BMP Interpolation

Interpolation			
BMP	Area	TSS %	Lr (lbs)
Gassy Swale 1	0.21	70	81
Gassy Swale 2	1.04	70	278
Swale 1+2	1.25	70	360
Detention Only	1.83	91	655
Combined BMPs	1.83	82.477273	
Site not treated	0.39	0	
Total Site	2.22		1014

CONTRIBUTING ZONE PLAN
ATTACHMENT N
Inspection, Maintenance, Repair and Retrofit Plan

The contractor will be directed to inspect and maintain all permanent BMPs during construction. One year after construction is complete the permanent BMPs will be turned over to the Mitchell Moore. Any deficiency noted must be corrected immediately by Mitchell Moore. The maintenance guidelines were pulled from the TCEQ Document "Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices" and its addendum sheet, the documents can be referenced for a more in-depth explanation of maintenance guidelines.

Maintenance and Inspection:

(1) Specification of routine and non-routine maintenance activities to be performed;

Grassy Swale:

• *Pest Management.* An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.

• *Seasonal Mowing and Lawn Care.* Lawn mowing should be performed routinely, as needed, throughout the growing season. Grass height should not exceed 18 inches. Grass cuttings should be collected and disposed of offsite, or a mulching mower can be used. Regular mowing should also include weed control practices; however, herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients.

• *Inspection.* Inspect swales at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The swale should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections should be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

• *Debris and Litter Removal.* Trash tends to accumulate in swale areas, particularly along highways. Any swale structures (i.e. check dams) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but should be performed no less than two times per year (Urbonas et al., 1992).

• *Sediment Removal.* Sediment accumulating near culverts and in channels needs to be removed when they build up to 3 inches at any spot, or cover vegetation. Excess sediment should be removed by hand or with flat-bottomed shovels. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level with the bottom of the swale. Sediment removal should be performed periodically, as determined through inspection.

• *Grass Reseeding and Mulching.* A healthy dense grass should be maintained in the channel and side slopes. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during swale establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established.

• *Public Education.* Private homeowners are often responsible for roadside swale maintenance. Unfortunately, overzealous lawn care on the part of homeowners can present some problems. For example, mowing the swale too close to the ground, or excessive application of fertilizer and pesticides will all be detrimental to the performance of the swale. Pet waste can also be a problem in swales, and should be removed to avoid contamination from fecal coliform and other waste associated bacteria. The delegation of maintenance responsibilities to individual landowners is a cost benefit to the locality. However, localities should provide an active educational program to encourage the recommended practices.

Batch Extended Detention:

• *Inspections.* Inspections should take place a minimum of twice a year. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. The remaining inspections should occur between storm events so that manual operation of the valve and controller can be verified. The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. The outlet structure and the trash screen should be inspected for signs of clogging. Debris and sediment should be removed from the orifice and outlet(s) as described in previous sections. Debris obstructing the valve should be removed. During each inspection, erosion areas inside and downstream of this BMP should be identified and repaired/revegetated immediately.

• *Mowing.* The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.

• *Litter and Debris Removal.* Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.

• *Erosion control.* The basin side slopes and embankment all may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading and revegetation, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.

• *Nuisance Control.* Standing water or soggy conditions may occur in the basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the basin may also occur between storms due to spring flow and residential water use that enters the storm sewer system. Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).

- *Structural Repairs and Replacement.* With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced.

- *Sediment Removal.* A properly designed batch detention basin will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the basin lining during maintenance.

- *Logic Controller.* The Logic Controller should be inspected as part of the twice yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

(2) A schedule for maintenance activities;

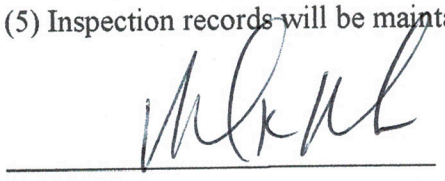
a. Inspection and maintenance will be held quarterly and after rainfall events of

more than one inch

(3) The batch detention basin can be accessed by vehicle as it is directly adjacent to a paved roadway;

(4) Mitchell Moore will be in charge of the oversight and scheduling of inspections and maintenance. Mitchell Moore is named Declarant and will establish the inspection and maintenance plans for the Organization; and

(5) Inspection records will be maintained at Mitchel Moore's office.



Party Responsible for Maintenance

8/9/23

Date

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Jessica Calhoun, P.E.

Date: 08/15/23

Signature of Customer/Agent:

Jessica Calhoun

Regulated Entity Name: Forty Six Parkway

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☐ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Comal Run

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

TEMPORARY STORMWATER SECTION
ATTACHMENT A
Spill Response Actions

Contractor to notify all appropriate authorities if more than 25 gallons of hydrocarbons are spilled. The construction plans include the required notes regarding appropriate spill response actions as directed by TCEQ. There will be no temporary storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, construction must contain spills by immediate action. Earthen materials must be kept readily available to provide a Dike. Sand should be used to help soak fuels. Property disposal of any materials used will be required.

Contractor must promote job site awareness to all employees involved. All employees must be made aware of the provisions in this report.

Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

(4) Establish a continuing education program to indoctrinate new employees.

(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(l) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise cleanup activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function

Clean up

(1) Clean up leaks and spills immediately.

(2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMP's in this section for specific information.

Minor Spills

(1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

(2) Use absorbent materials on small spills rather than hosing down or burying the spill.

(3) Absorbent materials should be promptly removed and disposed of properly.

(4) Follow the practice below for a minor spill:

(a) Contain the spread of the spill.

(b) Recover spilled materials.

(c) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with the absorbent materials and do not let the spill spread widely.

(4) If the spill occurs in dirt areas immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities (25 gallons):

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact

the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts ll0, ll9 and 302, the contractor should notify the National Response Center at (800) 424-8802.

(3) Notification should first be made by telephone and followed up with a written report.

(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

(5) Other agencies which may need to be consulted include, but are not limited to, the City of Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at: https://www.tceq.texas.gov/response/spills

Vehicle and Equipment Maintenance

(1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.

(3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allows leaking vehicles or equipment onsite.

(4) Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

(5) Place drip pans or absorbent materials under paving equipment when not in use.

(6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.

(7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

(8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.

(9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are not sure it is not leaking.

Vehicle and Equipment Fueling

(1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of storrnwater and the runoff of spills.

(2) Discourage "topping off" of fuel tanks.

(3) Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

TEMPORARY STORMWATER SECTION
ATTACHMENT B
Potential Sources of Contamination

This project includes the construction of 11,638 square feet (0.267 acres) of structures, 15,514 square feet (0.356 acres) of parking, and 20,833 square feet (0.478 acres) of other paved surfaces area. The possible sources of contamination include sediment transport from runoff and fuel spills by the Contractor while refueling equipment. Other small quantities of solvent for construction may be present. Contractor shall keep all fuel transfers and any other contaminants used secure. Silt Fences and rock berms will aid in the removal of transported sediment from the runoff. Please see Attachment “A” for response actions.

TEMPORARY STORMWATER SECTION
ATTACHMENT C
Sequence of Major Activities

Construction sequencing- The construction will be performed in two phases.

1. Call City Public Service (CPS) and TCEQ 48-hours prior to beginning any work. Call Dig TESS for utilities locations.
2. Install temporary erosion controls prior to any clearing and grubbing.
3. Inspect erosion controls at weekly intervals, before and after significant rainfall events to insure they are functioning properly.
4. Begin site clearing. (1.661 acres disturbed)
5. Construct drainage improvements.
6. Road cuts to subgrade elevation. (1.661 acres disturbed)
7. Complete fill and compaction on site to match subgrade elevations. (1.661 acres disturbed)
8. Complete all construction per approved plans and stabilize all disturbed areas.
9. Install Streetscape and/or landscaping improvements.
10. Contact project engineer to inspect site. Final City inspection to be scheduled.
11. Complete any necessary final dress up of areas that were disturbed.
12. Remove and dispose of temporary erosion controls after site re-vegetation has occurred.

TEMPORARY STORMWATER SECTION
ATTACHMENT D
Temporary Best Management Practices and Measures

Temporary erosion controls are proposed for this project to include silt fence, rock berms, concrete wash out area, and a stabilized construction entrances and exits. Please see Sheet C.0 Erosion Control Plan for all temporary erosion control details.

Temporary sediment basins are not required because there are no drainage areas greater than 10 acres disturbed on site.

Approximately 370 linear feet of silt fence will be used. This will be placed down gradient of all proposed construction.

15' rock berm will be used. This is to be place along the pond outfall.

Inlet protection is to be used in 3 places. This includes around the 2 area inlets and the cut curb.

A concrete washout pit is located along main access road.

A stabilized construction entrance at the beginning of the project will be required.

From the TECQ RG 348 dated July 2005, silt fences provide protection. In addition, the contractor has been directed to minimize disturbance to a reasonable working space.

TEMPORARY STORMWATER SECTION
ATTACHMENT F
Structural Practices

During construction, silt fences will be used until construction is complete and vegetation and paving has been established. Additionally, the contractor will pile the spoils from excavation on the uphill side of the excavation, with a minimum of one foot between the excavation and the pile, in order to prevent storm water from entering the trenched area.

In addition, the contractor will be directed to minimize site disturbance and avoid having equipment in areas that are not necessary for the construction. Natural vegetation shall be left undisturbed and will help remove sediment if any bypass at silt fences or other structural measures occurs.

TEMPORARY STORMWATER SECTION
ATTACHMENT G
Drainage Area Map

The Existing Drainage Area Map and Proposed Drainage Area Map (with their corresponding flow calculations) can be found in in the Contribution Zone Plan Report under Attachment K.

TEMPORARY STORMWATER SECTION
ATTACHMENT I
Inspection and Maintenance of BMPs

The Contractor will be directed to inspect and maintain all temporary BMPs. The design engineer will also make regular visits to the project and will provide visual inspections as well. Any deficiency noted must be corrected immediately by the contractor.
Maintenance:
1. Inspect all silt fence, rock berm, inlet protection, concrete wash out areas and stabilized concrete entrances and exits weekly and directly after any rainfalls greater than 1 inch.
2. Remove sediment when buildup reaches 6 inches on silt fence, rock berms or install a second line of silt fence parallel.
3. Replace any torn fabric in the silt fence.
4. Replace or repair any sections crushed or collapsed in the course of construction.
5. See stormwater pollution plan details as shown in the construction plans for proper size and installation.
6. Contractor to maintain a daily log and note any deficiencies to temporary BMPs and corrective action taken. Rainfall events shall also be noted.

BMP Inspection Report
Attachment I

Operator: _____ Date: _____

Job Name: _____ Receiving Waters: _____

Location: _____ Map Grid: _____

Inspector: _____ Inspector Qualifications: _____

Is this site over the Aquifer recharge or contributing zone ____ If this site is in compliance with the SWPPP and Permit ____

Visual Inspection of the Site	Y	N	N/A	Comments
NOI Posted?				
Site Notice Posted?				
Was a copy of the NOI sent to the Reporting agency?				
SWPPP Plan in Box?				
Copy of WPAP in the box? (If applies)				
SWPPP Information updates				
Material list updated?				
Project Milestone current with intended dates?				
All current locations of BMP's Identified on plans?				
Areas under operators control clearly Identified on site map?				
Trash Containers and Restrooms noted?				
Stabilized areas updated or noted on plans?				
Site Conditions				
Entrance and exits free from off site tracking?				
Trash and Debri being contained on site?				
Material storage area effectively controlling pollutants?				
Wash out pit working order?				
Are all pollutants contained on site?				
Erosion Control devices in working order?				
Are all BMP's Adequate for this site at this times				
Hazardous Waste				
Is there materials being exposed to storm water runoff?				
Any signs of major leaks or spills?				
Any leaks or spills of reputable Quanitiy need to be reported?				

BMP Inspection Report
Attachment I

Job Name: _____ Date: _____

Location	What Failed and Amount	Reason	Modification to be made	Correction Date
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
Location	What Failed and Amount	Reason	Modification to be made	Correction Date

I certify under the penalty of law that this document and all attachments were prepared under my direction or Supervision in accordance with a system designed to assure that qualified personnel properly gathered and Evaluated the information submitted. Based on my inquiry of the person or persons who manage the system? Or those persons directly responsible for gathering the information, the information submitted is, too the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for Submitting false information, including the possibility of fine and imprisonment for knowing violations.

Qualified BMP Inspector: _____

BMP Inspection Report
Attachment I

Job Name: _____ Date: _____

Construction Activities and location

Block/Lot or Address	Work being done	Date

NOTES:

TEMPORARY STORMWATER SECTION
ATTACHMENT J
Schedule of Interim and Permanent Soil Stabilization Practices

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site.

If after 21 days, and construction activity will not resume, hydromulch shall be applied to all disturbed areas except in drainage channels or where slopes exceed 3:1. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

All erosion control measures must remain in place until such stabilization has successfully occurred.

Silt Fences shall be used as indicated. Owner shall consult with design engineer to determine all necessary measures to stabilize the site if construction does not resume.

TCEQ RG 348 dated July 2005 shall be used as a guide in determining these areas that may require stabilization.

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Mitchell Moore,
Print Name

Owner,
Title - Owner/President/Other

of Mitchell Moore,
Corporation/Partnership/Entity Name

have authorized Jessica Calhoun, P.E., CFM
Print Name of Agent/Engineer

of HMT Engineering and Surveying
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

8/9/23
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Mitchell Mecs known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 9 day of August, 2023.

NOTARY PUBLIC

BRYCE KENT
My Notary ID # 134175550
Expires January 31, 2027

Bryce Kent
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 01/31/2027

Owner Authorization Form

Texas Commission on Environmental Quality
for Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

Land Owner Authorization

I, Christopher M Godwin of Christopher M Godwin
Land Owner Signatory Name — Land Owner Name (Legal Entity or Individual)

am the owner of the property located at
18772 Forty Six Parkway, Bulverde, TX 78070
Legal description of the property referenced in the application

and am duly authorized in accordance with §213.4(c)(2) and §213.4(d)(1) or §213.23(c)(2) and §213.23(d) relating to the right to submit an application, signatory authority, and proof of authorized signatory.

I do hereby authorize Mitchell Moore
Applicant Name (Legal Entity or Individual)

to conduct a TCEQ Contributing Zone Permit
Description of the proposed regulated activities

at 18772 Forty Six Parkway, Bulverde, TX 78070.
Precise location of the authorized regulated activities

Land Owner Acknowledgement

I understand that Christopher M Godwin
Land Owner Name (Legal Entity or Individual)

Is ultimately responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation even if the responsibility for compliance and the right to possess and control the property referenced in the application has been contractually assumed by another legal entity. I further understand that any failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Land Owner Signature

Land Owner Signature

8/8/23
Date

THE STATE OF § Texas

County of § Travis

BEFORE ME, the undersigned authority, on this day personally appeared Christopher Goodwin known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 8th day of August, 2023.

NOTARY PUBLIC

ALPA PATEL
Notary Public, State of Texas
Comm. Expires 07-02-2025
Notary ID 129477449

Alpa Patel
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 07/02/2025

Attached: (Mark all that apply)

- ☐ Lease Agreement
- ☐ Signed Contract
- ☐ Deed Recorded Easement
- ☐ Other legally binding document

Applicant Acknowledgement

I, Mitchell Moore of Mitchell Moore
Applicant Signatory Name — Applicant Name (Legal Entity or Individual)

acknowledge that Christopher M Godwin
Land Owner Name (Legal Entity or Individual)

has provided Mitchell Moore
Applicant Name (Legal Entity or Individual)

with the right to possess and control the property referenced in the Edwards Aquifer protection plan.

I understand that Mitchell Moore
Applicant Name (Legal Entity or Individual)

is contractually responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation. I further understand that failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Applicant Signature

Applicant Signature

8/9/23
Date

THE STATE OF § Texas

County of § Travis

BEFORE ME, the undersigned authority, on this day personally appeared Mitchell Moore known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 9 day of August

Jose Hitchcock
NOTARY PUBLIC

JOSE AARON HITCHCOCK
My Notary ID # 134265089
Expires March 22, 2027

Jose Hitchcock
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 3-22-2027

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Forty Six Parkway
Regulated Entity Location: 18772 Forty Six Parkway, Bulverde, Texas
Name of Customer: Mitchell Moore
Contact Person: Mitchell Moore Phone: 281-220-9042
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality.** Your canceled check will serve as your receipt. **This form must be submitted with your fee payment.** This payment is being submitted to:

☐ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	2.22 Acres	$ 4,000
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: Jessica Callum Date: 8/15/23

TCEQ-0574 (Rev. 02-24-15)

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Use Only
13001802 CZP

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 606170272		RN 111789715

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	08/08/2023

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Moore, Mitchell	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*

11. Type of Customer:	☐ Corporation	☒ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship	☐ Other:

12. Number of Employees	**13. Independently Owned and Operated?**
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher	☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	2303 Ranch Road 620 S						
	Ste 160, Box 241						
	City	Lakeway	**State**	TX	**ZIP**	78734	**ZIP + 4**	6229

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	gomoore@att.net

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(281) 220-9042		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Forty Six Parkway

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	18772 Forty Six Parkway							
	City	Bulverde	**State**	TX	**ZIP**	78070	**ZIP + 4**	0
24. County	Comal							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	The project is located about a quarter mile east of the intersection of River Way and Forty Six Parkway , and is on the north side of Forty Six Parkway, in Bulverde Texas.

26. Nearest City	**State**	**Nearest ZIP Code**
Bulverde	TX	78070

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	29.798475		**28. Longitude (W) In Decimal:**	-98.404965	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	47	54.5	98	24	17.9

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
8011	8062	621111	622110

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Medical Clinic

34. Mailing Address:	**2303 Ranch Road 620 S**							
	Ste 160, Box 241							
	City	**Lakeway**	**State**	**TX**	**ZIP**	**78734**	**ZIP + 4**	**6229**
35. E-Mail Address:	**gomoore@att.net**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(281) 220-9042		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
		Contribution Zone Plan		
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Zoe Hollinger		41. Title:	E.I.T.
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address	
(832) 330-7724		(830) 625-8556	zoeh@hmtnb.com	

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	HMT Engineering & Surveying	Job Title:	Project Manager	
Name *(In Print)*:	Jessica Calhoun, P.E. CFM		Phone:	(210) 255- 7873
Signature:	Jessica Calhoun		Date:	8/8/2023