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March 15, 2024

Ms. Sheila Morales
Town Secretary
Town of Copper Canyon
400 Woodland Drive
Coper Canyon, TX 75077

**RE: Jernigan Estates Preliminary Plat Review; 3/4/24 Submittal
Project Number: PRB-23001**

Ms. Morales:

We have reviewed the submitted Development Plan and Preliminary Plat for the referenced residential development. The provided Development Plan, Preliminary Plat, and Preliminary Construction Plans are consistent with the requirements in the Town's Subdivision Ordinance.

Below are items for consideration by the Planning and Zoning Committee.

- How is the overflow between this property and the property to the north being addressed? Will the existing berm be raised to separate the ponds?
- The Preliminary Construction Plans do not provide 1-ft of freeboard for the proposed spillway. The top of the berm elevation needs to be at a minimum 613.8' to ensure 1-ft of freeboard is provided at the spillway and the northwest corner of the pond.

Please let me know if you have any questions.

Sincerely,
tnp
teague nall & perkins

Christopher Hartke

Christopher Hartke, P.E.; CFM
Director of Engineering Services, Associate Principal





**TOWN OF COPPER CANYON
ENGINEERING DESIGN MANUAL**

CHECKLISTS

Please make sure the plans you are submitting are in accordance with this checklist. The following checklist will be used during the Plan Review.

Plat Application: **Preliminary Plat** **Preliminary Replat**
 Final Plat **Final Replat**

Engineering Plan: **Preliminary** **Final**

Storm Water Management: **Conceptual** **Preliminary** **Final**

Project Information

- A. Name of Development: JERNIGAN ESTATES B. Date: 02/27/2024
- C. Location of Development: 545 JERNIGAN ROAD, COPPER CANYON, TX 75077
- D. Type of Development: RESIDENTIAL
- E. Total area (acres): 13.165
- F. Proposed Land Uses (zoning designations): R2
- G. Anticipated project schedule: TO BE DETERMINED ASAP
- H. Name of Owner: MICHAEL CANNADAY
- I. Owner Telephone No.: (817) 371-4848 J. FAX No.: (817) 704-4457
- K. Owner Contact Name: MICHAEL CANNADAY
- L. Owner Address: 4931 LONG PRAIRE ROAD, SUITE 200 FLOWER MOUND, TEXAS 75028
- M. Owner Email Address: michael@michaelcannaday.com
- N. Engineer/Surveyor's Name: DARREN ANDREWS
- O. Engineer/Surveyor's Email Address: dandrews@mcadamsco.com
- P. Engineer/Surveyor Firm: The John R. McAdams Company, Inc.
- Q. Telephone No.: 972.310.7328

PRELIMINARY PLAT CHECKLIST:

- 1. Ten (10) Sets of Final Plats submitted to the Town Yes ___ No ___ N/A
- 2. Preliminary plats shall be placed on maximum 24" x 36" sheets and drawn to a scale of 1" = 100' or 1" = 50' unless approved in advance by the Town. Yes No ___ N/A ___
- 3. Title or name of the subdivision preceded by the words: "Preliminary Plat" Yes No ___ N/A ___
- 4. Name, address and telephone number of the owner, applicant, survey, and/or engineer. Yes No ___ N/A ___
- 5. Volume and page, or deed record number of the ownership deed from Denton County Deed Records. Yes No ___ N/A ___
- 6. Vicinity map and key map, if multiple sheets are needed. Yes No ___ N/A ___
- 7. Date of preparation, written and graphic scale, and north arrow. Yes No ___ N/A ___
- 8. Boundary line of the proposed subdivision drawn with a heavy line. Yes No ___ N/A ___
- 9. Computed gross acreage of the subdivision Yes No ___ N/A ___
- 10. Metes and bounds description of the proposed subdivision. Yes No ___ N/A ___
- 11. Location of the subdivision with respect to a corner of the survey or tract or an original corner of the survey of which it is a part. Yes No ___ N/A ___
- 12. Names of adjoining subdivisions with lots and blocks shown with dashed lines and/or property owners of record for all contiguous unplatted properties. Yes No ___ N/A ___
- 13. Town limits (if applicable). Yes ___ No ___ N/A
- 14. Location, dimension, and description and recording information for all existing rights-of-way, railroad rights-of-way, easements or other public ways on or adjacent to the property being developed. Yes No ___ N/A ___
- 15. Show permanent structures or uses that will remain. Yes No ___ N/A ___
- 16. Sizes and flowlines of existing drainage structures, 100-year floodplain and floodway as defined by FEMA. Yes No ___ N/A ___
- 17. Location, size and type of all existing utilities within or adjacent lot the site. Yes No ___ N/A ___

18. Number each proposed lot and block. Provide the proposed number of lots.

Yes No ___ N/A ___

19. Existing two (2) foot interval contours referenced to NAD.

Yes No ___ N/A ___

20. Proposed streets, alleys, drainageways, parks, open spaces, easements, other public areas and other rights-of-way within the subdivision. Dimensions of all easements and rights-of-way.

Yes No ___ N/A ___

21. Dimensions for all lots. Gross acreage for all non-residential lots. Approximate acreage for areas in residential use. Approximate acreage of streets, parks, and other non-residential uses.

Yes No ___ N/A ___

22. Front building setback lines, side and rear building setback lines.

Yes No ___ N/A ___

23. Preliminary Storm Water Management Plan meeting the requirements of the Engineering Design Manual shall be submitted with the Preliminary Plat. (Checklist in App. C)

Yes ___ No ___ N/A

24. Preliminary Plat approval block as described by the Subdivision Regulation Ordinance.

Yes No ___ N/A ___

25. Where the Preliminary Plat is part of a larger area owned by the Applicant that will be subsequently subdivided, provide a layout of the larger area showing the tentative layout of streets, blocks, drainage, water, sewerage, and other improvements for the larger area.

Yes ___ No ___ N/A

26. Added the note for buildings within 1,000 feet from existing oil or gas well as described by the Subdivision Regulation Ordinance.

Yes ___ No ___ N/A

FINAL PLAT CHECKLIST

1. Ten (10) Sets of Final Plats submitted to the Town

Yes ___ No ___ N/A

2. Final plats shall be placed on maximum 24" x 36" sheets and drawn to a scale of 1" = 100' or 1" = 50' unless approved in advance by the Town.

Yes ___ No ___ N/A

3. Title or name of the subdivision preceded by the words "Final Plat"

Yes ___ No ___ N/A

4. Name address and telephone number of the owner, applicant, survey, and/or engineer.

Yes ___ No ___ N/A

5. Vicinity map and key map if multiple sheets are needed.

Yes ___ No ___ N/A

6. Date, written and graphic scale, and north arrow.

Yes ___ No ___ N/A

7. Boundary line of subdivision drawn with a heavy line and with bearings, dimensions and curve data.

Yes ___ No ___ N/A

8. Names of adjoining subdivisions with lots and blocks shown with dashed lines and/or property owners of record for all contiguous unplatted properties.

Yes ___ No ___ N/A

9. Town limits, if applicable.

Yes ___ No ___ N/A

10. Proposed streets, alleys, drainageways, parks, open spaces, easements, other public areas and other rights-of-way within the subdivision including dimensions, bearings and curve data.

Yes ___ No ___ N/A

11. Location, dimension, description and recording information for all existing rights-of-way, railroad rights-of-way, easements or other public ways on or adjacent to the property being platted.

Yes ___ No ___ N/A

12. Location and description of all permanent monuments and control points

Yes ___ No ___ N/A

13. Final Storm Water Management Plan meeting the requirements of the Engineering Design Manual shall be submitted with the Preliminary Plat. (Checklist in App. C)

Yes ___ No ___ N/A

14. Floodways / Floodplains (FEMA):

a. Show the ultimate 100-year water surface elevation.

Yes ___ No ___ N/A

b. Show floodplain and floodway boundaries.

Yes ___ No ___ N/A

c. Drainage Floodway easement limits

Yes ___ No ___ N/A

d. Minimum fill and floor elevations specified.

Yes ___ No ___ N/A

15. Minimum building setback lines.

Yes ___ No ___ N/A

16. Lot and block numbers.

Yes ___ No ___ N/A

17. Approval block in the form prescribed by the Subdivision Regulations Ordinance.

Yes ___ No ___ N/A

18. Abutting property owner names and recording information.

Yes ___ No ___ N/A

19. Gross acreage of the land being subdivided

Yes ___ No ___ N/A

27. Added the note for buildings within 1,000 feet from existing oil or gas well as described by the Subdivision Regulation Ordinance.

Yes ___ No ___ N/A

20. Owner's certificate of deed or dedication with the following:

Yes ___ No ___ N/A

a. Metes and bounds description.

Yes ___ No ___ N/A

b. Representation that dedicators own the property.

Yes ___ No ___ N/A

c. Dedication statement.

Yes ___ No ___ N/A

- d. Reference and identification or name of final plat. Yes ___ No ___ N/A
- e. Surveyor certification in the form prescribed by the Subdivision Regulation Ordinance. Yes ___ No ___ N/A
- 21. Certificate showing all taxes have been paid. Yes ___ No ___ N/A
- 22. A letter fully outlining and alterations from the approved Preliminary Plat. Yes ___ No ___ N/A

ENGINEERING SITE PLAN – Each Engineering Site Plan shall include:

- 1. Engineering Site plans shall be placed on maximum 22" x 34" sheets and drawn to a scale of 1" = 100' or 1" = 50' unless approved in advance by the Town. Yes No ___ N/A ___
- 2. Title block in lower right hand corner including:
 - a. Subdivision name with lot and block number. Yes No ___ N/A ___
 - b. Area in acres. Yes No ___ N/A ___
 - c. Metes and bounds description including survey name and abstract number. Yes No ___ N/A ___
 - d. Town and County. Yes No ___ N/A ___
 - e. Preparation Date. Yes No ___ N/A ___
- 3. Name, address and telephone number of the owner, applicant, and surveyor/engineer. Yes No ___ N/A ___
- 4. Vicinity map and key map, if multiple sheets are needed. Yes No ___ N/A ___
- 5. Written scale, graphic scale and north arrow. Yes No ___ N/A ___
- 6. Approximate distance to the nearest street. Yes No ___ N/A ___
- 7. Site boundaries, dimensions, lot lines and lot areas. Yes No ___ N/A ___
- 8. Legend. Yes No ___ N/A ___
- 9. Site data summary table including:
 - a. Zoning. Yes No ___ N/A ___
 - b. Proposed use. Yes No ___ N/A ___
 - c. Building area (gross square footage). Yes ___ No ___ N/A
 - d. Building height (feet and inches). Yes No ___ N/A ___
 - e. Area of impervious surface. Yes ___ No ___ N/A
 - f. Total Parking: Required and provided. Yes ___ No ___ N/A

- g. Number of handicap parking spaces. Yes ___ No ___ N/A
- h. Number of dwelling units and number of bedrooms (multifamily). Yes ___ No ___ N/A
- 10. Existing improvements within 75' of the subject property. Yes No ___ N/A ___
- 11. Land use, zoning, subdivision name, recording information and adjacent owners. Yes No ___ N/A ___
- 12. Building locations, sizes, and dimensions. Yes ___ No ___ N/A
- 13. Distance between buildings on the same lot. Yes ___ No ___ N/A
- 14. Building lines and setbacks. Yes No ___ N/A ___
- 15. Dimensions of all drive lanes and traffic flow arrows. Yes ___ No ___ N/A
- 16. FEMA floodplains with elevations, and minimum finished floor elevations (include the floodplain note shown on the final plat). Yes ___ No ___ N/A
- 17. Public streets, private drives, and fire lanes with pavement widths and including rights-of-way, median openings, turn lanes, existing driveways, adjacent existing driveways with dimensions, radii, and surface. Yes No ___ N/A ___
- 18. Distances between existing and proposed driveways. Yes No ___ N/A ___
- 19. Loading and unloading areas. Yes ___ No ___ N/A
- 20. Ramps, crosswalks, sidewalks and barrier-free ramps with dimensions. Yes ___ No ___ N/A
- 21. Locations of dumpsters and trash compactors with height and material of screening. Yes ___ No ___ N/A
- 22. Size, location, dimensions and details of all signs and exterior lighting of signs, including type of standards, locations and radius of light and intensity of foot-candles. All signage are subject to approval by the Building Inspections Department. Yes ___ No ___ N/A
- 23. Location and sizes of existing and proposed water and sewer mains. Yes No ___ N/A ___
- 24. Location of fire hydrants. Yes No ___ N/A ___
- 25. Location and sizes of storm drains, culverts, inlets and other drainage features on or adjacent to the site. Yes No ___ N/A ___
- 26. Locations, widths, and types of existing and proposed easements. Yes No ___ N/A ___
- 27. Provide an elevation of all four sides of the building including materials, colors and dimensions at an architectural scale of 1"=20'. Yes ___ No ___ N/A
- 28. Landscape plan provided on separate sheet to show the following:
 - a. Natural features including tree masses and anticipated tree loss. Yes ___ No ___ N/A
 - b. Floodplains, drainageways and creeks. Yes ___ No ___ N/A

- c. Screening walls and fences, retaining walls, headlight screens, and service area screens including height and type of construction. Yes No N/A
- d. Existing and preserved trees including location, size, and species. Yes No N/A
- e. Landscaping materials including location and size. Yes No N/A
- f. Proposed plant materials. Yes No N/A
- g. Note to indicate type and placement of irrigation system. Yes No N/A
- 29. 2" x 3" blank box in lower right corner for Town use. Yes No N/A
- 30. Additional information as requested to clarify the proposed development. Yes No N/A

COVER SHEET * - The cover sheet shall include:

- 1. Project title and type of project. Yes No N/A
- 2. Location map. Yes No N/A
- 3. Disposal site for excess excavation. Yes No N/A
- 4. Index of Sheets (if not included on its own sheet). Yes No N/A
- 5. Approval blocks for Town including Town Engineer and Director of Public Works. Yes No N/A
- 6. Professional Engineer's seal, signature and date. Yes No N/A
- 7. "Release for Construction" note. Yes No N/A

* NOTE: If the Cover Sheet is not furnished, information should appear on other sheets.

GENERAL

- 1. North arrow clearly shown on each plan sheet. Yes No N/A
- 2. Bench marks shown on each sheet; located on permanent structure outside of construction limits and conveniently spaced (500' +). Yes No N/A
- 3. Title blocks, title, sheet number and scales shown. Yes No N/A
- 4. Each sheet must bear the seal of a Licensed Professional Engineer, signature, and date. Yes No N/A
- 5. Street names on each sheet. Yes No N/A
- 6. Property owners and property lines shown. Yes No N/A
- 7. Submit four (4) sets of plans for review on 22" x 34" sheets. Yes No N/A
- 8. Prepare plans on 22" x 34" sheets allowing for half size reduction to 11" x 17". Yes No N/A

9. Text shall be legible on the half size 11" x17" plans.

Yes No N/A

10. Place standard general notes on plans.

Yes No N/A

11. Existing, proposed and future facilities must clearly be defined.

Yes No N/A

12. Project name on right end of plan sheets.

Yes No N/A

GRADING * – Each grading plan shall include:

- | | |
|---|--|
| 1. Horizontal scale for grading plans shall be at 1" = 20' on full size drawings. | Yes ___ No <input checked="" type="checkbox"/> N/A ___ |
| 2. Existing one-foot contours based on an on-the-ground survey or controlled aerial topographic map (dashed lines and labeled) to extend 20 feet from property line onto adjacent property. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 3. Proposed one-foot contours – solid lines and labeled. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 4. Show top of curb elevation every 50 feet on streets, alleys, existing and proposed parking lots. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 5. Slope: | |
| a. Back of street curb to property line: 1/4" per foot. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| b. Parking lot top of curb to property line: Maximum 4 (horizontal) to 1 (vertical). | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| c. Any unpaved area to property line: Maximum slope of 4:1. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| d. Show driveways with 1/4" per foot + 6" from street gutter up to property line. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 6. Letter of approval if grading is proposed on adjacent property. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 7. Utility easement from abutting property owners. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 8. Proposed inlets, label and size. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 9. Proposed pipes, label and size. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 10. Existing inlets and pipes. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |

* NOTE: Add statement that grading only is being submitted with these plans.

PAVING PLAN – Each Paving Plan shall include:

- | | |
|--|--|
| 1. Horizontal scale for paving plans shall be at 1" = 20' on full size drawings. | Yes ___ No <input checked="" type="checkbox"/> N/A ___ |
| 2. Right-of-way, street, alley, drives and sidewalks dimensioned. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 3. Centerline stations shown. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 4. Limits of work defined. | Yes <input checked="" type="checkbox"/> No ___ N/A ___ |
| 5. Barrier free ramps at all intersections. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 6. Pavement transitions. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 7. Traffic control items; striping, traffic buttons, sign. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |
| 8. Street lighting. | Yes ___ No ___ N/A <input checked="" type="checkbox"/> |

- | | | | |
|---|---|-----------------------------|---|
| 9. Concrete pavement thickness. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 10. Minimum 3,600 psi in 28 days concrete compressive strength. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 11. 6" curbs. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 12. Minimum reinforcement with No. 4 bars 24" o.c. both ways. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 13. Sidewalks to be 4" thick, 3,600 psi in 28 days, reinforced with No. 3 bars 14" O.C.E.W. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 14. Expansion joints at intersection and at minimum 600 foot intervals for pavement. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 15. Saw cut at 15-, 17.5- and 20-foot intervals for 6-inch, 7-inch and 8-inch pavements respectively. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 16. Radius at corners conform to Table II-2. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 17. Gutter flow arrows. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 18. Roadways comply with thoroughfare plan. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 19. Geometrics meet design speed criteria. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 20. Is Superelevation required? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 21. Retaining Walls: | | | |
| a. Type, beginning and ending locations and wall elevations. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| b. Provide design if non-standard or modified. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| c. Drainage behind walls shown. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 22. Driveway grades shown. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 23. Prepare plans and necessary forms for TDLR plans review and field inspection. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 24. Developer to pay for all review and inspection fees. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |

PAVING PROFILES AND GRADES – Plans shall include:

- | | | | |
|--|---|-----------------------------|---|
| 1. Vertical scale for paving profiles shall be at 1" = 4' on full size drawings. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 2. Profiles plotted showing ground at proposed property line. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 3. Top of curb profiles must meet minimum and maximum grade requirements. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |
| 4. Driveway profile grades. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 5. Vertical curves must be designed in accordance with Table II-5. | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 6. Contour grading plans for major intersections. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> |

- 7. Spot top of curb elevations in plan view on proposed left turn lanes. Yes ___ No ___ N/A
- 8. Check carefully for any place water might pond. Are inlets located at sag points or vertical curves? Yes ___ No ___ N/A
- 9. Are grades, crossfall, slopes, etc., consistent with information shown on typical section? Yes No ___ N/A ___
- 10. Check ends of project for drainage. If gutters drain to ditches or field type inlets, are grades and profiles shown? Yes ___ No ___ N/A
- 11. Minimum grades maintained to assure complete drainage. Yes No ___ N/A ___

WATER – All water distribution and transmission facilities shall include:

- 1. Approval letter to connect to the waste line from Bartonville Water Supply Corporation Yes ___ No ___ N/A
- 2. Horizontal scale for plan views shall be at 1" = 20' on full size drawings. Yes ___ No N/A ___
- 3. Vertical scale for profile views shall be at 1" = 4' on full size drawings. Yes ___ No ___ N/A
- 4. Loop water mains. Yes ___ No ___ N/A
- 5. Valves on fire hydrant leads. Yes No ___ N/A ___
- 6. Valves on main lines between each fire hydrant. Yes ___ No ___ N/A
- 7. Maximum distance between each fire hydrant.
 - a. Residential – 500' c-c on street. Yes No ___ N/A ___
 - b. Multifamily – 400' c-c on street. Yes ___ No ___ N/A
 - c. Office, retail, commercial, industrial 300' c-c on street. Yes ___ No ___ N/A
- 8. All portions of building within 300' radius of a fire hydrant in commercial. Yes ___ No ___ N/A
- 9. All portions of building within 400' radius of a fire hydrant in multifamily. Yes ___ No ___ N/A
- 10. All portions of buildings within 500' radius of a fire hydrant in single family and duplex residential. Yes No ___ N/A ___
- 11. Maximum length non-looped line serving a fire hydrant is 150 feet. Yes ___ No N/A ___
- 12. Lateral service (min. 1" copper) from main line to two feet from ROW. Yes No ___ N/A ___
- 13. Water main extended to opposite property line or tied to existing main. Yes ___ No ___ N/A
- 14. Profile mains 12" and larger. Yes ___ No ___ N/A
- 15. Show other utility lines crossing wastewater lines. Yes ___ No ___ N/A
- 16. Show location of water meters:
 - a. Domestic. Yes No ___ N/A ___

b. Irrigation.

Yes ___ No ___ N/A

c. Fire line.

Yes ___ No ___ N/A

17. Show size of water meters.

Yes ___ No ___ N/A

18. Note minimum pipe covers (attach water and standard details and general notes).

Yes No ___ N/A ___

19. Dedicate water line easements up to and including fire hydrants and water meters for lines off ROW.

Yes No ___ N/A ___

WASTEWATER – All wastewater plans shall include:

1. Approval letter to connect to the wastewater collection agency (i.e. Flower Mound, Highland Village, Upper Trinity, Private)

Yes ___ No ___ N/A

2. Horizontal scale for plan views shall be at 1" = 20' on full size drawings.

Yes ___ No ___ N/A

3. Vertical scale for profile views shall be at 1" = 4' on full size drawings.

Yes ___ No ___ N/A

4. 8" minimum, PVC SDR-35 (unless 6-inch approved by Town).

Yes ___ No ___ N/A

5. Manhole at end of all lines.

Yes ___ No ___ N/A

6. Manholes at change of pipe size, tees and bends.

Yes ___ No ___ N/A

7. 500' maximum distance between manholes on lines 21" and smaller.
800' maximum distance between manholes on lines 24" and larger.

Yes ___ No ___ N/A

8. Minimum slopes:

a. 6" – 0.50% (Pipe size as approved by Town).

Yes ___ No ___ N/A

b. 8" – 0.33%.

Yes ___ No ___ N/A

c. 10" – 0.25%.

Yes ___ No ___ N/A

d. 12" – 0.20%.

Yes ___ No ___ N/A

e. 15" – 0.14%.

Yes ___ No ___ N/A

f. 18" – 0.12%.

Yes ___ No ___ N/A

9. Maximum slope such that velocity is less than 10 fps.

Yes ___ No ___ N/A

10. Sewer laterals 10' downstream from water service or to center of lot.

Yes ___ No ___ N/A

11. Minimum lateral size:

a. Residential, 4".

Yes ___ No ___ N/A

b. Apartment, retail or commercial – 6".

Yes ___ No ___ N/A

c. Manufacturing or industrial – 8".

Yes ___ No ___ N/A

12. Profile all sewer lines except laterals.

Yes ___ No ___ N/A

13. Show other utility lines crossing wastewater lines.

Yes ___ No ___ N/A

14. Label lines to correspond to profile.

Yes ___ No ___ N/A

15. Concrete encasement at creek crossing.

Yes ___ No ___ N/A

16. Provide stub outs to adjacent property. Add services for Planned Development Communities.

Yes ___ No ___ N/A

17. Note benchmark on all sheets.

Yes ___ No ___ N/A

18. 10' utility easement provided for lines not in ROW.

Yes ___ No ___ N/A

UTILITIES – All plans shall show the following:

1. Existing and proposed facilities shown in plan and profiles views.

Yes No ___ N/A ___

2. Underground facilities close to or in conflict with proposed construction located by actual ties and elevations.

Yes No ___ N/A ___

3. Caution notes shown when construction operations come close to existing utilities. Telephone number of utility contact shall be shown.

Yes No ___ N/A ___

EROSION CONTROL – All plans shall show the following:

1. The scale for Erosion Control Plans may vary however shall be prepared on sheets no smaller than 1" = 100' on full size drawings.

Yes No ___ N/A ___

2. Existing and Proposed Grading.

Yes No ___ N/A ___

3. Existing and Proposed Drainage Features.

Yes No ___ N/A ___

4. Erosion features including temporary construction entrance, silt fence, inlet protection, rock berms, seeding, etc.

Yes No ___ N/A ___

5. Erosion control standard details.

Yes No ___ N/A ___

PAVEMENT MARKINGS AND SIGNAGE

1. The scale for Pavement Marking Plans may vary however shall be prepared on sheets no smaller than 1" = 100' on full size drawings.

Yes No ___ N/A ___

2. Pavement Markings and Signage Plan in accordance with MUTCD.

Yes No ___ N/A ___

3. Pavement Markings Standard Details.

Yes No ___ N/A ___

TRAFFIC CONTROL PLAN

- 1. The scale for Traffic Control Plans may vary however shall be prepared on sheets no smaller than 1" = 200' on full size drawings.
- 2. Traffic Control Plan in accordance with MUTCD.
- 3. Traffic Control Standard Details.
- 4. Traffic Control Phasing as necessary.

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

LANDSCAPE AND IRRIGATION PLANS

- 1. The scale for Landscape and Irrigation Plans may vary however shall be prepared on sheets no smaller than 1" = 100' on full size drawings.
- 2. Landscape Plan showing rights-of-way and proposed back of curbs, sidewalk, existing; and proposed utilities and other features pertinent to the plan.
- 3. Planting details.
- 4. Irrigation Plans including metering, back flow prevention, and provision for electrical service and controllers.
- 5. Irrigation details.

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

STREET LIGHTING

- 1. The scale for Street Lighting Plans may vary however shall be prepared on sheets no smaller than 1" = 100' on full size drawings.
- 1. Lighting and Conduit Layout Plan.
- 2. Lighting Standard Details.

Yes ___ No ___ N/A

Yes ___ No ___ N/A

Yes ___ No ___ N/A

JERNIGAN ESTATES

TOWN OF COPPER CANYON, TEXAS

DRAINAGE STUDY

PROJECT NUMBER: PRB-23001
DESIGNED BY: ERIN STOREY, PE, CFM

DATE: MARCH 2024



MCADAMS

201 COUNTRY VIEW DRIVE
ROANOKE, TEXAS 76262
TBPE FIRM # 19762



1	NARRATIVE
2	EXHIBITS
3	DIGITAL DATA

JERNIGAN ESTATES

Drainage Study

General Description & Background

Jernigan Estates is a proposed 7 lot single family residential subdivision of approximately 13.2 acres along Jernigan Road. Six new lots are proposed, and one existing lot is to remain resulting in seven new platted lots. Associated infrastructure (paving, drainage, water) is proposed to serve the development. The site is located approximately 950 feet north of the intersection of Jernigan Road and Rolling Acres Drive in the Town of Copper Canyon, Denton County, TX. A site map is included in Exhibit 1.

This report contains:

- Hydrologic calculations detailing the 2-year, 10-year, and 100-year storm events (24-hour event for each) for the pre and proposed project conditions.
- Detention facility and outlet calculations for the detention area spanning the site and adjacent property.

Calculation Methodology

- HEC-HMS Version 4.10, by the U.S. Army Corps of Engineers, was used for hydrology calculations.
- PondPack Version V10.02.00.01 was used to determine outlet rating curves for the existing and proposed outlet control weirs.
- The time of concentration was calculated using the SCS TR-55 Segmental Approach. The T_c flow paths are divided into three segments: overland flow, concentrated flow, and channel flow. The travel time is then computed for each segment, from which the overall time of concentration is determined by taking the sum of each segmental time.
- Using the Web Soil Survey, the contributing basin soils were determined to be from hydrologic soil groups (HSG) 'B', 'C' and 'D' soils. Since the method chosen to compute the post development peak flow rate is dependent upon the HSG, care was taken when selecting the appropriate Soil Conservation Service Curve Number (SCS CN). Within the sub-basin, an approximate proportion of each soil group was determined using Web Soil Survey Maps. Once an approximate proportion was determined, a composite SCS CN was computed for each land cover condition.

Existing Hydrology

- Existing land cover is based on the existing condition within the contributing area.
- Existing Basin A is approximately 109 acres of open space/rural residential and this report estimates the basin is about 5% impervious or about 5.5 acres.
- Within the basin, the predominant soil is Type B, with Type C and Type D soil making up less than 20% of the overall basin.
- The CN for existing Basin A is calculated to be 65.4.
- The calculated time of concentration is 32.5 minutes.

- Soils mapping, CN calculations, Tc calculations, and rainfall data are included in Exhibit 2. Basin mapping is included in Exhibit 3.

Proposed Hydrology

- Proposed project land cover is based on the offsite existing condition and onsite project area comprised of minimum 2-acre residential lots.
- Proposed Project Basin A is 109 acres, and the 13.2-acre onsite area is assumed to be 12% impervious which is consistent with the Town of Copper Canyon’s Engineering Design Manual for this type of land use.
- The proposed project land use breakdown is 5.5 acres of offsite impervious, 13.2 acres of 2-acre lot residential, and 90.3 acres of offsite open space.
- The proposed project CN is calculated to be 65.8.
- The calculated time of concentration is 32.5 minutes – no change from pre project.
- Soils mapping, CN calculations, Tc calculations, and rainfall data are included in Exhibit 2. Basin mapping is included in Exhibit 3.

Poindexter Branch Master Drainage Study Discussion

- With reference to TNP’s Poindexter Branch Master Drainage Study (PBMDs), the project site is included in Basin P17. P17 is 138 acres with a CN of 65.1 and a Tc of 37.3 min.
- The CN values calculated in this study are consistent with the PBMDs values, however, the larger values calculated in this study are attributed to the higher concentration of Type C and Type D soils with the smaller 109-acre subbasin.
- The calculated Tc for this study is consistent with TNP’S overall P-17 basin Tc of 37.3 minutes. From this study’s outfall (labelled SP A), the flow travels approximately 1870 feet to the outfall of P17. At an assumed 5 feet per second, another 6.2 minutes of concentrated flow would be added to the 32.5 minutes resulting in a total Tc of about 38.7 minutes which is consistent with TNP’S 37.3-minute Tc. Differences are attributed to variations in flow path length, topography, and slope used by each engineer.
- See Exhibit 4 for selected references from the PBMDs study.

Detention Discussion

Existing Geometry

- There is an onsite pond (Pond 1) in the northwest corner of the property, however, there is no engineered outfall structure regulating the pond.
- There is an offsite pond (Pond 2) on the northern adjacent property that also outfalls to the study point. Pond 2 does not have an engineered outlet structure.
- While the ponding areas are located on separate parcels, effectively Pond 2 drains into Pond 1 before the Pond 2 weir engages. The 612 contour is shared across the common property line and the 611 contour is just at the common property line. Functionally, there is one pond outfalling on two separate parcels. For labelling and discussion purposes of this study the ponds are labelled Pond 1 and Pond 2.

- Based on field topography, Pond 1 begins overtopping around elevation 611.40 and flows northwest to the study point. To estimate outflow, a broad crested weir was approximated near the existing berm. Assumed weir geometry for the existing condition of Pond 1 is shown in Exhibit 5.
- Based on field topography, Pond 2 pond begins overtopping around elevation 612.7 and flows southwest to the study point. Assumed weir geometry for the existing condition of Pond 2 is shown in Exhibit 5. Existing weir plan view locations are called out in Exhibit 3.
- Between elevation 611.40 and elevation 612.7, Pond 1 weir regulates outflow and water surface elevation. No outflow from Pond 2 is anticipated.
- At elevation 612.7, the Pond 2 weir engages and between elevation 612.7 and 613 both weirs are assumed to regulate outflow and water surface elevation.
- The modelling in this study assumes one pond with two broad crested weirs at different elevations. As previously stated, Bentley PondPack was used to generate the rating curve for the irregular weir configuration. The PondPack calculations for the existing weir geometry used in the HMS model are included in Exhibit 6.

Proposed Geometry

- To mitigate increases in peak flow, volume will be added onsite to Pond 1 and an outlet control structure will be constructed.
- A 35-foot broad crest weir is proposed to regulate outflow and water surface elevations between elevation 610.9 and 612.7.
- As in the pre project case, the Pond 2 weir engages and between elevation 612.7 and 613 and between these elevations both weirs are assumed to regulate outflow and water surface elevation.
- No offsite grading is proposed and no improvements for Pond 2 weir are proposed.
- Bentley PondPack was used to generate the rating curve for the proposed condition weir configuration. The PondPack calculations for the proposed weir geometry used in the HMS model are included in in Exhibit 7.
- A copy of the civil plans showing details related to the control structure is provided in Exhibit 8.
- In the proposed condition, the flow pattern to the study point is unchanged. In the proposed condition, the flow path from Pond 1 is approximately 50 feet shorter but no significant change in flow depth or velocity are anticipated as the proposed flow crosses the property line onto the adjacent property. See Exhibit 9 for a cross section showing a pre and proposed comparison of computed flow velocity and depth near the property line.

Summary of Results

The chart below provides a summary of the pre and post development flow rates at the study point and pre and proposed pond water surface elevations.

	Pre	Post
2 Year (cfs)	41.6	41.5
2 Year Pond Water Surface Elevation (ft)	611.9	611.4
10 Year (cfs)	148.1	139.7

10 Year Pond Water Surface Elevation (ft)	612.3	612.1
100 Year (cfs)	365.9	327.3
100 Year Pond Water Surface Elevation (ft)	612.9	612.8

Conclusion

If the development is built as proposed within this report, then the requirements set forth in Town of Copper Canyon Engineering Design Manual will be met. However, modifications to the proposed development may require that this analysis be revised. Modifications that would require this analysis to be revised include:

1. The percent impervious of the drainage area through the site varies significantly from that used in this report.
2. Offsite grading in the detention area significantly changes how the detention pond functions.

The above modifications may result in the assumptions within this report becoming invalid. The computations within this report will need to be revisited if any of the above conditions become apparent as development of the proposed site moves forward.

EXHIBIT 1



M:\Projects\PRB\PRB23001\04-Production\Water Resources\Stormwater Management\Prelim Sizing\Current Drawings\PRB23001.dwg, 3/4/2024 8:14:38 AM, Erin Storey



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JERNIGAN ESTATES

SITE LOCATION MAP

545 JERNIGAN ROAD

COPPER CANYON, TEXAS, 75077

PLAN INFORMATION

PROJECT NO.	PRB-23001
FILENAME	EXHIBIT 1
CHECKED BY	EKS
DRAWN BY	EKS
SCALE	NTS
DATE	03.04.2024

EXHIBIT 2

a pervious area CN of 61, the composite CN obtained from Figure 2.1.5-3 is 68. The CN difference between 70 and 68 reflects the difference in percent impervious area.

<u>Cover Description</u>	<i>Average percent impervious area²</i>	<u>Curve numbers for hydrologic soil groups</u>			
		A	B	C	D
Cultivated Land:					
Without conservation treatment		72	81	88	91
With conservation treatment		62	71	78	81
Pasture or range land:					
Poor condition		68	79	86	89
Good condition		39	61	74	80
Meadow:					
Good condition		30	58	71	78
Wood or forest land:					
Thin stand, poor cover		45	66	77	83
Good cover		25	55	70	77
Open space (lawns, parks, golf courses, cemeteries, etc.)³					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved; curbs and storm drains (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Urban districts:					
Commercial and business	85%	89	92	94	95
Industrial	72%	81	88	91	93

Table 2.1.5-1 Runoff Curve Numbers¹					
<u>Cover Description</u>		<u>Curve numbers for hydrologic soil groups</u>			
<i>Cover type and hydrologic condition</i>	<i>Average percent impervious area²</i>	A	B	C	D
Residential districts by average lot size:					
1/8 acre or less (town house)	65%	77	85	90	92
1/4 acre	38%	61	75	83	87
1/3 acre	30%	57	72	81	86
1/2 acre	25%	54	70	80	85
1 acre	20%	51	68	79	84
2 acres	12%	46	65	77	82
Developing urban areas and newly graded areas (previous areas only, no vegetation)		77	86	91	94

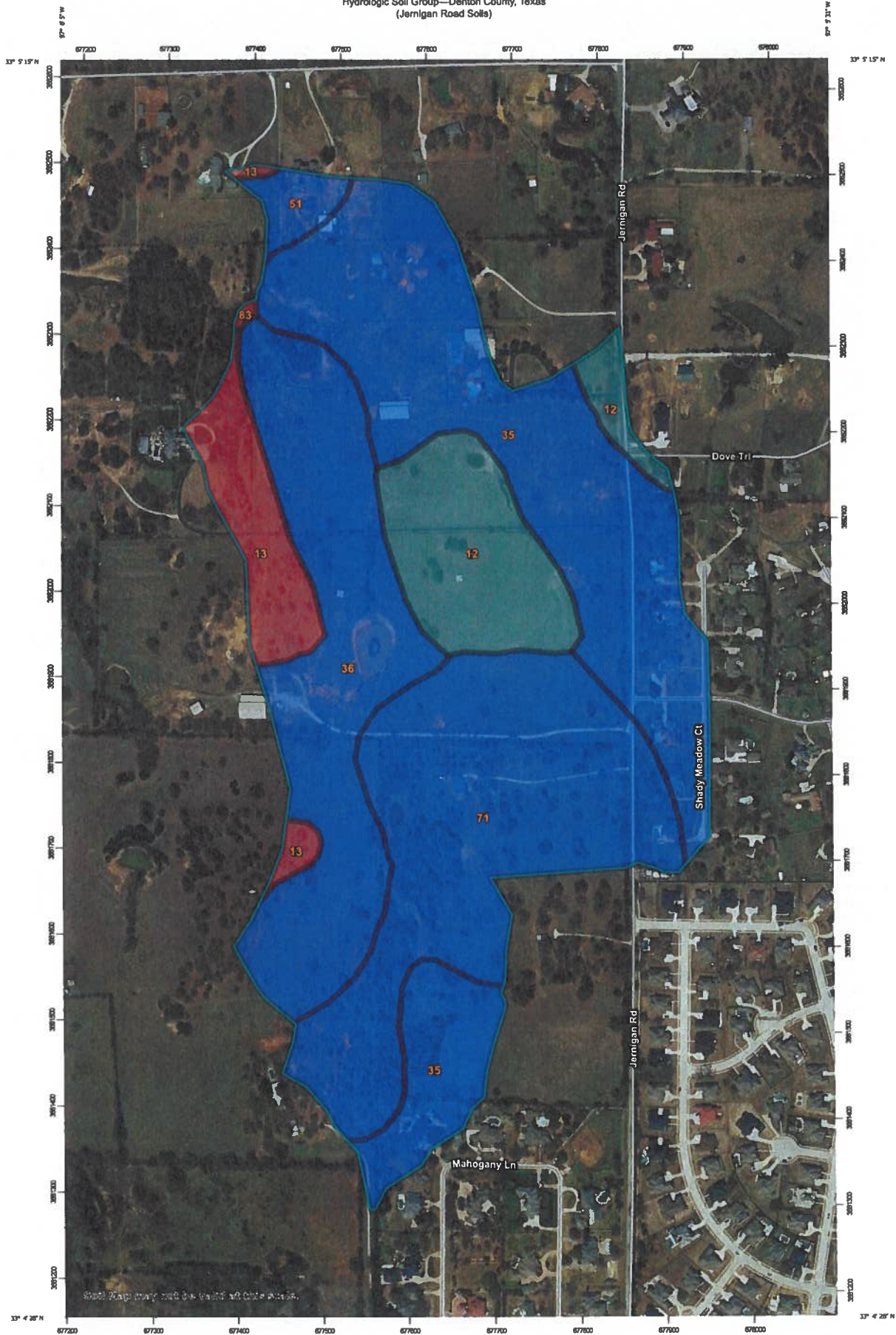
¹ Average runoff condition, and $I_a = 0.2S$

² The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. If the impervious area is not connected, the SCS method has an adjustment to reduce the effect.

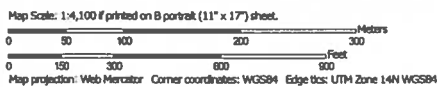
³ CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

		Return Period (Years)							
		1	2	5	10	25	50	100	
Coefficients									
e		0.82089	0.80553	0.79891	0.78388	0.76912	0.76817	0.75660	
b		43.381	50.455	65.467	70.683	78.538	89.853	95.776	
d		T8	9	11	11	11	12	12	
Hours	Minutes	Rainfall Intensity (inches per hour)							
0.083	5	5.28	6.02	7.15	8.04	9.31	10.19	11.23	
	6	4.97	5.70	6.81	7.67	8.89	9.76	10.75	
	7	4.70	5.41	6.50	7.33	8.50	9.36	10.32	
	8	4.46	5.15	6.23	7.03	8.16	9.00	9.93	
	9	4.24	4.92	5.98	6.75	7.84	8.67	9.57	
	10	4.04	4.71	5.75	6.50	7.55	8.36	9.24	
	11	3.87	4.52	5.54	6.27	7.29	8.08	8.93	
	12	3.71	4.34	5.35	6.05	7.04	7.82	8.65	
	13	3.56	4.18	5.17	5.85	6.82	7.58	8.39	
0.250	14	3.43	4.04	5.00	5.67	6.61	7.36	8.14	
	15	3.31	3.90	4.85	5.50	6.41	7.14	7.91	
	16	3.19	3.77	4.70	5.34	6.23	6.95	7.70	
	17	3.09	3.66	4.57	5.19	6.05	6.76	7.50	
	18	2.99	3.55	4.44	5.05	5.89	6.59	7.31	
	19	2.90	3.44	4.32	4.91	5.74	6.43	7.13	
	20	2.81	3.35	4.21	4.79	5.60	6.27	6.96	
	21	2.73	3.26	4.11	4.67	5.46	6.12	6.80	
	22	2.66	3.17	4.01	4.56	5.34	5.99	6.65	
	23	2.59	3.09	3.91	4.45	5.21	5.85	6.50	
	24	2.52	3.02	3.82	4.35	5.10	5.73	6.36	
	25	2.46	2.95	3.74	4.26	4.99	5.61	6.23	
	26	2.40	2.88	3.66	4.17	4.89	5.50	6.11	
	27	2.34	2.81	3.58	4.08	4.79	5.39	5.99	
	28	2.29	2.75	3.51	4.00	4.69	5.28	5.88	
0.500	29	2.24	2.69	3.44	3.92	4.60	5.18	5.77	
	30	2.19	2.64	3.37	3.85	4.51	5.09	5.66	
	31	2.14	2.58	3.31	3.77	4.43	5.00	5.56	
	32	2.10	2.53	3.24	3.71	4.35	4.91	5.47	
	33	2.06	2.49	3.18	3.64	4.28	4.83	5.38	
	34	2.02	2.44	3.13	3.58	4.20	4.75	5.29	
	35	1.98	2.39	3.07	3.51	4.13	4.67	5.20	
	36	1.94	2.35	3.02	3.46	4.06	4.59	5.12	
	37	1.91	2.31	2.97	3.40	4.00	4.52	5.04	
	38	1.87	2.27	2.92	3.35	3.94	4.45	4.96	
	39	1.84	2.23	2.88	3.29	3.88	4.38	4.89	
	40	1.81	2.19	2.83	3.24	3.82	4.32	4.82	
	41	1.78	2.16	2.79	3.19	3.76	4.26	4.75	
	42	1.75	2.13	2.74	3.15	3.71	4.20	4.68	
	43	1.72	2.09	2.70	3.10	3.65	4.14	4.62	
0.750	44	1.69	2.06	2.66	3.06	3.60	4.08	4.56	
	45	1.67	2.03	2.63	3.01	3.55	4.02	4.50	
	46	1.64	2.00	2.59	2.97	3.50	3.97	4.44	
	47	1.62	1.97	2.55	2.93	3.46	3.92	4.38	
	48	1.59	1.94	2.52	2.89	3.41	3.87	4.32	
	49	1.57	1.92	2.49	2.85	3.37	3.82	4.27	
	50	1.55	1.89	2.45	2.82	3.33	3.77	4.22	
	51	1.53	1.86	2.42	2.78	3.28	3.73	4.17	
	52	1.51	1.84	2.39	2.75	3.24	3.68	4.12	
	53	1.49	1.82	2.36	2.71	3.21	3.64	4.07	
	54	1.47	1.79	2.33	2.68	3.17	3.60	4.02	
	55	1.45	1.77	2.30	2.65	3.13	3.55	3.98	
	56	1.43	1.75	2.28	2.62	3.09	3.51	3.93	
	57	1.41	1.73	2.25	2.59	3.06	3.48	3.89	
	58	1.39	1.71	2.22	2.56	3.03	3.44	3.85	
	59	1.37	1.69	2.20	2.53	2.99	3.40	3.81	
	1	60	1.36	1.67	2.17	2.50	2.96	3.36	3.77
	2	120	0.81	1.01	1.33	1.55	1.85	2.11	2.38
3	180	0.59	0.74	0.99	1.15	1.38	1.58	1.79	
6	360	0.34	0.43	0.58	0.68	0.83	0.95	1.09	
12	720	0.19	0.25	0.34	0.40	0.49	0.57	0.65	
24	1440	0.11	0.14	0.20	0.23	0.29	0.33	0.39	

Hydrologic Soil Group—Denton County, Texas
(Jernigan Road Soils)



Soil Map may not be valid at this scale.



MAP LEGEND

- Area of Interest (AOI)**
 Area of Interest (AOI)
- Soils**
- Soil Rating Polygons**
- A
 - A/D
 - B
 - B/D
 - C
 - C/D
 - D
 - Not rated or not available
- Soil Rating Lines**
- A
 - A/D
 - B
 - B/D
 - C
 - C/D
 - D
 - Not rated or not available
- Water Features**
- Streams and Canals
- Transportation**
- Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
- Aerial Photography
- Soil Rating Points**
- A
 - A/D
 - B
 - B/D
 - C
 - C/D
 - D
 - Not rated or not available
- Soil Rating Polygons**
- C
 - C/D
 - D
 - Not rated or not available

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Denton County, Texas
 Survey Area Data: Version 20, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 3, 2022—Mar 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
12	Birome fine sandy loam, 3 to 5 percent slopes	C	11.9	11.0%
13	Birome-Rayex-Aubrey complex, 2 to 15 percent slopes	D	6.7	6.2%
35	Gasil fine sandy loam, 1 to 3 percent slopes	B	35.7	32.9%
36	Gasil fine sandy loam, 3 to 8 percent slopes	B	23.6	21.8%
51	Konsil fine sandy loam, 3 to 8 percent slopes	B	1.8	1.7%
71	Silawa loamy fine sand, 2 to 5 percent slopes	B	28.6	26.4%
83	Wilson clay loam, 0 to 1 percent slopes	D	0.1	0.1%
Totals for Area of Interest			108.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

I. SCS CURVE NUMBERS

Soils from WebSoilSurvey are only inclusive of indirectly connected areas

HSG	Impervious	Open	2ac Residential
A	98	39	46
B	98	61	65
C	98	74	77
D	98	80	82

Assume:
 HSG 'A' = 0.0%
 HSG 'B' = 82.7%
 HSG 'C' = 11.0%
 HSG 'D' = 6.3%

Cover Condition	SCS CN	Comments
Impervious	98	-
Open	64	Assume good condition
2ac Residential	67	Assumes 12% impervious

II. PRE-DEVELOPMENT

Watershed Land Use Breakdown

Contributing Area	SCS CN	Area [sf]	Area [acres]	Comments
Onsite impervious	98	0	0.00	-
Onsite open	64	574,992	13.20	Assume good condition
Offsite impervious	98	239,580	5.50	-
Offsite open	64	3,933,468	90.30	Assume good condition

Total area = 109.00 acres
 4,748,040 sf
 Composite SCS CN = 65.4
 % Impervious = 5.0%

III. TIME OF CONCENTRATION INFORMATION

Time of concentration is calculated using the SCS Segmental Approach (TR-55).

Segment 1: Overland Flow

Length = 100 ft
 Top Elev = 672.00 ft
 Bot Elev = 671.00 ft
 Height = 1 ft
 Slope = 0.0100 ft/ft
 Manning's n = 0.24 dense grasses
 P (2-year/24-hour) = 3.36 inches (Apex, NC)
 Segment Time = 18.35 minutes

Segment 2: Concentrated Flow

Length = 600 ft
 Top Elev = 671.00 ft
 Bot Elev = 653.00 ft
 Height = 18 ft
 Slope = 0.0300 ft/ft
 Paved ? = No
 Velocity = 2.79 ft/sec
 Segment Time = 3.58 minutes

Segment 4: Channel Flow

Length = 3175 ft
 Top Elev = 653.00 ft
 Bot Elev = 609.00 ft
 Height = 44 ft
 Slope = 0.0139 ft/ft
 Manning's n = 0.035 natural channel
 Flow Area = 9.00 sf (assume 3'w x 3'h channel)
 Wetted Perimeter = 9.00 lf (assume 3' x 3' channel)
 Channel Velocity = 5.01 ft/sec
 Segment Time = 10.56 minutes

Time of Concentration =	32.49	minutes
SCS Lag Time =	19.49	minutes (SCS Lag = 0.6* Tc)
Time Increment =	5.65	minutes (= 0.29*SCS Lag)

I. SCS CURVE NUMBERS

Soils from WebSoilSurvey are only inclusive of indirectly connected areas

HSG	Impervious	Open	2ac Residential
A	98	39	46
B	98	61	65
C	98	74	77
D	98	80	82

Assume:
 HSG 'A' = 0.0%
 HSG 'B' = 82.7%
 HSG 'C' = 11.0%
 HSG 'D' = 6.3%

Cover Condition	SCS CN	Comments
Impervious	98	-
Open	64	Assume good condition
2ac Residential	67	Assumes 12% impervious

II. PRE-DEVELOPMENT

Watershed Land Use Breakdown

Contributing Area	SCS CN	Area [sf]	Area [acres]	Comments
Onsite impervious	98	0	0.00	-
Onsite 2ac Residential	67	574,992	13.20	Assumes 12% impervious
Offsite impervious	98	239,580	5.50	-
Offsite open	64	3,933,468	90.30	Assume good condition

Total area = 109.00 acres
 4,748,040 sf
 Composite SCS CN = 65.8
 % Impervious = 6.5%

III. TIME OF CONCENTRATION INFORMATION

Time of concentration is calculated using the SCS Segmental Approach (TR-55).

Segment 1: Overland Flow

Length = 100 ft
 Top Elev = 672.00 ft
 Bot Elev = 671.00 ft
 Height = 1 ft
 Slope = 0.0100 ft/ft
 Manning's n = 0.24 dense grasses
 P (2-year/24-hour) = 3.36 inches (Apex, NC)
 Segment Time = 18.35 minutes

Segment 2: Concentrated Flow

Length = 600 ft
 Top Elev = 671.00 ft
 Bot Elev = 653.00 ft
 Height = 18 ft
 Slope = 0.0300 ft/ft
 Paved ? = No
 Velocity = 2.79 ft/sec
 Segment Time = 3.58 minutes

Segment 4: Channel Flow

Length = 3175 ft
 Top Elev = 653.00 ft
 Bot Elev = 609.00 ft
 Height = 44 ft
 Slope = 0.0139 ft/ft
 Manning's n = 0.035 natural channel
 Flow Area = 9.00 sf (assume 3'w x 3'h channel)
 Wetted Perimeter = 9.00 lf (assume 3' x 3' channel)
 Channel Velocity = 5.01 ft/sec
 Segment Time = 10.56 minutes

Time of Concentration =	32.49	minutes
SCS Lag Time =	19.49	minutes (SCS Lag = 0.6 * Tc)
Time Increment =	5.65	minutes (= 0.29 * SCS Lag)

EXHIBIT 3



MCADAMS
The John A. McAdams Company, Inc.
4502 State Highway 211, Suite 800
Lawrence, Texas 75056
Phone 972, 436, 9712
Fax 972, 436, 9713
TWP. 1. 12N12. 79W.4. 12E.46460
www.mcadams.com



APPLICANT

PERCROW BUILDERS, INC.
10000 W. STATE HIGHWAY 200
SUITE 100
MCKINNEY, TEXAS 75068
(972) 371-4848
MOMILL@PERCROW.COM

JERNIGAN ESTATES
FP/ED
545 JERNIGAN ROAD
TOWN OF COPPER CANYON, TEXAS, 75077

REVISIONS

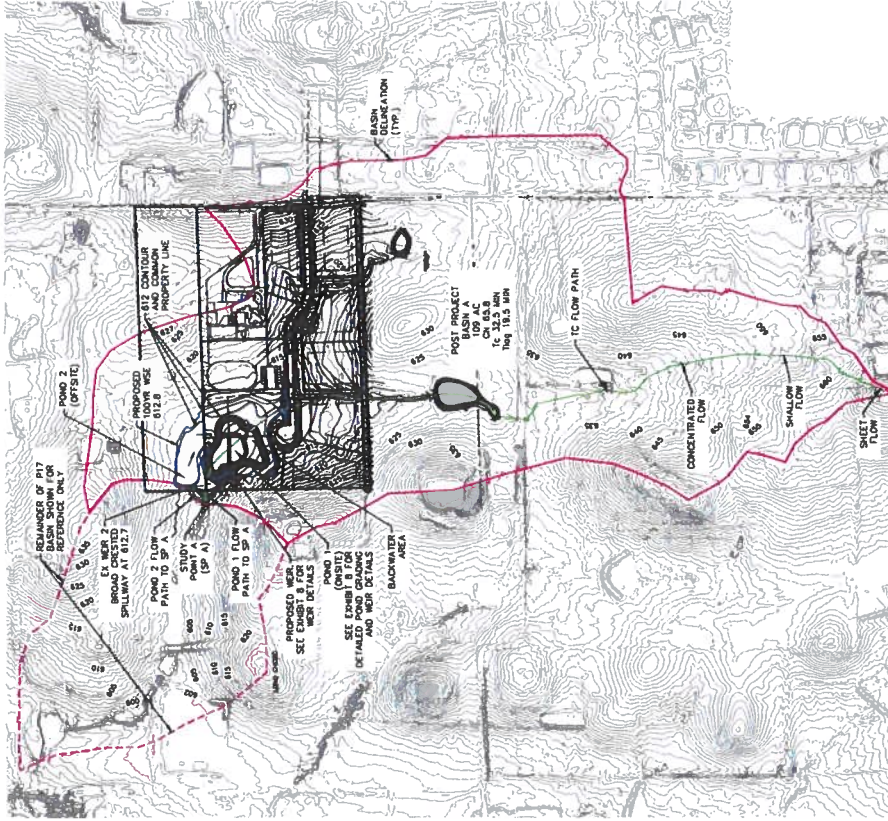
NO.	DATE	DESCRIPTION

PLAN INFORMATION

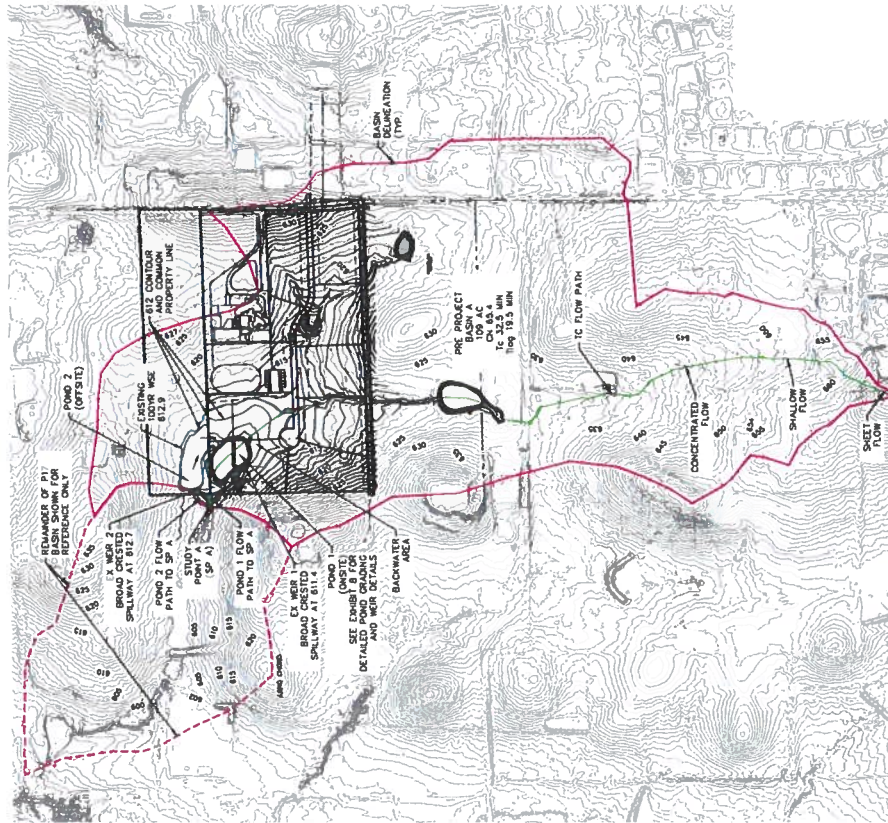
PROJECT NO.	PH-23001
FILENAME	PH33001.DWG
CHECKED BY	EGS
DRAWN BY	EGS
SCALE	1" = 300'
DATE	01-04-2014

**BASIN
MAPPING**

EX 3

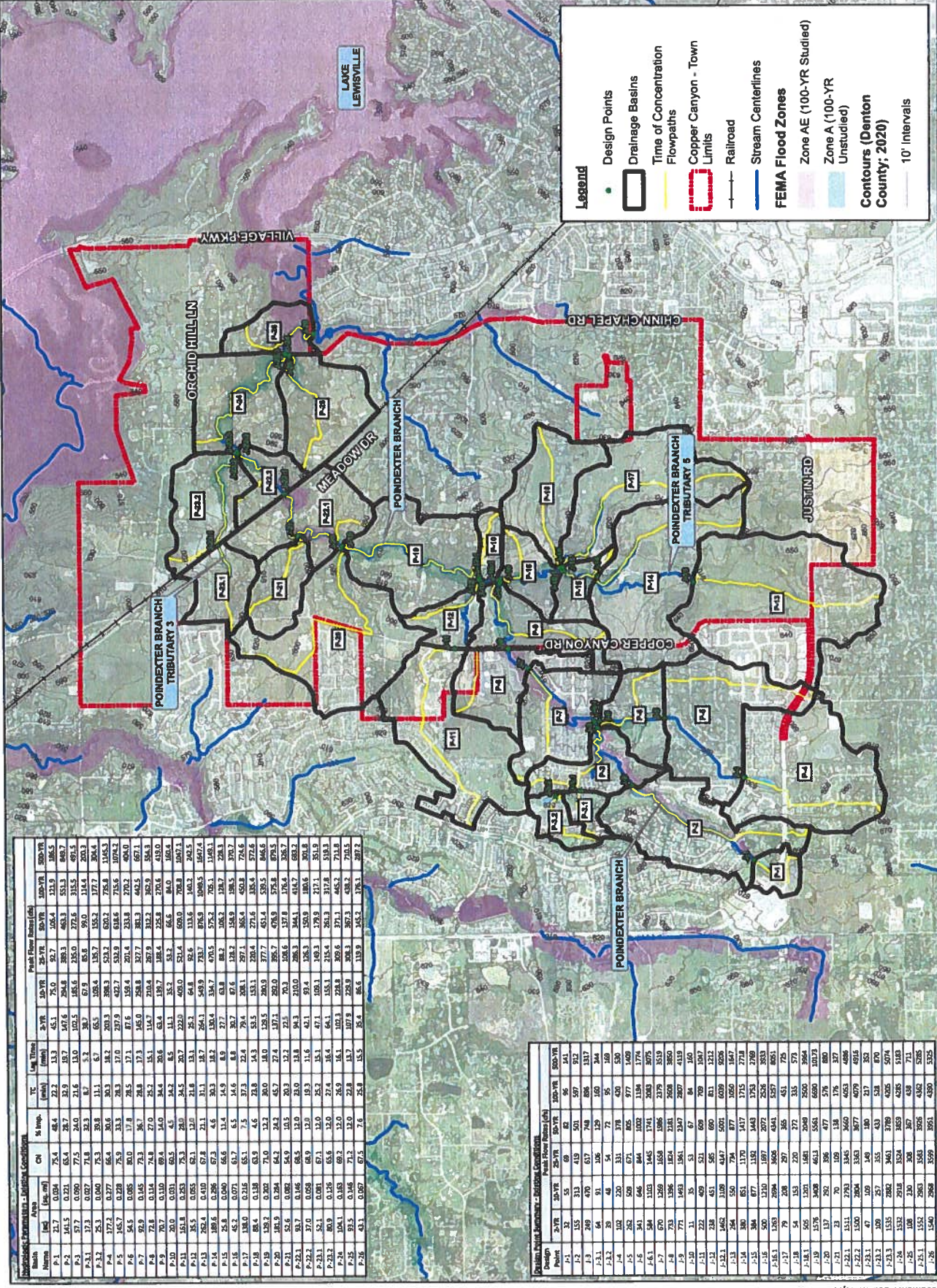


POST DEVELOPMENT BASIN MAPPING
1"=300'



EXISTING BASIN MAPPING
1"=300'

EXHIBIT 4



Legend

- Design Points
- Drainage Basins
- Time of Concentration Flowpaths
- Copper Canyon - Town Limits
- Railroad
- Stream Centerlines
- FEMA Flood Zones
- Zone AE (100-YR Studied)
- Zone A (100-YR Unstudied)
- Contours (Denton County, 2020)
- 10' Intervals

Hydrologic Parameters - Drainage Subcatchment

Basin	Area (Ac)	CH	TC (min)	% Imp.	TC (hr)	Peak Flow (cfs)	Peak Flow (MGD)
P-1	11.2	0.024	25.4	48.4	2.2	13.3	0.27
P-2	141.5	0.024	68.4	28.7	32.9	147.6	3.16
P-3	17.3	0.027	71.8	32.3	8.7	38.7	0.85
P-4	177.2	0.027	66.4	30.6	30.3	182.2	4.03
P-5	145.7	0.028	75.3	33.3	28.3	170.2	3.75
P-6	54.5	0.035	80.0	17.8	28.5	17.1	0.38
P-7	72.9	0.035	71.3	26.5	17.1	46.6	1.03
P-8	72.9	0.035	71.3	26.5	17.1	46.6	1.03
P-9	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-10	151.8	0.023	73.3	28.0	34.5	207.2	4.60
P-11	35.5	0.055	62.1	32.0	12.0	21.8	0.48
P-12	76.2	0.040	67.3	21.1	18.7	35.1	0.78
P-13	189.6	0.026	67.3	4.6	38.3	182.2	4.03
P-14	45.2	0.071	67.1	15.5	6.9	31.2	0.69
P-15	45.2	0.071	67.1	15.5	6.9	31.2	0.69
P-16	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-17	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-18	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-19	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-20	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-21	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-22	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-23	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-24	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-25	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-26	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-27	189.2	0.030	71.0	32.2	30.0	140.0	3.11
P-28	189.2	0.030	71.0	32.2	30.0	140.0	3.11

Drainage Basin Summary - Drainage Subcatchment

Point	20-YR	50-YR	100-YR	500-YR
P-1	32	55	69	95
P-2	155	313	419	597
P-3	249	479	617	748
P-4	196	329	429	546
P-5	72	125	161	211
P-6	25	42	54	72
P-7	32	55	69	95
P-8	32	55	69	95
P-9	132	251	321	439
P-10	110	214	274	364
P-11	67	110	144	191
P-12	73	125	161	211
P-13	189	358	464	617
P-14	149	281	361	479
P-15	50	84	109	144
P-16	132	251	321	439
P-17	132	251	321	439
P-18	132	251	321	439
P-19	132	251	321	439
P-20	132	251	321	439
P-21	132	251	321	439
P-22	132	251	321	439
P-23	132	251	321	439
P-24	132	251	321	439
P-25	132	251	321	439
P-26	132	251	321	439
P-27	132	251	321	439
P-28	132	251	321	439



CPP 20403

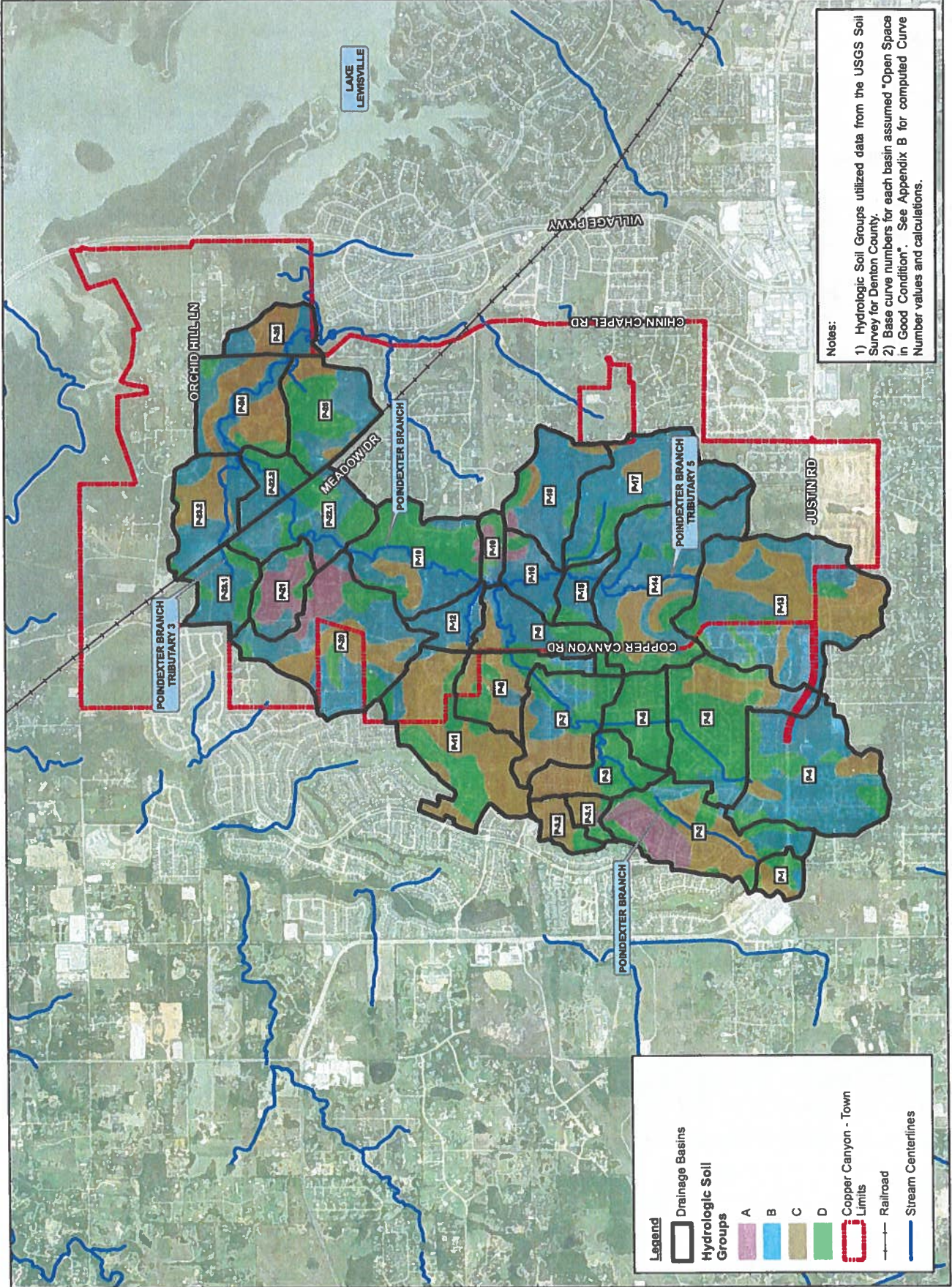


0 1,000 2,000
1 inch = 2,000 feet

POINDEXTER BRANCH MASTER DRAINAGE STUDY EXHIBIT 3 HYDROLOGIC SOILS MAP

Copper Canyon, Texas

August 2021

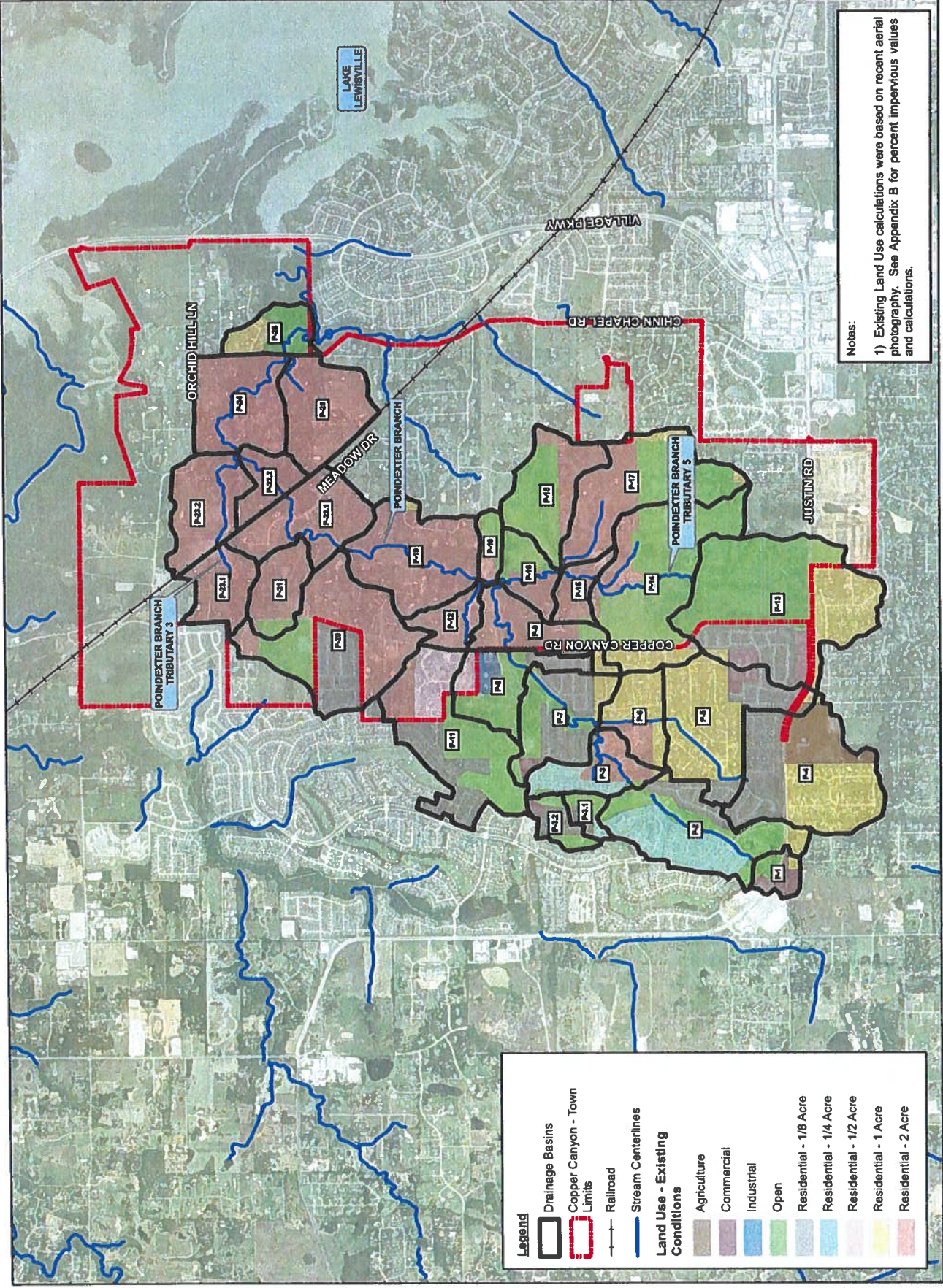


Notes:

- 1) Hydrologic Soil Groups utilized data from the USGS Soil Survey for Denton County.
- 2) Base curve numbers for each basin assumed "Open Space in Good Condition". See Appendix B for computed Curve Number values and calculations.

Legend

- Drainage Basins
- Hydrologic Soil Groups
 - A
 - B
 - C
 - D
- Copper Canyon - Town Limits
- Railroad
- Stream Centerlines



Notes:
1) Existing Land Use calculations were based on recent aerial photography. See Appendix B for percent impervious values and calculations.

Legend

- Drainage Basins
- Copper Canyon - Town Limits
- Railroad
- Stream Centerlines

Land Use - Existing Conditions

- Agriculture
- Commercial
- Industrial
- Open
- Residential - 1/8 Acre
- Residential - 1/4 Acre
- Residential - 1/2 Acre
- Residential - 1 Acre
- Residential - 2 Acre



CPP 20403

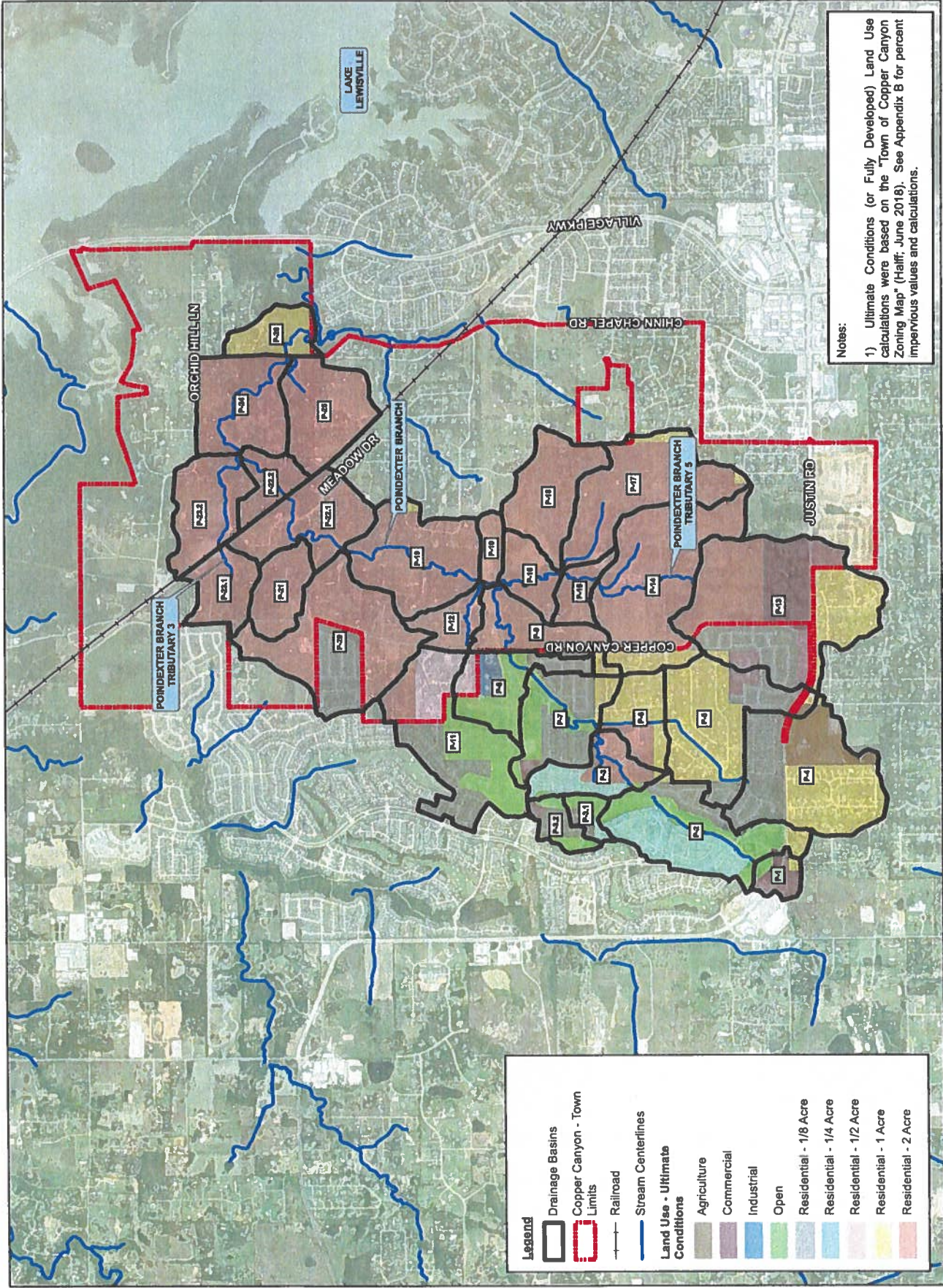


0 1,000 2,000
1 inch = 2,000 feet

LAND USE MAP - ULTIMATE CONDITIONS

EXHIBIT 5

Poindexter Branch Master Drainage Study
Copper Canyon, Texas
August 2021

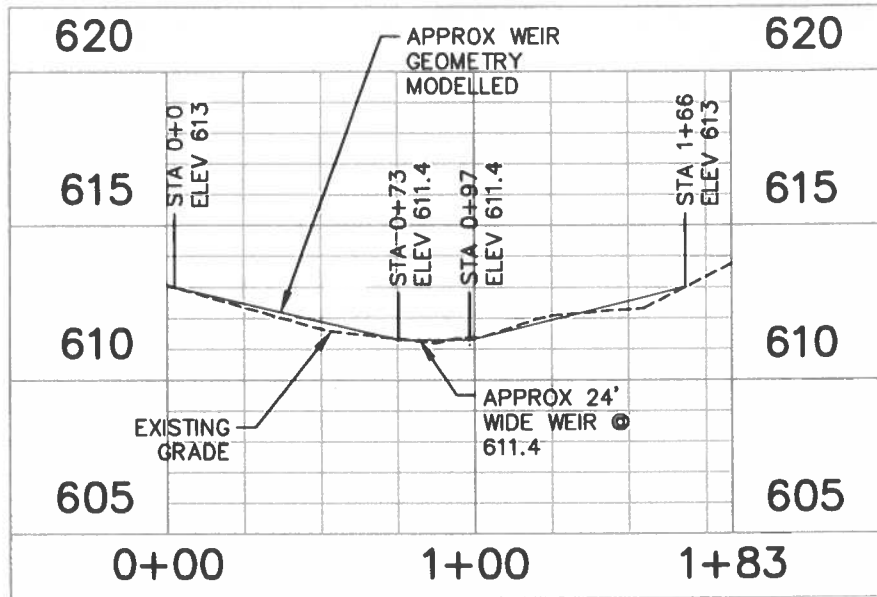


Notes:
1) Ultimate Conditions (or Fully Developed) Land Use calculations were based on the "Town of Copper Canyon Zoning Map" (Half, June 2018). See Appendix B for percent impervious values and calculations.

Legend

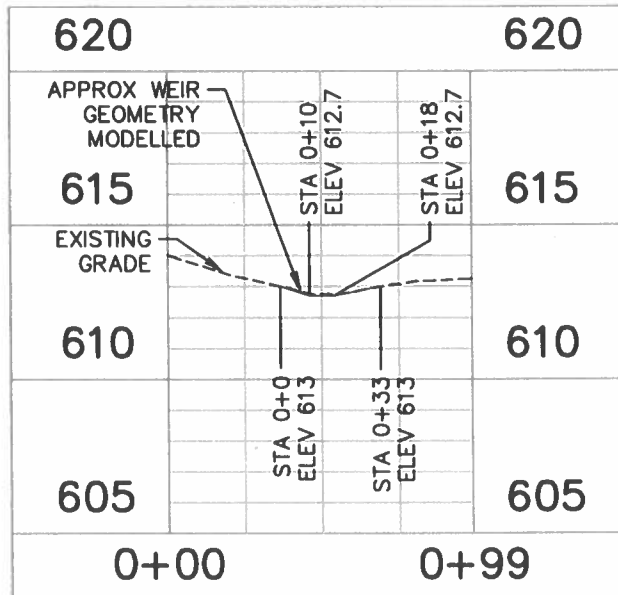
- Drainage Basins
- Copper Canyon - Town Limits
- Railroad
- Stream Centerlines
- Land Use - Ultimate Conditions
- Agriculture
- Commercial
- Industrial
- Open
- Residential - 1/8 Acre
- Residential - 1/4 Acre
- Residential - 1/2 Acre
- Residential - 1 Acre
- Residential - 2 Acre

EXHIBIT 5

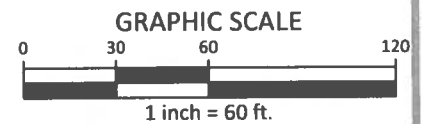


WEIR 1

NOTES:
SEE EXHIBIT 3 FOR
WEIR LOCATIONS.



WEIR 2



M:\Projects\PRB\PRB23001\04-Production\Water Resources\Stormwater Management\Prelim Sizing\Current Drawings\PRB23001 DCS-for outfall analysis.dwg, 3/4/2024 3:35:28 PM, Erin Storey



The John R. McAdams Company, Inc.
201 Country View Drive
Roanoke, TX 76262

phone 940.240.1012
TBPE FIRM # 19762

www.mcadamsco.com

JERNIGAN ESTATES
EXISTING WEIR GEOMETRY
545 JERNIGAN ROAD
COPPER CANYON, TEXAS, 75077

PLAN INFORMATION

PROJECT NO.	PRB-23001
FILENAME	EXHIBIT 5
CHECKED BY	EKS
DRAWN BY	EKS
SCALE	1"=60'(H), 1"=6"(V)
DATE	03.04.2024

EXHIBIT 6

Existing Pond Data			
Elev (ft)	Area (sf)	Area (ac)	Vol (cf)
611	46397	1.1	0
611	75331	1.7	0
612	118731	2.7	58218
613	176038	4.0	205603

Existing Condition Rating Curve from Pond Pack			
Elev (ft)	Flow (cfs)	storage (cf)	storage (ac ft)
611.40	0.00	0.00	0.00
611.45	0.86	4851.54	0.11
611.50	2.57	9703.08	0.22
611.55	5.00	14554.62	0.33
611.60	8.12	19406.16	0.45
611.65	11.94	24257.70	0.56
611.70	16.47	29109.24	0.67
611.75	21.73	33960.78	0.78
611.80	27.74	38812.32	0.89
611.85	34.52	43663.86	1.00
611.90	42.10	48515.40	1.11
611.95	50.49	53366.94	1.23
612.00	59.71	58218.48	1.34
612.05	69.80	65587.71	1.51
612.10	80.76	72956.93	1.67
612.15	92.62	80326.16	1.84
612.20	105.40	87695.38	2.01
612.25	119.13	95064.61	2.18
612.30	133.81	102433.83	2.35
612.35	149.47	109803.06	2.52
612.40	166.13	117172.28	2.69
612.45	183.81	124541.51	2.86
612.50	202.53	131910.73	3.03
612.55	222.30	139279.96	3.20
612.60	243.14	146649.18	3.37
612.65	265.07	154018.41	3.54
612.70	288.11	161387.63	3.70
612.75	312.59	168756.86	3.87
612.80	338.61	176126.08	4.04
612.85	366.20	183495.31	4.21
612.90	395.40	190864.53	4.38
612.95	426.26	198233.76	4.55
613.00	458.84	205602.98	4.72

EXHIBIT 7

Proposed Pond Data			
elev (ft)	area (sf)	area (ac)	vol (cf)
611	65762	1.5	0
611	78022	1.8	25162
612	152961	3.5	111781
613	182366	4.2	279444

Proposed Condition Rating Curve from Pond Pack			
Elev (ft)	Flow (cfs)	storage (cf)	storage (ac ft)
610.90	0.00	0.00	0.000000
610.95	1.15	3594.57	0.082520
611.00	3.25	7189.14	0.165040
611.05	6.00	10783.71	0.247560
611.10	9.29	14378.29	0.330080
611.15	13.03	17972.86	0.412600
611.20	17.21	21567.43	0.495120
611.25	21.78	25162.00	0.577640
611.30	26.72	30936.60	0.710207
611.35	32.03	36711.20	0.842773
611.40	37.67	42485.80	0.975340
611.45	43.64	48260.40	1.107906
611.50	49.94	54035.00	1.240473
611.55	56.55	59809.60	1.373039
611.60	63.46	65584.20	1.505606
611.65	70.68	71358.80	1.638173
611.70	78.19	77133.40	1.770739
611.75	85.99	82908.00	1.903306
611.80	94.08	88682.60	2.035872
611.85	102.44	94457.20	2.168439
611.90	111.09	100231.80	2.301006
611.95	120.02	106006.40	2.433572
612.00	129.21	111781.00	2.566139
612.05	138.68	120164.15	2.758589
612.10	148.42	128547.30	2.951040
612.15	158.43	136930.45	3.143491
612.20	168.71	145313.60	3.335941
612.25	179.24	153696.75	3.528392
612.30	190.05	162079.90	3.720843
612.35	201.11	170463.05	3.913293
612.40	212.44	178846.20	4.105744
612.45	224.03	187229.35	4.298194
612.50	235.87	195612.50	4.490645
612.55	247.98	203995.65	4.683096
612.60	260.34	212378.80	4.875546
612.65	272.97	220761.95	5.067997
612.70	285.84	229145.10	5.260448
612.75	299.30	237528.25	5.452898
612.80	313.41	245911.40	5.645349
612.85	328.19	254294.55	5.837800
612.90	343.66	262677.70	6.030250
612.95	359.85	271060.85	6.222701
613.00	376.81	279444.00	6.415152

EXHIBIT 8



MCADAMS

Professional Engineering
4400 State Highway 131, Suite 200
Lawrenceville, GA 30046
Phone 770.436.9712
Fax 770.436.9713
TWP: 13761 TPAU: 003300000
www.mcadams.com

APPLICANT

PERCORN BUILDERS, INC.
4831 LONG PRAIRIE ROAD, SUITE 300
FLOWER MOUND, TEXAS 75028
MICHAEL CANNADY

JERNIGAN ESTATES FP/ED 545 JERNIGAN ROAD TOWN OF COPPER CANYON, TEXAS, 75077



REVISIONS
NO. DATE DESCRIPTION

PLAN INFORMATION

PROJECT NO. PPG-23003
FILE NAME PPG23003-61-POND.DWG
CHECKED BY DAA
DRAWN BY DJ
SCALE 1" = 40'
DATE 02.04.2024
SHEET

POND GRADING PLAN

C3.09



BENCHMARKS:

TBM #1: MAGNOL WITH SKINNER FOUND ON THE EAST SIDE OF JERNIGAN ROAD, LOCATED APPROXIMATELY 280' NORTH OF THE INTERSECTION OF JERNIGAN ROAD AND APPROXIMATELY 645' NORTH OF THE INTERSECTION OF ROLLING ACRES DRIVE AND JERNIGAN ROAD. N: 7080815.339 E: 2399310.941 ELEVATION: 636.85

TBM #2: MAGNOL WITH SKINNER (MCADAMS) SET IN A DRIVEWAY ENTRANCE FOR THE NORTH EAST CORNER OF SUBJECT PROPERTY, LOCATED APPROXIMATELY 220' NORTH OF THE INTERSECTION OF JERNIGAN ROAD AND APPROXIMATELY 1,290' SOUTH OF THE INTERSECTION OF LONGSOME DOVE LAKE AND JERNIGAN ROAD. N: 7081301.010 E: 2399259.267 ELEVATION: 634.72

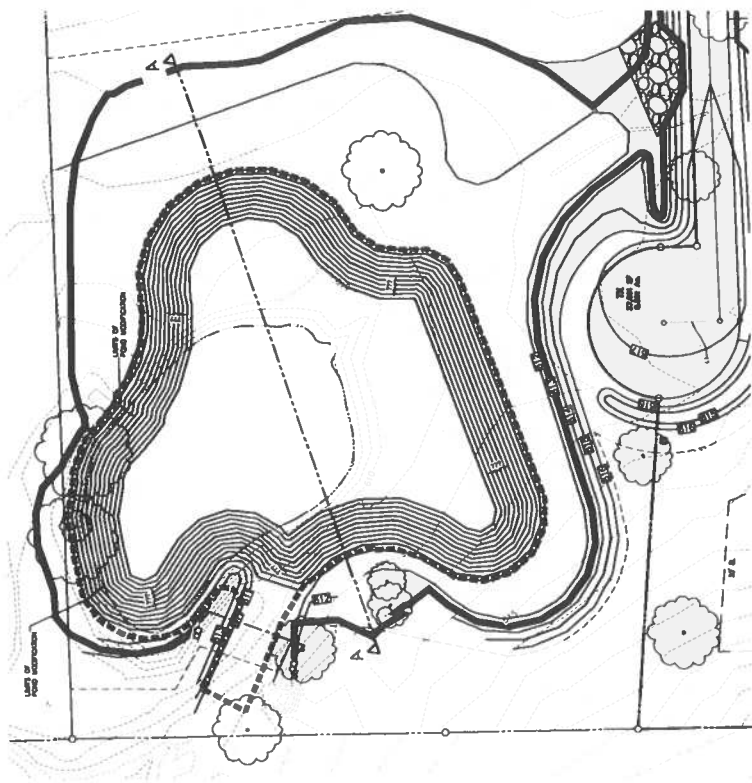
GENERAL NOTES:

1. THE TOWN OF COPPER CANYON ENGINEERING HAS REVIEWED THIS PLAN AND IS NOT RESPONSIBLE FOR THE ACCURACY OF THE DATA OR THE RESULTS OF THE WEIR CALCULATIONS BASED ON Q = C L H^{1.5}; C = 3
2. FOR DETAILED HYDRAULIC AND HYDROLOGY INFORMATION FOR THIS PROJECT, PLEASE REFER TO THE HYDROLOGY REPORT FOR JERNIGAN ESTATES DATED BY MCADAMS DATED MARCH 4th, 2024.

LEGEND

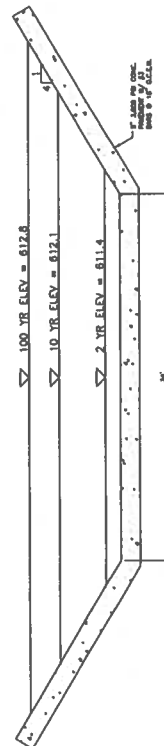
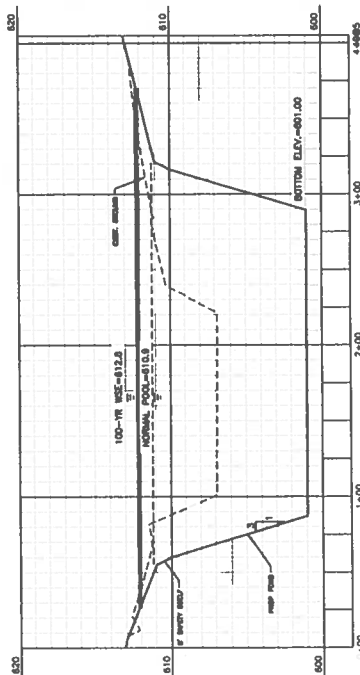
- PROPOSED WATER COURSE
- PROPOSED WEIR COURSE
- EXISTING COURSE
- PROPOSED NORMAL WEIR
- PROPOSED 100-YR WEIR

FOR DETAILED HYDRAULIC AND HYDROLOGY INFORMATION PLEASE SEE DRAINAGE STUDY FOR JERNIGAN ESTATES DONE BY MCADAMS DATED MARCH 4th, 2024.



WEIR	POOL
2	811.4
10	812.1
100	812.8

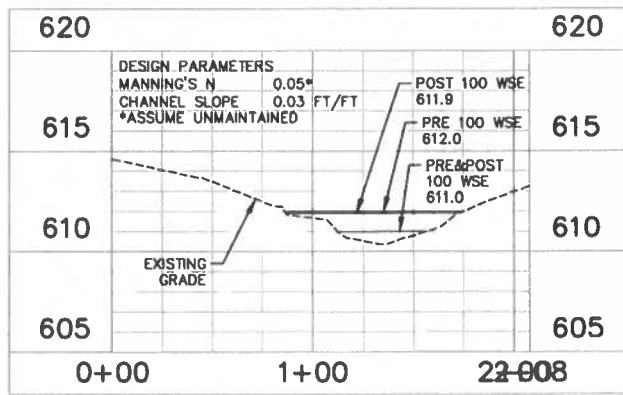
WEST POND CROSS SECTION A-A



SECTION B-B

INCLUDED FOR REFERENCE ONLY WITH THIS DRAINAGE STUDY. PLEASE SEE CIVIL SET FOR CONSTRUCTION PLAN.

EXHIBIT 9



A-A

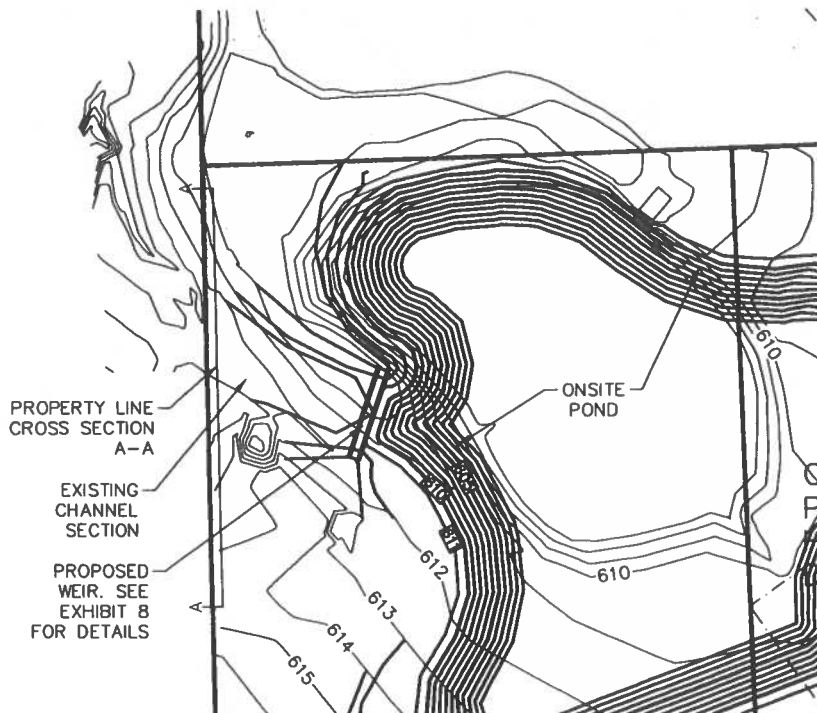
	PRE Q (CFS)	POST Q (CFS)
2 YR	41.6	41.5
10 YR	148.19	139.7
100 YR	365.9	327.3

	PRE WSE (FT)	POST WSE (CFS)
2 YR	611.0	611.0
10 YR	611.5	611.4
100 YR	612.0	611.9

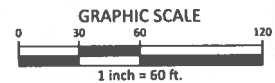
	PRE V (FPS)	POST V (FPS)
2 YR	2.7	2.7
10 YR	3.9	3.8
100 YR	4.7	4.5

**THE FLOW FROM WEIR 2 IS INSIGNIFICANT (<3CFS) WITH RESPECT TO WEIR 1 FLOW. TO SIMPLIFY THIS ANALYSIS THE CALCULATED STUDY POINT PEAK FLOW HAS BEEN APPLIED TO THIS CROSS SECTION.

SECTION A-A PROFILE



SECTION A-A PLAN



M:\Projects\PRB\PRB23001\04-Production\Water Resources\Stormwater Management\Plan Sizing\Current Drawings\PRB23001 DCS for outfall analysis.dwg, 1/4/2024 1:38:44 PM, Erin Steery

McADAMS

The John R. McAdams Company, Inc.
301 Country View Drive
Roanoke, TX 76262

phone 940.240.1012
TXPE FIRM # 15762

www.mcadamaco.com

JERNIGAN ESTATES
EXISTING WEIR GEOMETRY
545 JERNIGAN ROAD

PLAN INFORMATION

PROJECT NO. PRB-23001
FILENAME EXHIBIT 9
CHECKED BY EKS
DRAWN BY EKS
SCALE 1"=60'(H), 1"=6'(V)
DATE 03.04.2024

DIGITAL DATA