

# **APPENDIX D – Hydrology and Hydraulics**

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**Appendix D1 – Tables**

**Appendix D2 – Figures**

## **Appendix D1 – Tables**

**Table D1-1 - Undersized Structures within Secondary Plan Area**

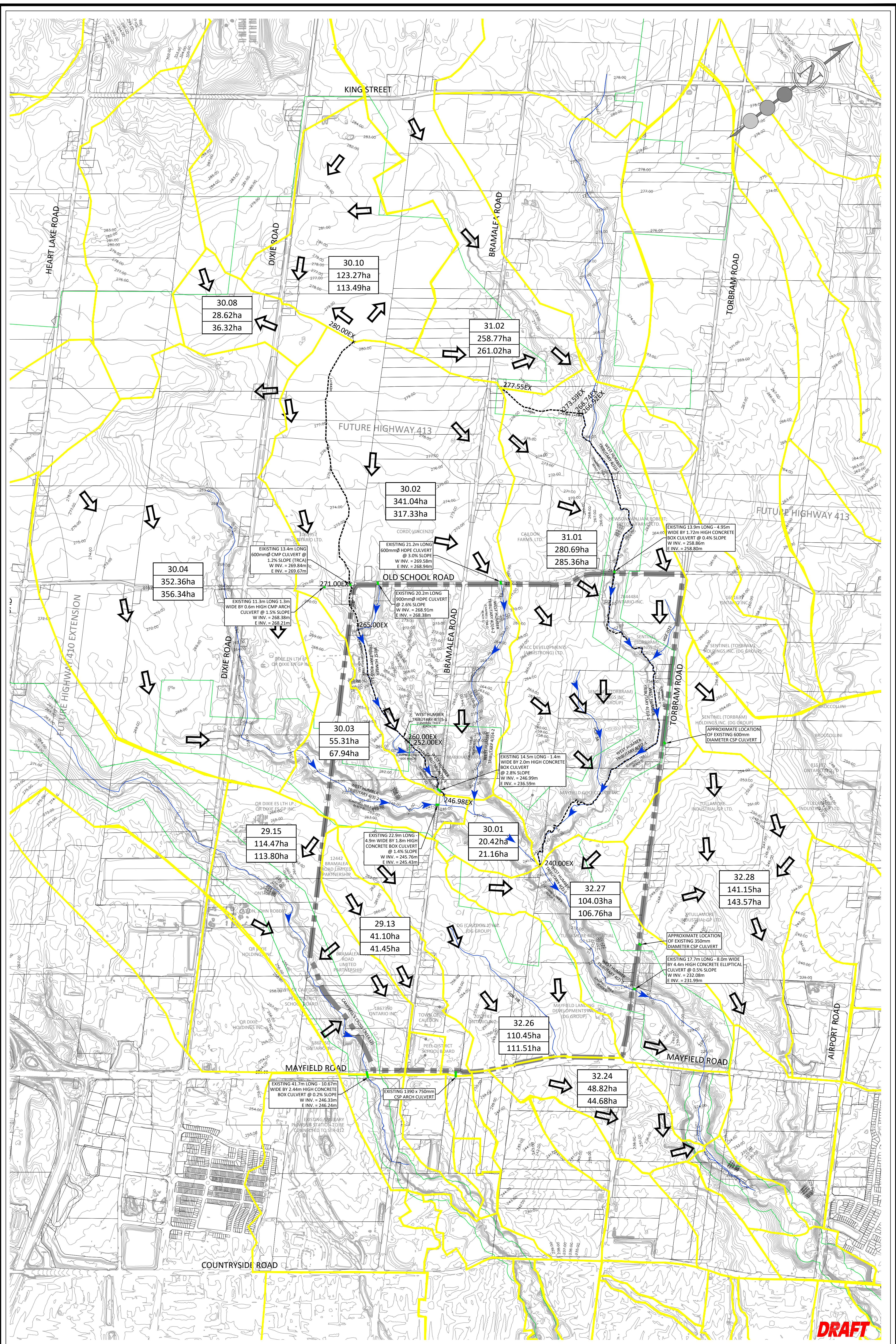
| Undersized Structure     | Intersecting Road | Structure Shape | Structure Size (m)        |
|--------------------------|-------------------|-----------------|---------------------------|
| Campbell's Crk-512.088   | Bramalea Road     | Box             | Span: 4.9<br>Rise: 1.8    |
|                          |                   | Box             | Span: 1.4<br>Rise: 2.0    |
| Campbell's Crk-507.641   | Mayfield Road     | Box             | Span: 10.67<br>Rise: 2.44 |
| Campbell's TribA-807.008 | Torbram Road      | Ellipse         | Span: 8<br>Rise: 4.4      |
| Campbell's TribA-806.128 | Mayfield Road     | Arch            | Span: 8.42<br>Rise: 3.69  |

**Table D1-2 - Hydrology and Hydraulics Peak Flow Summary**

| WHZ1 HEC-RAS Model Flow Updates |                |               |                       |   |                            |  |   |
|---------------------------------|----------------|---------------|-----------------------|---|----------------------------|--|---|
| Watercourse                     | HEC-RAS River  | HEC-RAS Reach | HEC-RAS River Station | VO ADDHYD/<br>NASHYD Number<br>(Existing SCS Model) | VO Aerial Reduction Factor | HEC-RAS Regional Flow<br><br>(m <sup>3</sup> /s) | SCS VO Regional Flow<br><br>(m <sup>3</sup> /s) |
| West Humber Tributary 4(3)5-1   | CamTribP South | Reach 1       | 1009.95               | 8   | Hazel1000                  | 8.375  | 6.427   |
| West Humber Tributary 4(3)5-1   | CamTribP North | Reach 1       | 668.98                | 9   | Hazel1000                  | 4.123  | 5.336   |
| West Humber Tributary 4(3)5-1   | Campbell TribP | Reach 1A/1B   | 1432.02/671.06        | 9   | Hazel1000                  | 11.008   | 13.473  |
| West Humber Tributary 4(3)5-1   | Campbell TribP | Reach 1C      | 512.07                | 14  | Hazel1000                  | 14.023   | 17.66   |
| West Humber Tributary 4(3)4-2   | Campbell TribO | Reach 1       | 1993.51               | 7   | Hazel1000                  | 5.97   | 8.427   |
| West Humber Tributary 4(3)4-2   | Campbell TribO | Reach 1       | 1148.69               | 15  | Hazel1000                  | 7.383  | 10.312  |
| West Humber Tributary 4(3)4-2   | Campbell TribO | Reach 1       | 301.74                | 18  | Hazel1000                  | 9.285  | 10.269  |
| West Humber Tributary 4(3)2-1   | Campbell TribJ | Reach 2       | 988.33                | 22  | Hazel1000                  | 54.935   | 53.367  |
| West Humber Tributary 4(3)2-1   | Campbell TribJ | Reach 1       | 867.84                | 24  | Hazel1000                  | 61.629   | 60.173  |

| West HEC-RAS Model Flow Updates |                  |               |                       |   |                            |  |  |   |
|---------------------------------|------------------|---------------|-----------------------|---|----------------------------|--|--|---|
| Watercourse                     | HEC-RAS River    | HEC-RAS Reach | HEC-RAS River Station | VO ADDHYD/<br>NASHYD Number<br>(Existing SCS Model) | VO Aerial Reduction Factor | TRCA VO Regional Flow<br><br>(m <sup>3</sup> /s) | HEC-RAS Regional Flow<br><br>(m <sup>3</sup> /s) | SCS VO Regional Flow<br><br>(m <sup>3</sup> /s) |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 812.543               | 794   | Hazel1000                  | 68.502   | 68.502   | 68.447  |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 810.603               | 1124  | Hazel992                   | 94.581   | 94.581   | 95.809  |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 809.18                | 732   | Hazel992                   | 95.498   | 95.498   | 96.884  |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 808.382               | 732   | Hazel992                   | 156.302  | 156.302  | 159.535   |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 808.212               | 1734  | Hazel982                   | 161.447  | 161.446  | 164.859   |
| West Humber Tributary 4(2)-1    | Campbell's TripA | Reach 3       | 806.107               | 1734  | Hazel971                   | 159.381  | 159.371  | 162.761   |

## Appendix D2 – Figures



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**MAYFIELD TULLAMORE  
LANDOWNER GROUP**



30 CENTURIAN DRIVE, SUITE 100  
MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900  
FAX: (905) 475-8335

**LEGEND:**

- LIMIT OF SECONDARY PLAN
- WATERCOURSE
- EXISTING CONTOUR
- OVERLAND FLOW DIRECTION
- HUMBER RIVER HYDROLOGY MODEL BOUNDARY
- GREENBELT
- EXISTING CULVERT
- EXISTING ELEVATION
- TIME OF PEAK FLOW PATH AND LENGTH

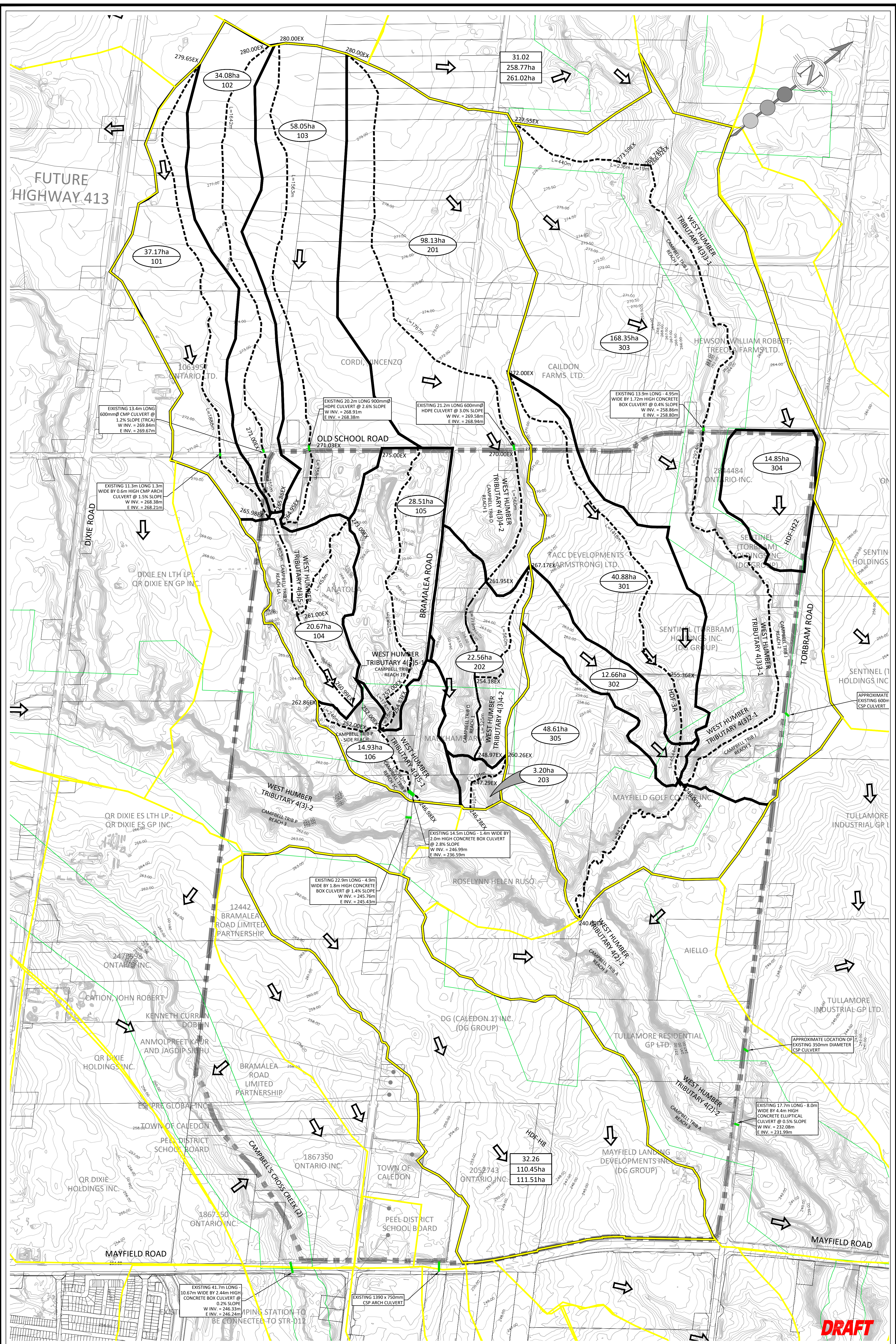
|          |   |
|----------|---|
| 30.02    | TRCA CATCHMENT ID                       |
| 100.00ha | TRCA DRAINAGE AREA (HECTARES)           |
| 90.00ha  | SCS DRAINAGE AREA (MAY 2024) (HECTARES) |

**LOCAL SUBWATERSHED STUDY**

DESIGNED BY: C.M.D. CHECKED BY: N.D.M.  
SCALE: 1:10000 DATE: JULY 2024

**EXISTING WATERSHED DRAINAGE PLAN**

PROJECT No: 2699 FIGURE No: D2-1



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**MAYFIELD TULLAMORE LANDOWNER GROUP**

**SCS consulting group ltd**

30 CENTURIAN DRIVE, SUITE 100  
MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900  
FAX: (905) 475-8335

**LEGEND:**

- L=771m
- TIME TO PEAK
- GREENBELT
- CULVERT
- OVERLAND FLOW DIRECTION
- TRCA CATCHMENT ID
- TRCA DRAINAGE AREA (HECTARES)
- SCS DRAINAGE AREA (MAY 2024) (HECTARES)
- CATCHMENT ID
- LIMIT OF SECONDARY PLAN
- STORM DRAINAGE BOUNDARY
- HUMBER RIVER HYDROLOGY MODEL BOUNDARY
- WATERCOURSE
- EXISTING CONTOUR

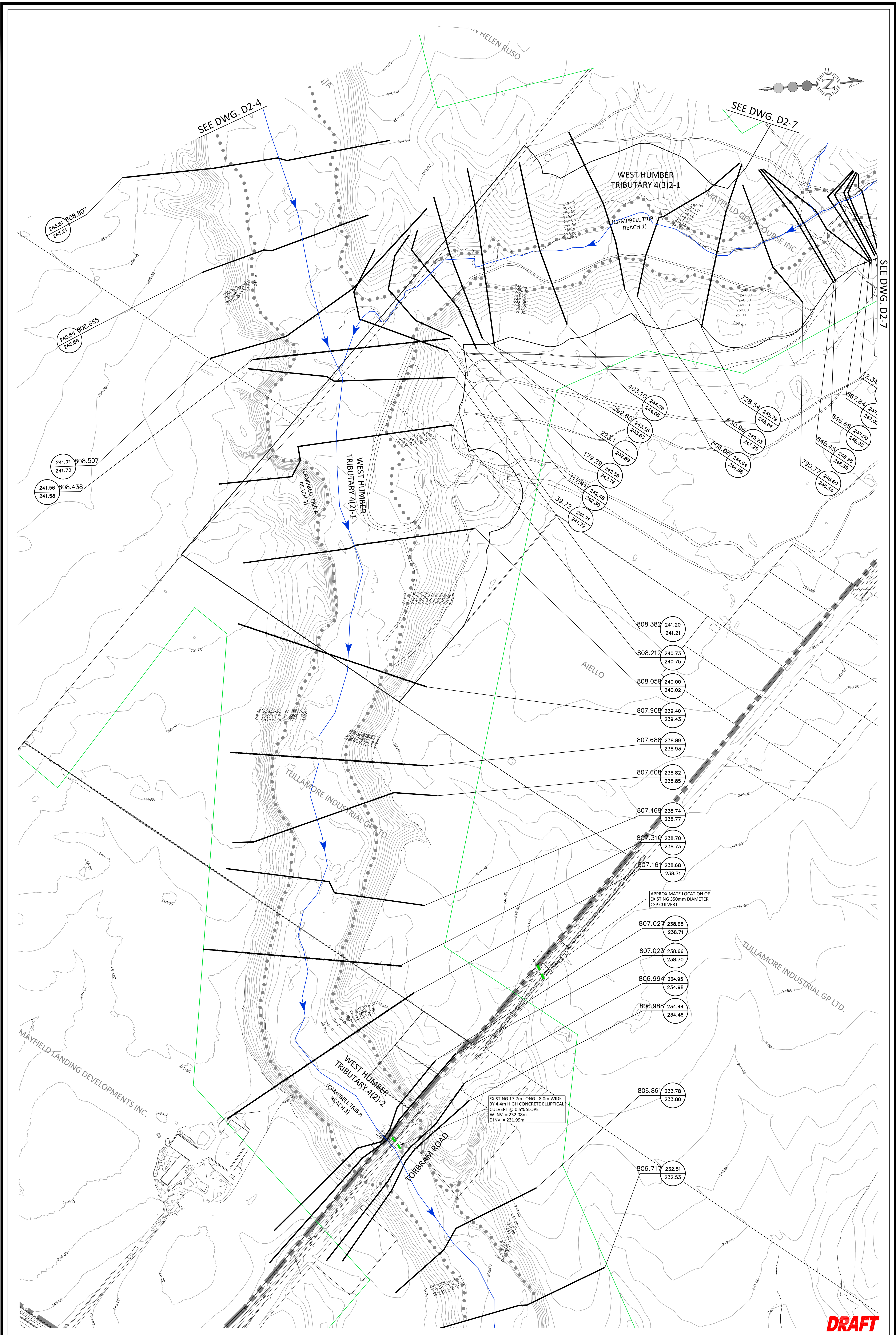
**LOCAL SUBWATERSHED STUDY**

DESIGNED BY: C.M.D. CHECKED BY: N.D.M.

SCALE: 1:6000 DATE: JULY 2024

**LOCAL TRIBUTARY STORM DRAINAGE PLAN**

PROJECT No: 2699 FIGURE No: D2-2



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FAX: (905) 475-8335

**LEGEND:**

- LIMIT OF SECONDARY PLAN
- EXISTING REGULATORY FLOODLINE (SCS)
- GREENBELT
- WATERCOURSE
- EXISTING CONTOUR
- HEC CROSS-SECTION

262.39 2745  
262.39

- TRCA EXISTING REGULATORY FLOOD ELEVATION
- HYDRAULIC SECTION ID
- FLOODLINE ELEVATION LEADER
- SCS EXISTING REGULATORY FLOOD ELEVATION
- EXISTING CULVERT

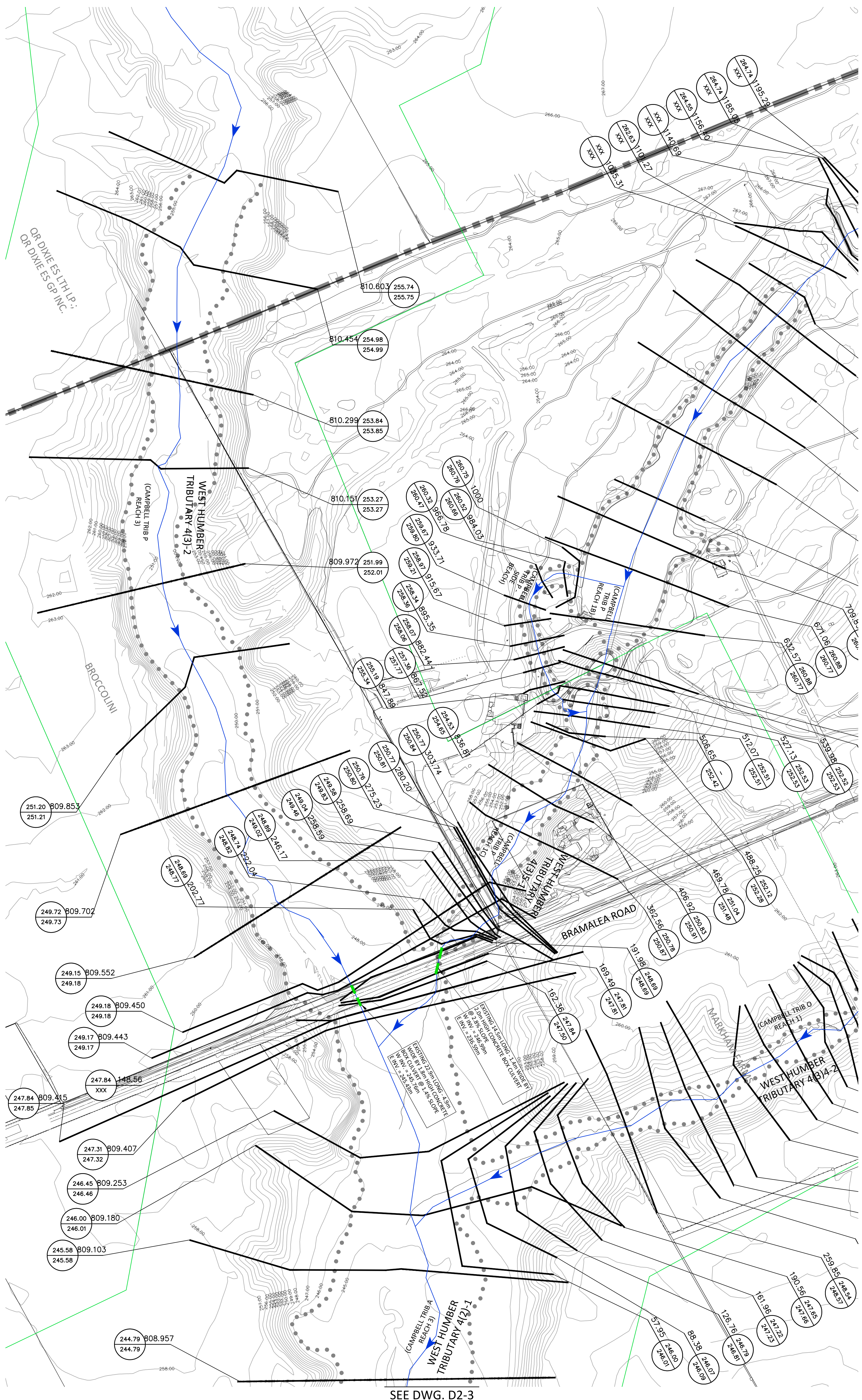
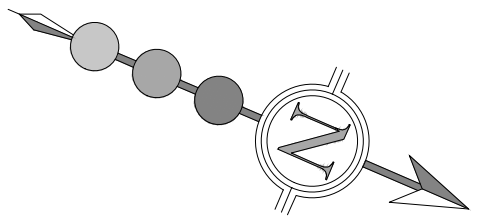
**LOCAL SUBWATERSHED  
STUDY**

DESIGNED BY: C.M.D. CHECKED BY: N.D.M.  
SCALE: 1:2000 DATE: JULY 2024

**EXISTING  
FLOODPLAIN MAPPING**

PROJECT No: 2699 FIGURE No: D2-3





SEE DWG. D2-3

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MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900  
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**LEGEND:**

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- EXISTING REGULATORY FLOODLINE (SCS)
- GREENBELT
- WATERCOURSE
- EXISTING CONTOUR
- HEC CROSS-SECTION

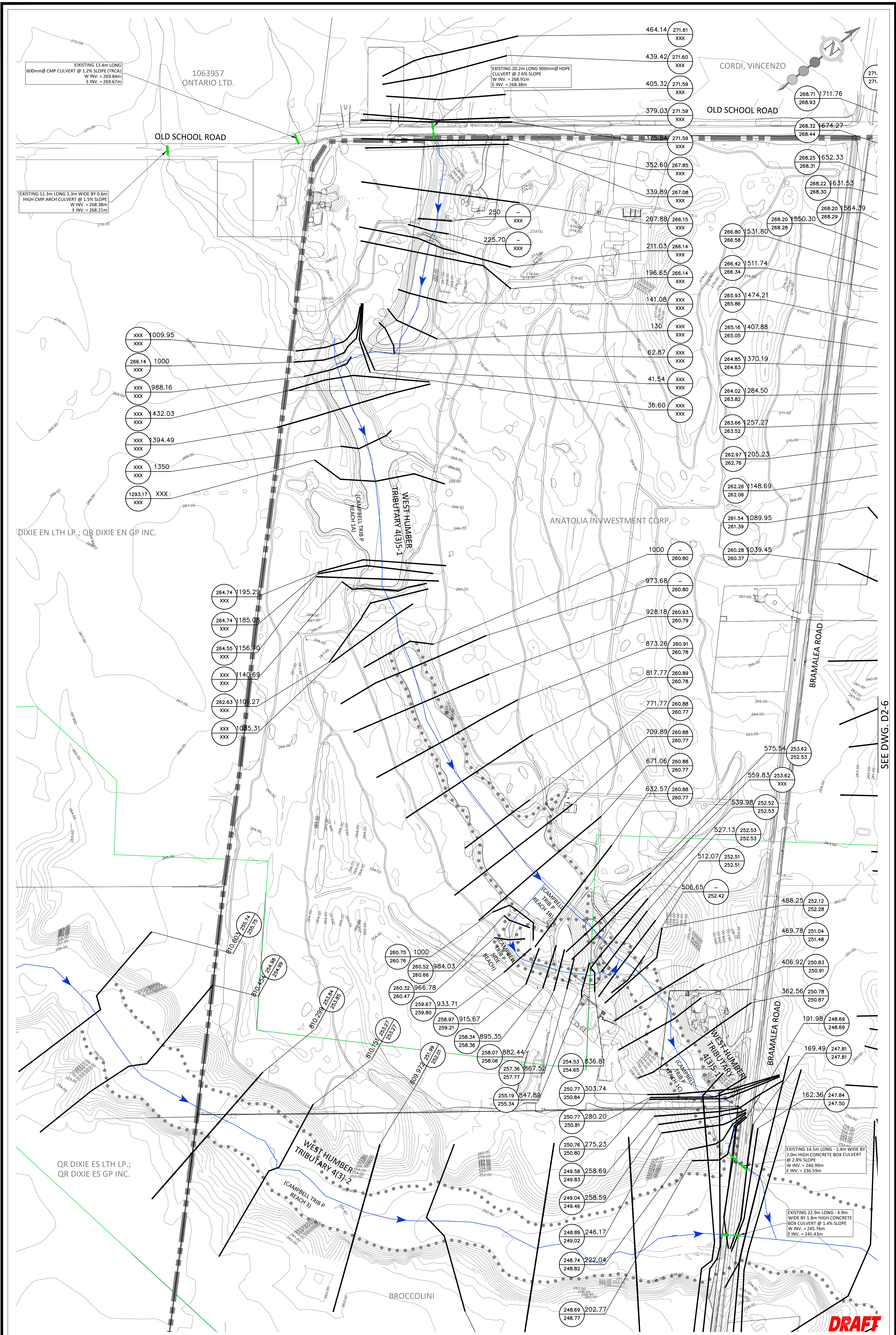
- TRCA EXISTING REGULATORY FLOOD ELEVATION
- HYDRAULIC SECTION ID
- FLOODLINE ELEVATION LEADER
- SCS EXISTING REGULATORY FLOOD ELEVATION
- EXISTING CULVERT

**LOCAL SUBWATERSHED STUDY**

|              |        |             |           |
|--------------|--------|-------------|-----------|
| DESIGNED BY: | C.M.D. | CHECKED BY: | N.D.M.    |
| SCALE:       | 1:2000 | DATE:       | JULY 2024 |

**EXISTING FLOODPLAIN MAPPING**

|             |      |            |      |
|-------------|------|------------|------|
| PROJECT No: | 2699 | FIGURE No: | D2-4 |
|-------------|------|------------|------|



SEE DWG. D2-6

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MAYFIELD TULLAMORE  
LANDOWNER GROUP

**LEGEND:**

- LIMIT OF SECONDARY PLAN
- EXISTING REGULATORY FLOODLINE (SCS)
- GREENBELT
- WATERCOURSE
- EXISTING CONTOUR
- HEC CROSS-SECTION
- TRCA EXISTING REGULATORY FLOOD ELEVATION
- HYDRAULIC SECTION ID
- FLOODLINE ELEVATION LEADER
- SCS EXISTING REGULATORY FLOOD ELEVATION
- EXISTING CULVERT

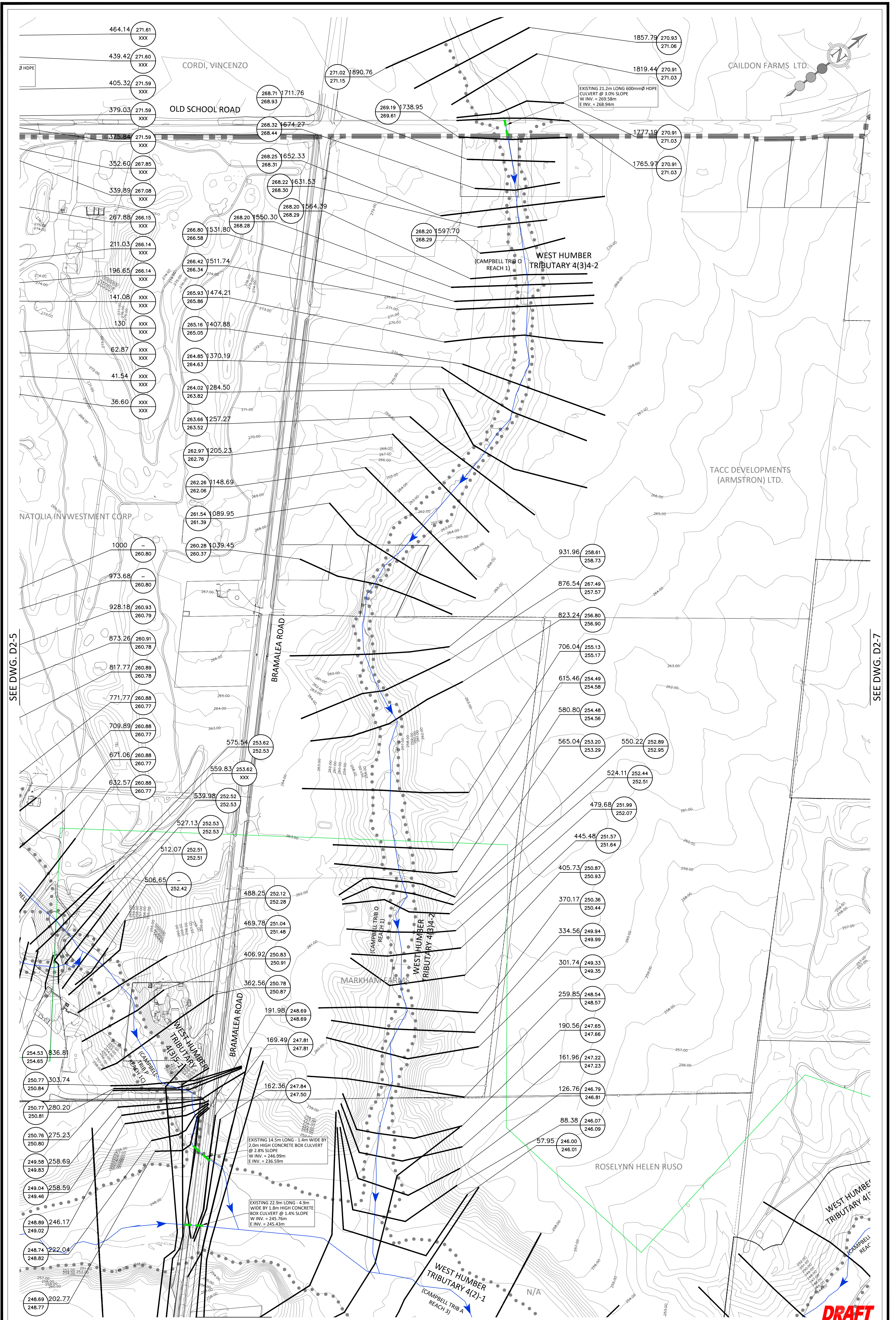
**LOCAL SUBWATERSHED STUDY**

DESIGNED BY: C.M.D. CHECKED BY: N.D.M.  
SCALE: 1:2000 DATE: JULY 2024

**EXISTING FLOODPLAIN MAPPING**

PROJECT No: 2699 FIGURE No: D2-5

**scs consulting group ltd**  
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SEE DWG. D2-5

SEE DWG. D2-7

SEE DWG. D2-4

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LANDOWNER GROUP

**LEGEND:**

- LIMIT OF SECONDARY PLAN
- EXISTING REGULATORY FLOODLINE (SCS)
- GREENBELT
- WATERCOURSE
- EXISTING CONTOUR
- HEC CROSS-SECTION

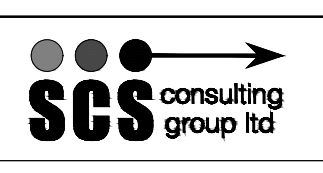
- TRCA EXISTING REGULATORY FLOOD ELEVATION
- HYDRAULIC SECTION ID
- FLOODLINE ELEVATION LEADER
- SCS EXISTING REGULATORY FLOOD ELEVATION
- EXISTING CULVERT

**LOCAL SUBWATERSHED STUDY**

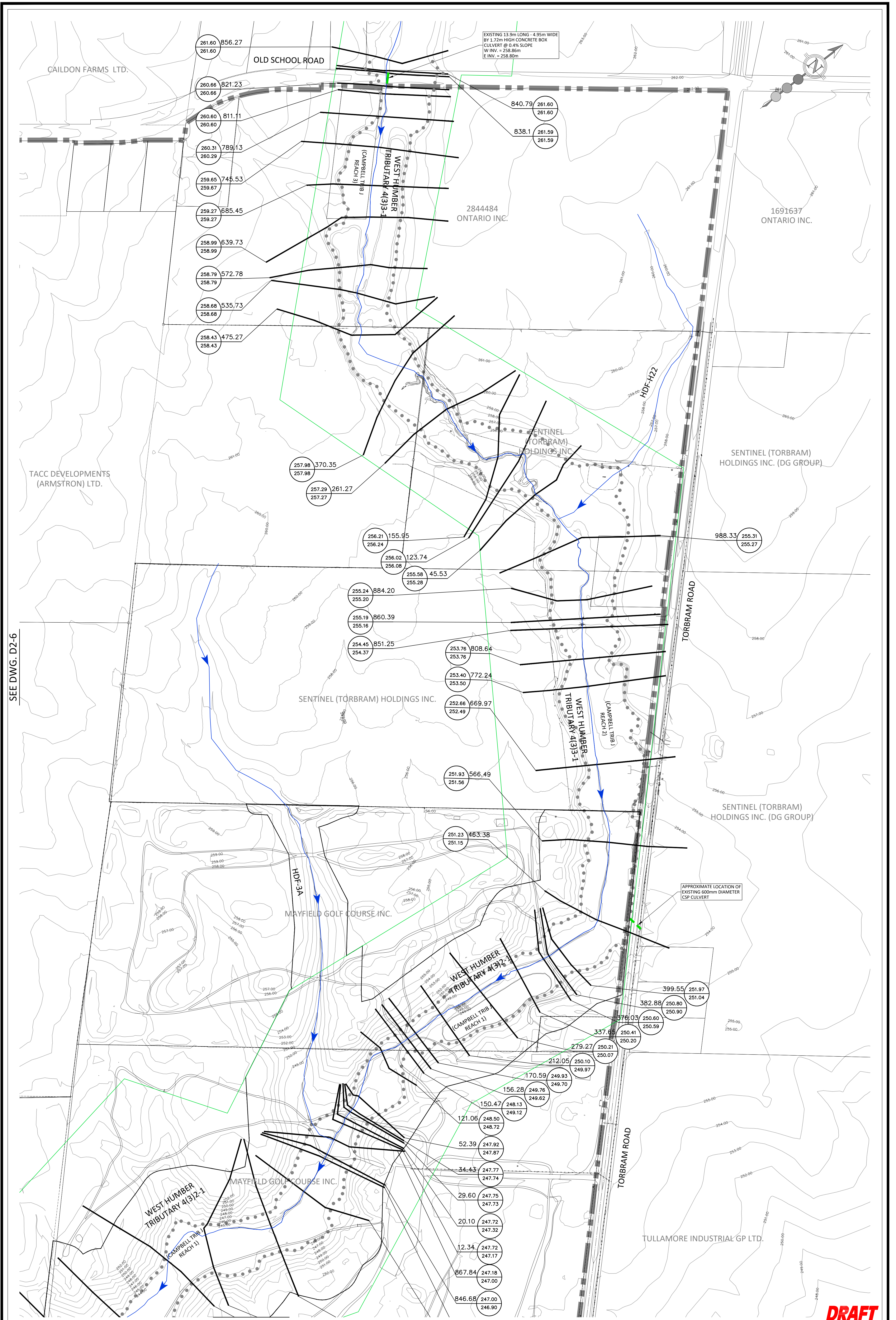
DESIGNED BY: C.M.D.    CHECKED BY: N.D.M.  
SCALE: 1:2000    DATE: JULY 2024

**EXISTING FLOODPLAIN MAPPING**

PROJECT No: 2699    FIGURE No: D2-6



30 CENTURIAN DRIVE, SUITE 100  
MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900  
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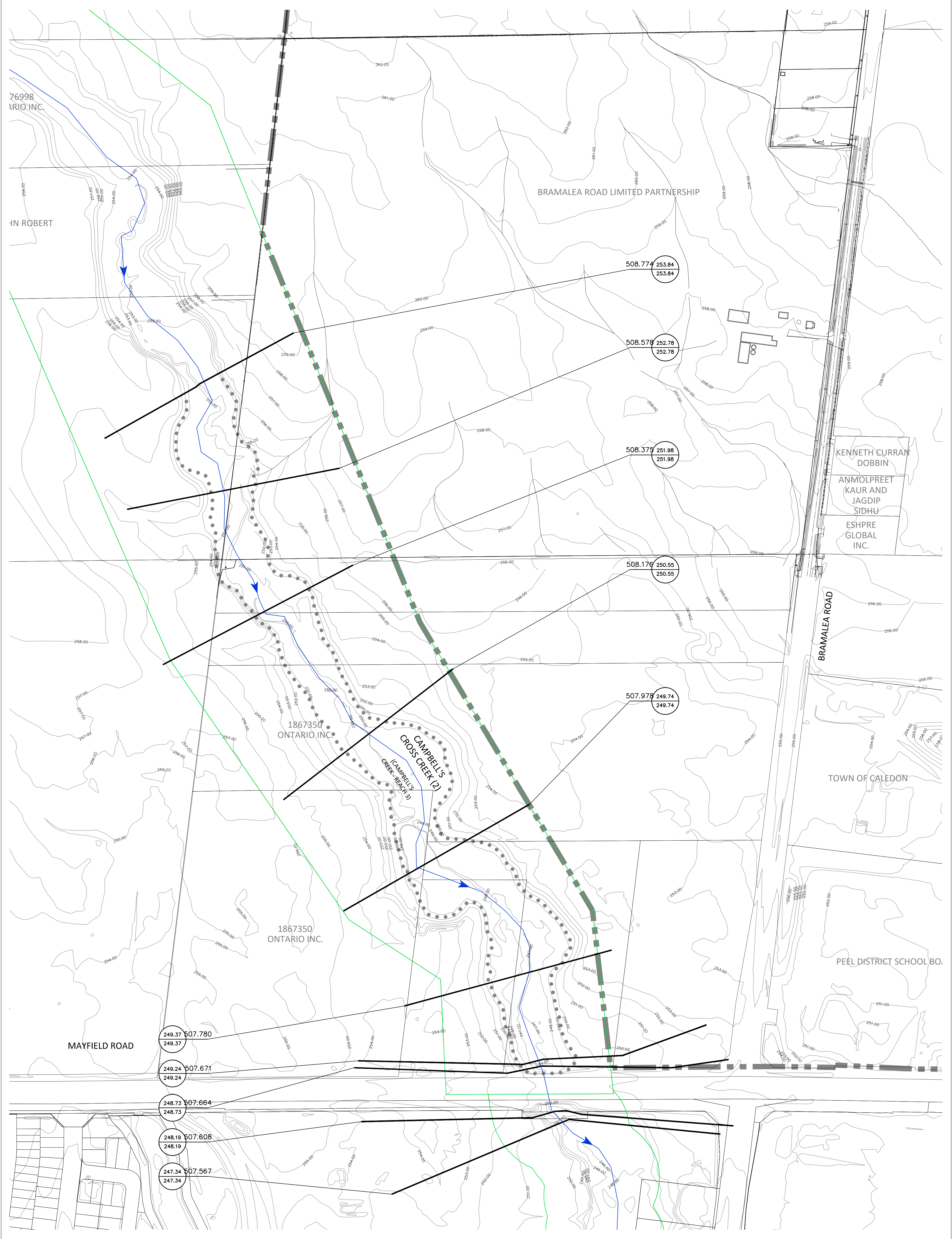
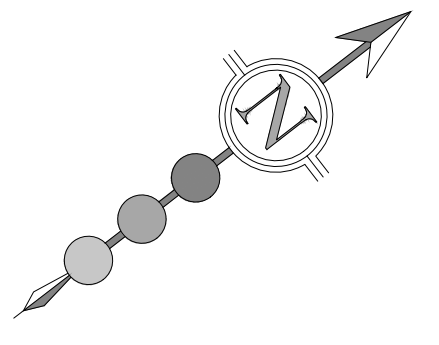


SEE DWG. D2-6

SEE DWG. D2-3

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|  |   |   |   |  |   |                                      |
|--|---|---|---|--|---|--------------------------------------|
| <p><b>MAYFIELD TULLAMORE LANDOWNER GROUP</b></p> <p>30 CENTURIAN DRIVE, SUITE 100<br/>MARKHAM, ONTARIO L3R 8B8<br/>TEL: (905) 475-1900<br/>FAX: (905) 475-8335</p> | <p><b>LEGEND:</b></p> <ul style="list-style-type: none"> <li> LIMIT OF SECONDARY PLAN</li> <li> EXISTING REGULATORY FLOODLINE (SCS)</li> <li> GREENBELT</li> <li> WATERCOURSE</li> <li> EXISTING CONTOUR</li> <li> HEC CROSS-SECTION</li> </ul> | <p> TRCA EXISTING REGULATORY FLOOD ELEVATION</p> <p> HYDRAULIC SECTION ID</p> <p> FLOODLINE ELEVATION LEADER</p> <p> SCS EXISTING REGULATORY FLOOD ELEVATION</p> <p> EXISTING CULVERT</p> | <p><b>LOCAL SUBWATERSHED STUDY</b></p>          |  | <p><b>EXISTING FLOODPLAIN MAPPING</b></p> |                                      |
|  |   |   | <p>DESIGNED BY: C.M.D.</p> <p>SCALE: 1:2000</p> | <p>CHECKED BY: N.D.M.</p> <p>DATE: JULY 2024</p> | <p>PROJECT No:</p> <p><b>2699</b></p>     | <p>FIGURE No:</p> <p><b>D2-7</b></p> |



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|   |                    |  |                                      |                                       |                                    |                           |
|---|--------------------|--|--------------------------------------|---------------------------------------|------------------------------------|---------------------------|
| <b>MAYFIELD TULLAMORE LANDOWNER GROUP</b><br> | <b>LEGEND:</b><br> |  | <b>LOCAL SUBWATERSHED STUDY</b>      |                                       | <b>EXISTING FLOODPLAIN MAPPING</b> |                           |
|   |                    |  | DESIGNED BY: C.M.D.<br>SCALE: 1:2000 | CHECKED BY: N.D.M.<br>DATE: JULY 2024 | PROJECT No:<br><b>2699</b>         | FIGURE No:<br><b>D2-8</b> |