

elm creek

Watershed Management Commission

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Rolling Hills Acres **Corcoran Project #2019-030**

Project Overview: This is a 40.8-acre rural agriculture parcel located about a mile north of Hwy. 55 on the east side of Rolling Hills Road. There is an existing home site in the far southwest corner of the parcel. The project proposes to subdivide the property into 4 large single family lots ranging from 6.9 acres to 12.7 acres in size. The project will create approximately 0.5 acres on new impervious areas. There are wetland and floodplains on this site. This site plan triggers the Commission's review for conformance to Rule E, (Erosion and Sediment Controls) Rule I (Buffer Strips) and Rule F (Floodplains).

Applicant: Skies Limit LLC, Attn. Philip Kothrade, 26175 Birch Bluff Road, Excelsior, MN 55331. Phone: 612-201-1982. Email: phillipe@jpccustomhomes.com

Engineer: Otto Associates, Attn. Paul Otto, 9 West Division Street, Buffalo, MN 55313. Phone: 763-682-3522. Email: paul@ottoassociates.com

Exhibits:

- 1) Elm Creek Watershed Management Commission Request for Plan Review and Approval received November 14, 2019 with application fee of \$3,650.00.
- 2) Preliminary Plat of Rolling Hills Acres by Otto Associates dated March 19, 2019 with most recent revision of October 24, 2019.
 - a. Updated seeding narrative by Phillip Kothrade (applicant) on Preliminary Plat. Signed and dated June 2, 2020.
- 3) Certificate of Survey by Otto Associates dated March 19, 2019.
- 4) Soil boring information by Otto Associates dated March 19, 2019
- 5) 6370 Rolling Hills Road Wetland Conservation Act Information
 - a. Delineation Report by Kjolhaug Environmental Services dated June 9, 2019.
 - b. LGU Notice of Application, Wetland delineation determination dated July 1, 2019
 - c. LGU Notice of Decision, Wetland delineation, dated August 26, 2019
 - d. LGU Notice of Application, Wetland Replacement Plan, dated October 15, 2019
 - e. LGU Notice of Decision, Wetland Replacement Plan, dated November 20, 2019.

Findings:

- 1) A complete application was received November 14, 2019. The initial 60-day decision period per MN Statute 15.99 expires January 13, 2020.
- 2) This is an existing 40.8-acre rural agriculture property with an existing farmstead. The applicant is requesting the parcel be subdivided into 4 rural residential lots.

- 3) The Commission rules require review of the wetland buffer plans (Rule I), Erosion and Sediment Controls (Rule E) and Floodplains (Rule F). Because there are no impacts to floodplains, grading disturbance will be less than 1.0 acres and stormwater plans are not required for this site plan, staff has administrative approval authority on this site plan.

Grading and Erosion Controls

- 4) Except for the driveway wetland impact grading, the applicant proposes individualized grading on each lot when homes are constructed. Otherwise no grading is proposed for the home sites at this time. It is estimated the cumulative grading will be approximately 0.5 to 0.75 acres per lot or 1.5 to 2.25 acres over the period of home building.
- 5) Approximately 35 out of the 40.8 acres are cropland. A permanent vegetation cover must be planted to control erosion and sedimentation on this site.
 - a. We recommend a cover crop of oats or rye grass with a MN-Dot 22-112 seed mix or similar.
- 6) A natural drainage way flows from west to east through lots 3 and 4 before draining into the large wetland complex just east of this site. The watershed area to this drainage way is approximately 78 acres.

Wetlands

- 7) A wetland delineation determined there three wetland basins on this property.
 - a. Basin 1 is a type 2/3 wetland, 1.86 acres in size.
 - b. Basin 2 is a type 2 wetland, 0.82 acres in size
 - c. Basin 3 is a type 2/3/6 wetland that is part of the larger DNR wetland complex #27-422W. Only 0.3 acres of that basin is on this property.
- 8) A wetland replacement plan has been approved by the City of Corcoran (WCA LGU for this site) to construct driveway access from Rolling Hills Road into lots 2 and 3 on this site.
 - a. 1,993 sq. ft. of wetland impacts will occur from these two access roads.
 - b. Replacement wetlands will be a 2:1 ratio from BWSR wetland bank account 1427 in Anoka County.
- 9) The preliminary plat provides for 25' wetland buffers and monumentation around all the wetland basins on this site.
 - a. A planting plan must be developed for the wetland buffer areas that are not in permanent vegetation at this time.
- 10) The preliminary plat shows all wetland and buffer areas covered by drainage and utility easements.

Floodplains

- 11) There is a FEMA Zone A floodplain in far SE corner of this site on Lots 3 and 4. This floodplain area corresponds to the Elm Creek Watersheds Upland Flood Storage Area 11 in the stormwater management plan.
 - a. FEMA does not have a 1% storm elevation for their flood zone A on this parcel.
 - b. The ECWMC determined the 100-year flood elevation at 966.2 (1928 datum) for upland flood storage area 11.

- c. The applicant used an elevation of 972.0 as the determining elevation for the drainage and utility easement and the 100-year elevation.

- 12) The preliminary plat provides for drainage and utility easement over all floodplain elevations determined for this site.

Stormwater Management.

- 13) Grading for the home sites should not affect the stormwater flows on this property.
- 14) Counting new driveways and homes for the three new lots, new impervious surfaces will amount to less than 1.0 acre. Total disturbed on all three new home sites will most likely be greater than 1.0 acres. Building each lot individually will not trigger the Commissions stormwater management requirements.
- 15) No stormwater management is proposed on this site. Staff made the following estimates for pre and post development water flows and nutrient loads on this site based on converting 38.5 acres from cropland to grassland and increasing the impervious areas from 1.0 acres to 1.5 acres.
- 16) ECWMC staffs rough pre- and post-development runoff rates are estimated at;

Total sum discharge	2-yr (cfs)	10-yr (cfs)	100-yr (cfs)
Existing	74.1	135.9	268.5
Proposed	35.8	80.5	189.5

- 17) ECWMC staffs rough estimate for nutrient and volume loads from this site are as follows.

Stormwater Summary

Condition (based on 40 acres)	TP Load (lbs/yr)	TSS Load (lbs/yr)	Filtration (cu. ft.)	Annual Volume (ac. ft.)
Pre-development (baseline)	17.4	3084	N/A	48.1
Post-development without BMPs	7.2	1462	N/A	27.3
Post-development with BMPs	7.2	1462	N/A	27.3
Net Change	-10.2	-1622	N/A	-20.8

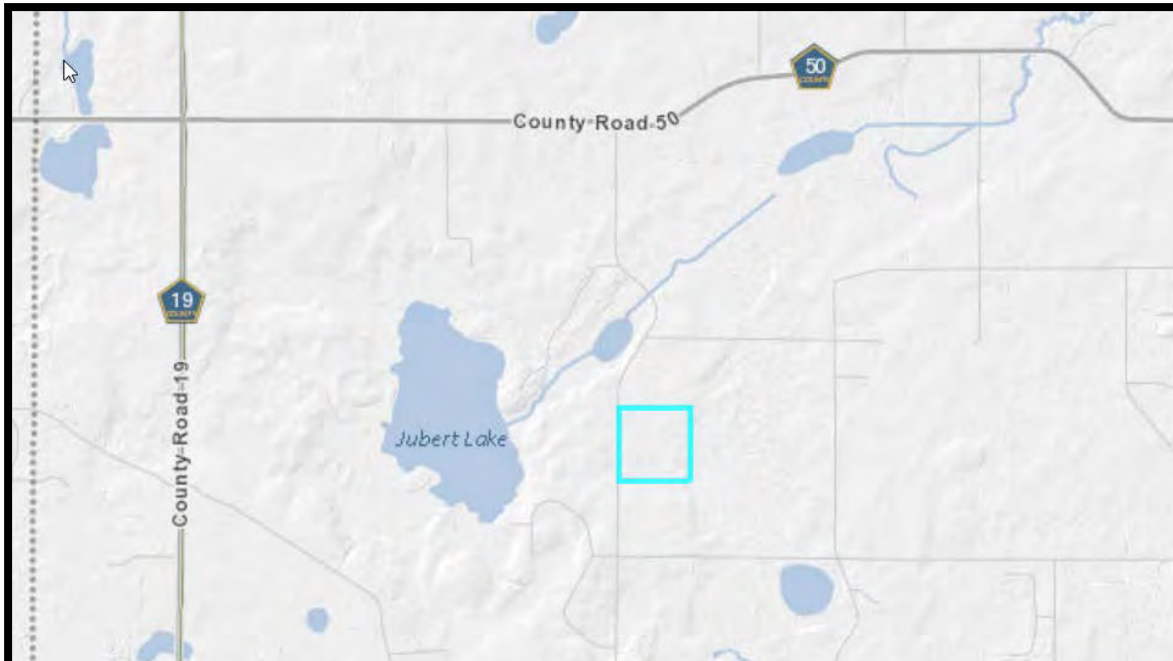
Decision. Approved.

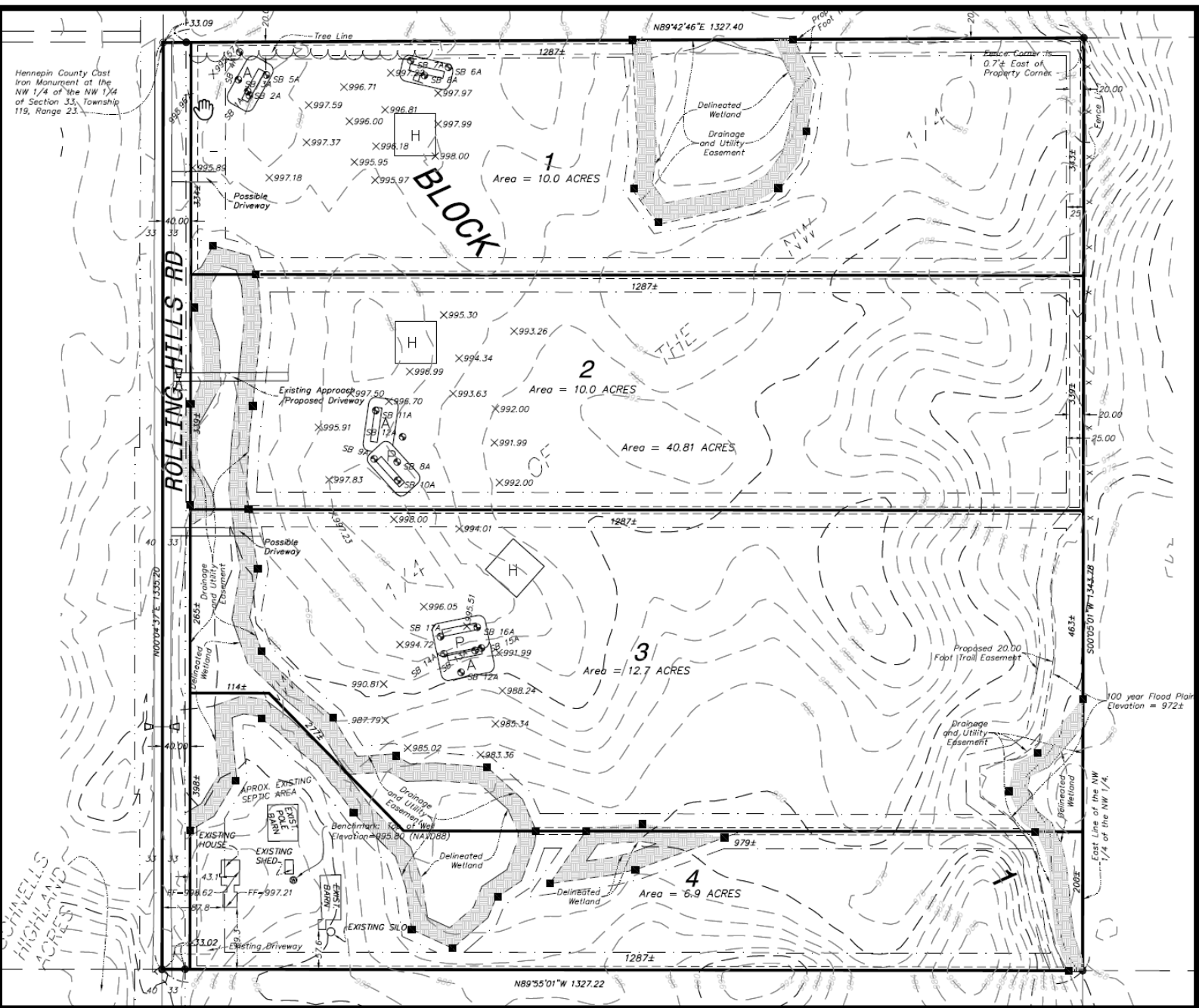
Barr Engineering
Technical Advisor to the Commission

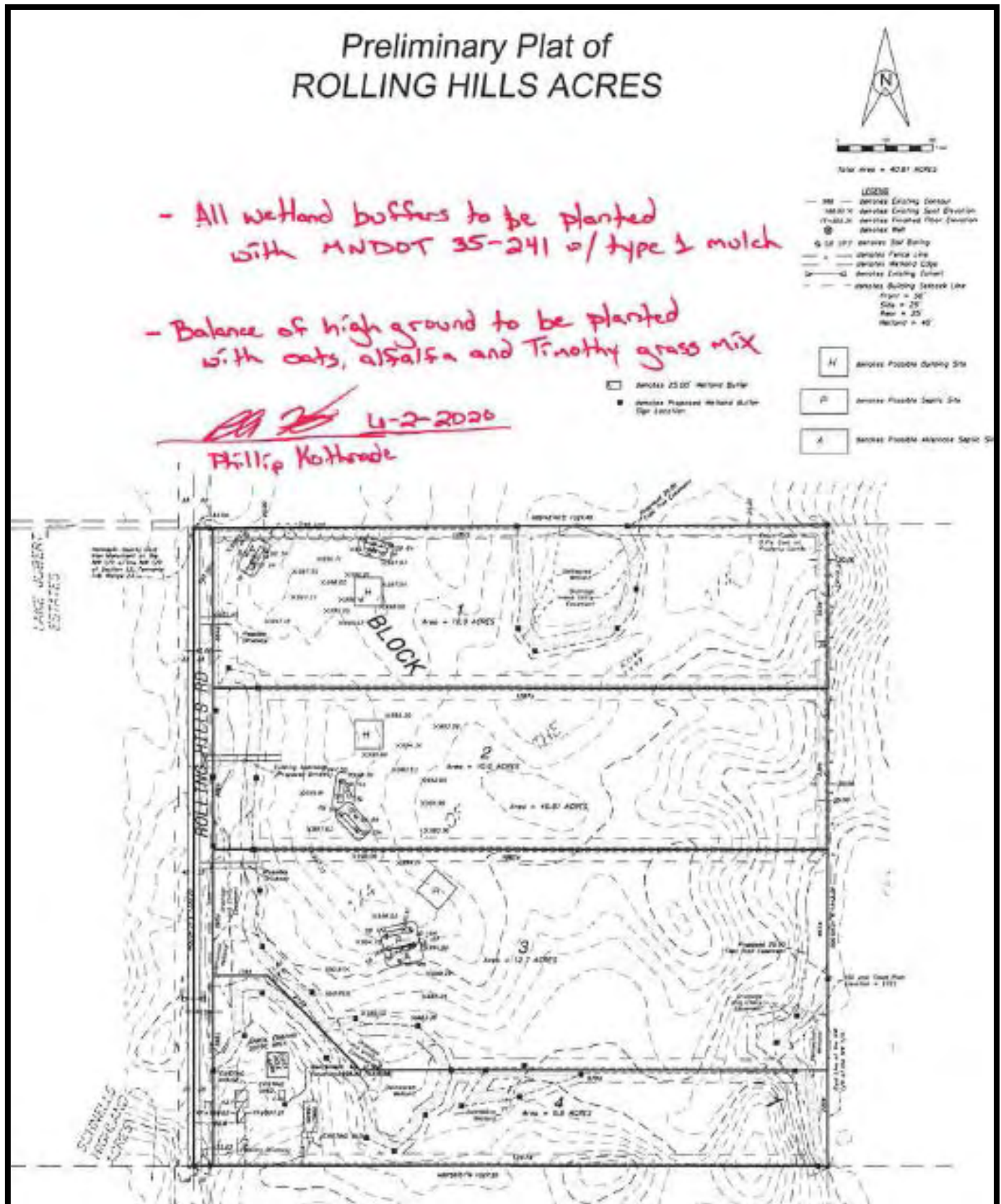

James C. Kujawa
Surface Water Solutions LLC

June 9, 2020
Date

Location Map







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Watershed Management Commission

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Skye Meadows **Rogers, Project #2020-016**

Project Overview: Lennar Corporation is proposing to construct a residential development on 130 acres along Territorial Road. Currently, this site consists of 6 separate parcels located both north and south of Territorial Road (CR116) just to the west of Tilton Trail. There are 363 single family residential units proposed creating 38.73 acres of new impervious areas in seven phases. The Commission's review will be for conformance to our 3rd Generation Stormwater Management Plan Appendix 0. This review will cover stormwater management (Rule D), floodplain alterations (Rule F) wetland alterations and buffer strips (Rules G & I) for all seven phases. It will review compliance for erosion and sediment controls (Rule E) for Phase 1 and 2 (initial grading proposed). Future site development must be reviewed for compliance to the approvals on this project plus future erosion and sediment controls.

Applicant & Agent: Lennar Homes, Attention Paul Tabone, 16305 36th Ave. N. Suite 600, Plymouth, MN 55443. Phone: 952-249-3075. Email: paul.tabone@lennar.com

Agent/Engineer: ISG, Attention Jerremy Foss, 7900 International Drive, Suite 550, Minneapolis, MN 55425. Phone: 952-426-0699. Email: Jerremy.foss@ISGInc.com

Exhibits:

- 1) ECWMC Request for Plan Review and Approval dated April 13, 2020, received May 12, 2020.
- 2) Project review fees, \$9,130.00 received May 14, 2020.
- 3) Lennar Homes Skye Meadows Development Preliminary Site Plans by ISG dated Plat. No signature or date. Original Issue Date March 27, 2020.
 - a. Sheet 1 of 56 Title Sheet
 - b. Sheet 2 of 56, Phasing Plan
 - c. Sheet 3 of 56, Typical Street Section
 - d. Sheet 4-8 of 56, Site Details
 - e. Sheets 9-15 of 56, Stormwater Pollution Prevention Plan, Notes and Details
 - f. Sheets 16-20 of 56, Existing & Removals Plan
 - g. Sheets 21-25 of 56, Preliminary Plat
 - h. Sheet 26 of 56, Overall PUD Master Site Plan
 - i. Sheets 27-30 of 56, Site Plan
 - j. Sheets 31-39 of 56 Utility Plans

- k. Sheets 40-44 of 56, Grading Plan
 - l. Sheets 45-49 of 56, Wetland Buffer & Impact Plan
 - m. Sheets 50-54 of 56, Landscaping Plan
 - n. Sheet 55 of 56, Entry Monument Enlargement
 - o. Sheet 56 of 56, Tree Preservation Plan.
- 4) Lennar Territorial Road Development Stormwater Management Report by ISG dated April 22, 2020. Including HydroCAD report (print date April 23, 2020) with existing and proposed drainage maps, Geotechnical Evaluation Report by Braun Intertec dated December 17, 2019, pipe, and culvert sizing calculations, SWPPP stormwater details & utility sheets, and MIDS Calculations.
- 5) ECWMC Project 2020-005, Territorial Road EAW review file.

Findings:

General

- 1) A complete application was received on May 14, 2020. The initial 60-day decision period per MN Statute 15.99 expires July 13, 2020.
- 2) Drainage on this site has flows into two separate watersheds.
 - a. Existing Flows: The south 44 acres flows to the south into a series of large wetland/floodplain/ditched areas before entering the North Fork of Rush Creek just north of the CR 117 and 116 intersection in Rogers. The northerly 76 acres flows north, eventually making its way into Fox Creek approximately $\frac{3}{4}$ of a mile north of this site. Fox Creek flows for about 2 miles before entering the Crow River just north of CR 44 near the railroad track west of I94.
 - b. Proposed Flows: The project will route 58 acres south into the Rush Creek Basin and 63 acres north into the Crow River Basin.
- 3) Existing soils are Nessel/Cordova/Angus/Lester loams. Geotechnical soil borings and analysis show high clay contents, unsuitable for infiltration.
- 4) The City of Rogers assumes responsibility for the long-term operation and maintenance of the stormwater basins on residential sites where water reuse (irrigation) is not utilized as a stormwater component. Water reuse is not proposed in the stormwater management plan so no other O & M agreements are required.

Stormwater Management (Rule D)

General

- 1) To manage stormwater for all seven phases (120 acres) the applicant proposes to construct 9 wet detention ponds and 6 biofiltration basins.
- 2) For clarity, specific details for outlet control structures, biofiltration basins and wet-detention ponds are necessary.
- 3) All or portions of offsite areas DA 5, 20, 21 and 23 will drain into this site.
 - a. We would recommend Rogers use,
 - i. Future land-use for these areas to determine their rate-flows for regional ponds in Sky Meadows and
 - ii. Abstraction and water quality for the future development of these off-site areas be the responsibility of the future developer.

- 4) NWL and HWL for wetlands 7 and 8 will need to be modeled/identified.
 - a. FES 9A and 9B appear to be too low (934 vs ground elev. at ~ 938)
- 5) Pond A/Basin A. Pond A is the primary wet-detention pond with an outlet control elevation at 938.25.
 - a. An overflow pipe leading into Basin A is set at 938.5. The interaction between the pond and basin and connections and outlet pipes does not appear to be modeled correctly in HydroCAD.
 - b. Basin A appears to be a surge basin/dry pond.
- 6) Basin B has an inflow pipe from the south with an elevation of 941.0 with an outlet in the NE corner at 939.31
 - a. Modeling and site plans are unclear how the basin drains into the outlet control structure at wet detention pond B.
 - b. Basin B has a 946.0 contour in the NW corner that is not accurate ((does not close on itself or match existing ground))
- 7) Basin D subdrains are not shown on utility plans
- 8) Pond K1 will outlet via custom weir at 941.5. This water will bypass basin K2 until it gets to the secondary outlet elevation of 942.0, thus, not treating the first flush of surface water from the watershed.
- 9) The west sections of Basins L and M will contain wet vegetation with no open water. Aesthetically this may not be desired by the homeowners in these areas.
- 10) Post-development HydroCAD design does not seem to match site plan elevations at various locations and does not route water into the filter basins adequately. Examples:
 - a. Ponds H & I elevations appear to be controlled by a custom weir wall in their outlet control structures at elevation 946.3. They also overflow into Basin J at 946.8 (Note: plan elevations vs HydroCAD elevations don't match).
 - i. This scenario appears to bypass water from ponds H & I from going into filter basin J, except when elevations exceed 946.8 which is the majority of the 2-year storm event.
- 11) All filter basins assume an exfiltration at 4.0 inches per hour. Due to head loss and pipe length/roughness, generally 1.0 or 1.5 inches per hour is used for a sand filter exfiltration assumption and drawdown timing.

Rate Controls cannot be determined (see general stormwater comments above)

- 1) Overall peak flows will be controlled at the discharge points from this site by the proposed pond and biofiltration basins and their outlet controls.

Rate Control Summary

		2-yr (cfs)	10-yr (cfs)	100-yr (cfs)
North to Fox Creek/Crow River	Pre-Development (76 Acres)			
	Post-Development (63 Acres)			
South to Rush Creek/Elm Creek	Pre-Development (44 Acres)			
	Post Development (58 Acres)			

Abstraction Controls (38.73 acres new impervious areas) cannot be determined (see general stormwater comments above).

- 1) There are 5.38 acres of existing impervious areas on this site. After development there will be 44.11 acres of impervious areas. To meet the ECWMC requirements, new impervious area water volume must be abstracted. There are 38.73 acres of new impervious areas.
- 2) True abstraction will not occur because soil infiltration rates (based on geotechnical report) are too low to absorb a 1.1" rainfall event over 48 hours.
- 3) In lieu of true abstraction, six (6) biofiltration basins will be installed throughout the project to filter the required 1.1" volume of runoff from all new imperious areas (38.73 acres).
 - a. Required abstraction = $38.73 \times 1.1/12 = 3.55$ -acre feet (154,649 cubic feet)
 - b. Total filtration provided in 6 basins= 4.00-acre feet. (174,284 cubic feet)
 - c. For pre-treatment, raw water from impervious areas will be directed into wet-detention ponds or vegetated swales prior to flowing into biofiltration basins.
 - d. Typical details for outlet control structures, biofiltration basins and wet-detention ponds are necessary in the plan set or stormwater management plan. The Commission recommends the following guidelines on filter basins.
 - i. Underdrains must be constructed with Schedule 40 or SDR smooth wall PVC pipe (or a similar pipe and corresponding 'n' value)
 - ii. Minimum 3" #57 (3/4-1") stone around the pipe
 - iii. Minimum 2" chocking stone (1/2" minus)
 - iv. Minimum 0.5% pipe slope
 - v. One underdrain for every 1000 sq. ft. of surface area.
 - vi. Include at least 2 observation /cleanouts for each underdrain, one at the upstream end and one at the downstream end. Cleanouts should be at least 4 inches diameter vertical non-perforated schedule 40 PVC pipe, and extend to the surface. Cap cleanouts with a watertight removable cap.
 - vii. For underdrains that daylight on grade, include a marking stake and animal guard
 - viii. Avoid filter fabric. (Pipe socks may be needed for underdrains imbedded in sand. If pipe socks are used, then use circular knit fabric)
 - ix. Use solid sections of non-perforated PVC piping and watertight joints wherever the underdrain system passes below berms, down steep slopes, makes a connection to a drainage structure, or daylights on grade.
 - x. Filter basin sequencing must be very specific as it relates to your site. Sequencing must ensure the basin is constructed or reconstructed after the site has permanent stabilization established or the plan must state how it will be protected during the interim (perimeter silt fence alone is not adequate)
 - e. Drawdown on abstraction volumes cannot be determined at this time.

Water Quality Controls

- 1) Water quality controls cannot be determined based on HydroCAD and modeling items listed above in general stormwater section.

Stormwater Summary

CONDITION (AC.)	TP LOAD (LBS/YR)	TSS LOAD (LBS/YR)	FILTRATION (CU. FT.) (38.73-ACRES IMPERVIOUS)	ANNUAL VOLUME (AC. FT.)
Pre-development (baseline)				
Post-development without BMPs				
Post-development with BMPs				
Net Change				

Buffer Strips (Rule I).

- 1) The ECWMC requires a 25' average and 10' minimum buffer width for all wetlands.
 - a. Where slopes within a buffer are graded, any final slope steeper than 6:1 must increase buffer widths 5' horizontally for every 1' vertical increase (i.e. 5:1=30', 3:1 = 45' average).
 - b. Linear roadways and trails must have buffers established to the extent practicable, but are generally exempt from buffer averages
- 2) Based on the plan sheets 45 to 49, it cannot be determined where the specific buffer line will be placed throughout this development.
 - a. It appears that 40' average buffer widths were used to determine buffer areas. Confirmation is necessary.
 - b. Buffer plan tables address wetland areas, it should list wetland perimeters.
 - c. If 40' average is used, the buffer areas will exceed the Commission standard.
 - d. Wetland impacts, if impacted due to buffer compliance, do not appear to be necessary or can be minimized in many areas. Example include buffers on lots 2, 4, 5, 6, 44, 48, 49, 50, Basin F, 213, 214, 215, 190, 191, 192, 193, 121, 122, 110, 111, 302, 303, 305.
- 3) Wetland buffer areas that are not vegetated or have been cultivated or disturbed within the last shall be replanted and maintained with native vegetation.
- 4) Wetland buffer monumentation locations must be provided on the site plans.

Wetland Alterations (Rule G)

- 1) The City of Rogers is the LGU in charge of administering the MN Wetland Conservation Act. Impacts of 1.81 acres are proposed throughout all 7 phases of the development.
 - a. The City of Rogers wetland and zoning codes follow the ECWMC wetland alteration rules.
 - b. Wetland replacement plans have not been received as of this review.

- c. Per statute, the ECWMC will be provided a copy of the replacement plan public notice.
- d. Comments from the ECWMC will take place outside of this review's purview.

Floodplain (Rule F)

- 1) The stormwater management plan interprets the base flood elevation (BFE) at 934.0 using LIDAR elevations in relation to the FEMA overlay maps.
 - a. This area should be analyzed utilizing FEMA and MN DNR standard floodplain models to determine a specific base flood elevation on the basin.
 - b. To provide relief from flood insurance rates on future homeowners in the FEMA flood overlay, a letter of map amendment should be provided for the community.
 - c. Initial drainage area estimate for watershed outlet at Tilton Trail is 586 acres.
 - i. Rough estimate for the wetland basin storage at between 930.0 and 932.0 = 200-acre feet.

Erosion and Sediment Controls for Phase's 1 and 2 only. (Rule E)

- 1) Redundant silt fence/perimeter controls are necessary adjacent to wetlands.
- 2) Temporary and permanent seed mixes during and after mass grading activities are necessary on the SWPP or Landscape plans.
- 3) Filter basins must have their own specific sequencing plan developed as part of the erosion and sediment control plans.

Recommendation: None currently

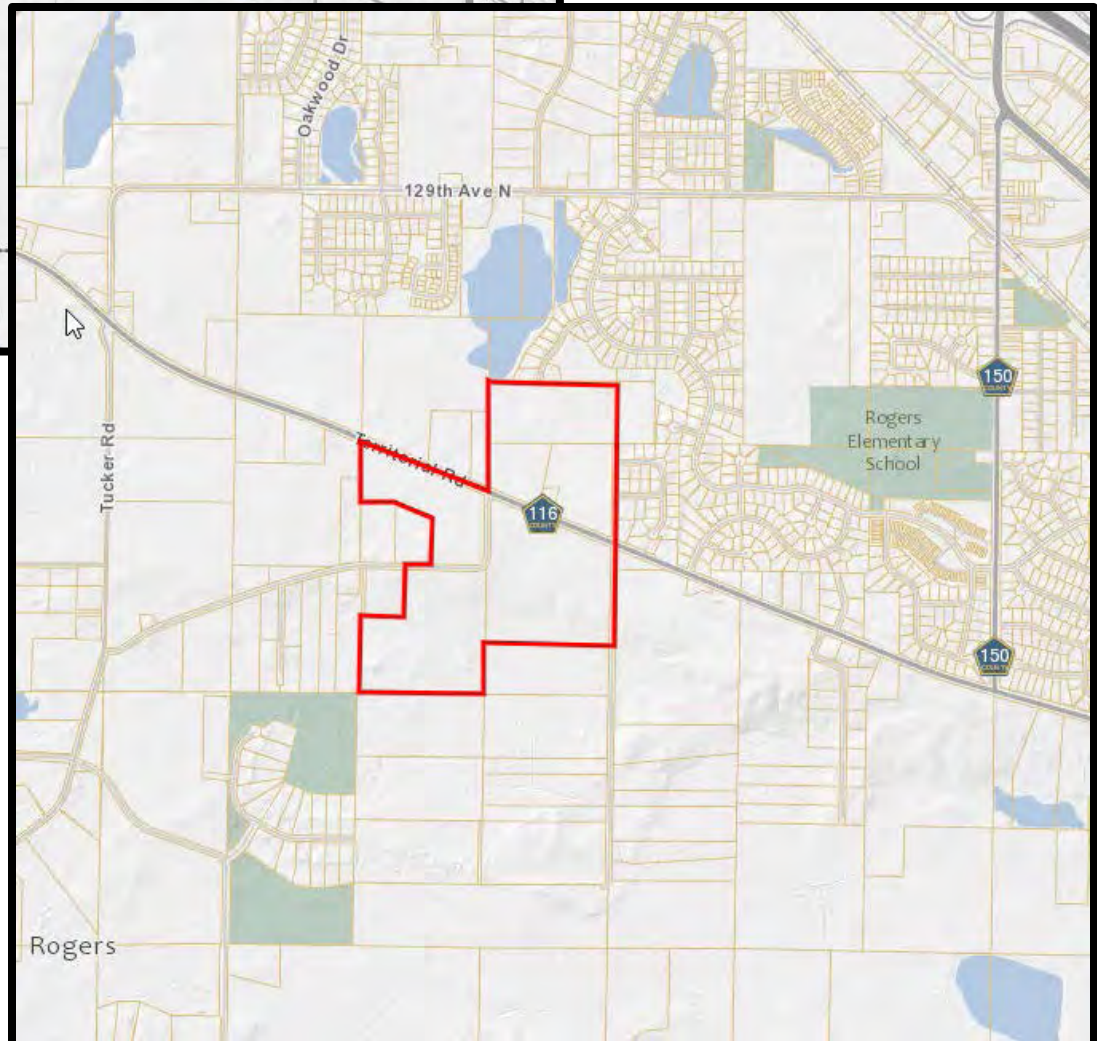
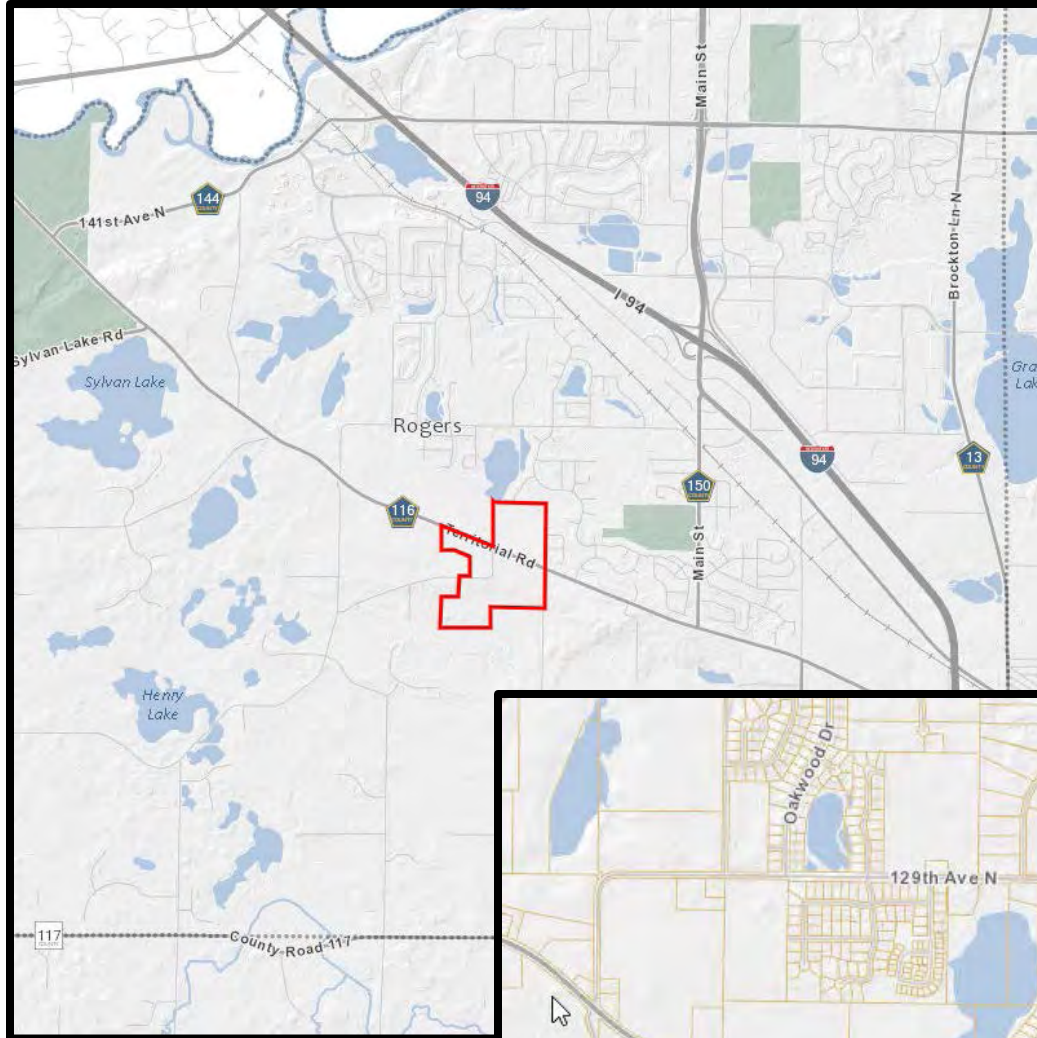
On Behalf of Barr Engineering
Advisor to the Commission

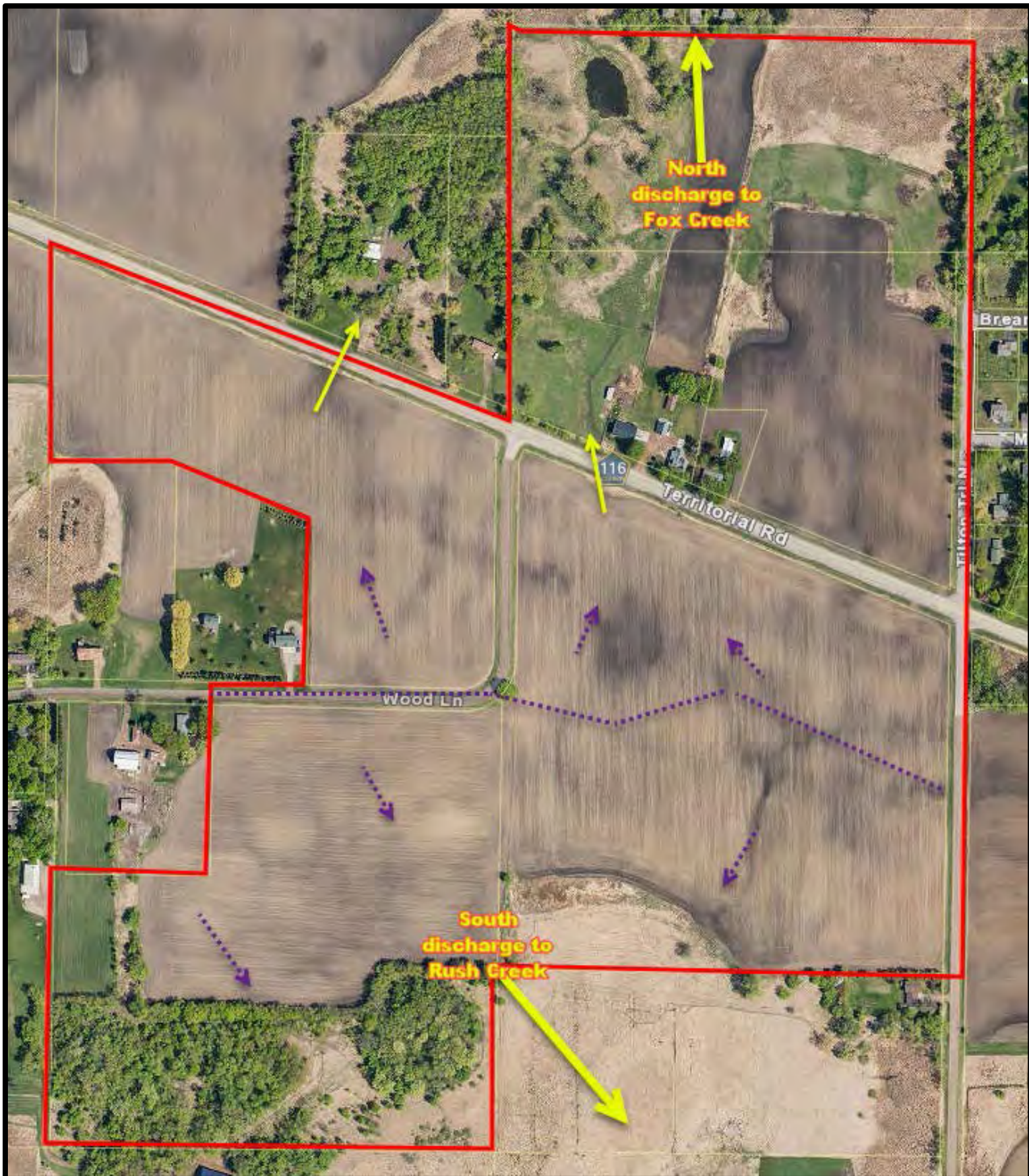


James C. Kujawa
Surface Water Solutions LLC

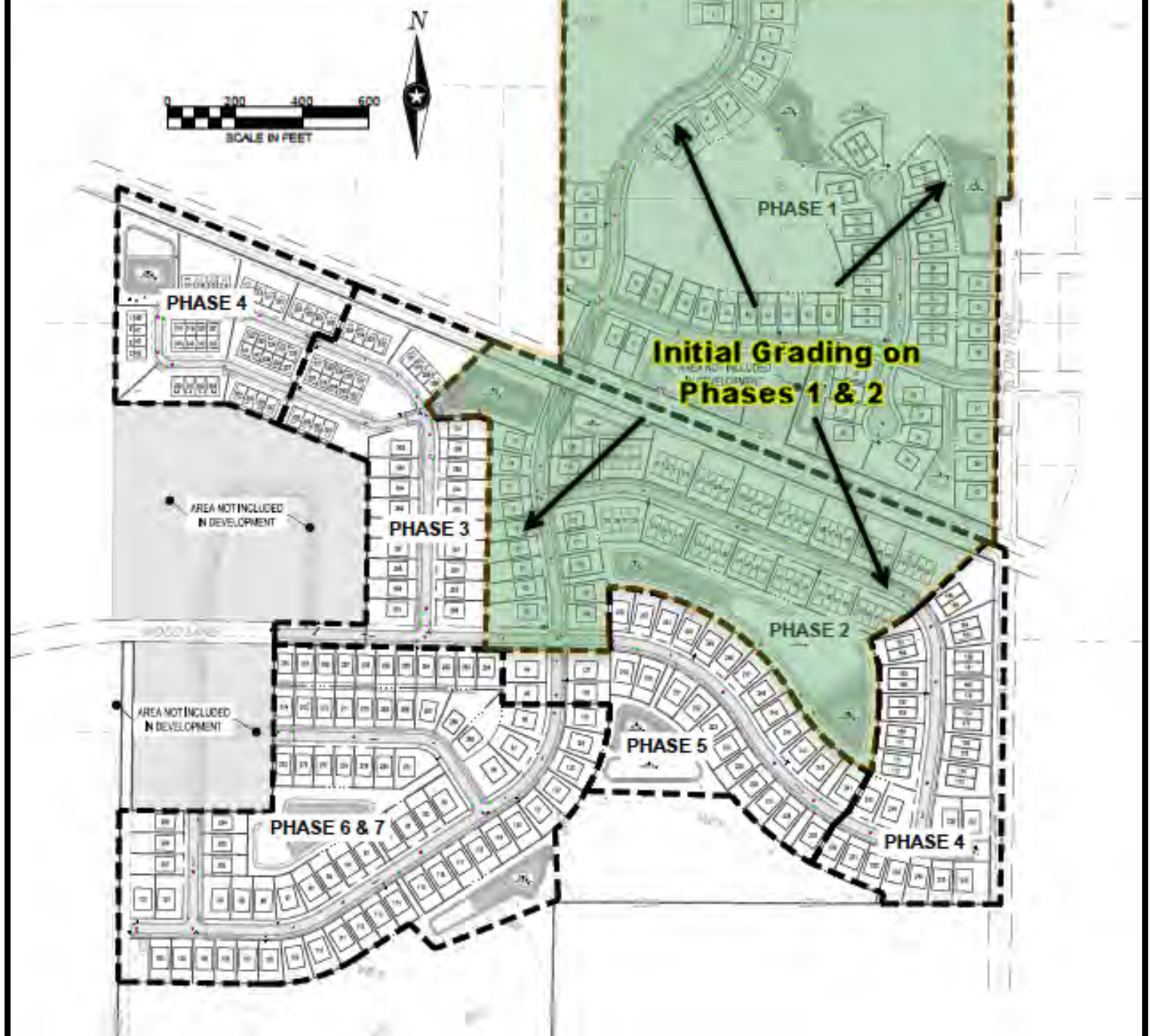
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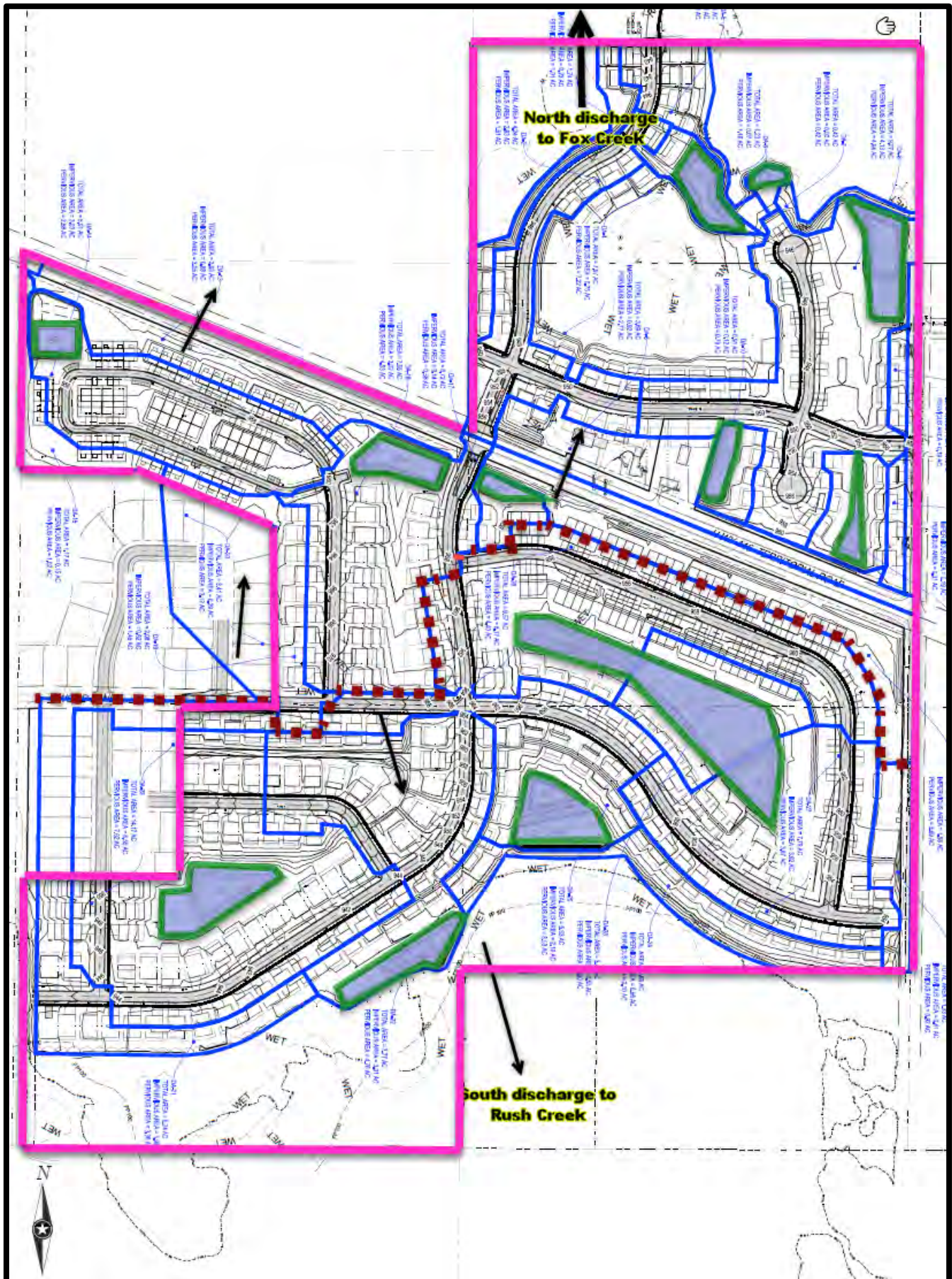
Location Map





LOT BREAKDOWN BY PHASE		
PHASE	LOTS	TOTAL
1	1-17, 25-74	67
2	75-83, 128-162, 167-218	76
3	288-305, 327-336, 358-370	41
4	163-186, 230-240, 306-326, 337-357	77
5	84-85, 126-127, 219-229, 241-253	28
6 & 7	86-125, 254-285	74
TOTAL		363





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Meadow View **Medina, Project #2020-017**

Project Overview: This is a 22-acre project located south of Meander Road and north of Hwy 55. Lennar Homes is proposing to build 125 townhomes with their necessary infrastructure on this site. The plans call for 7.64 acres of new impervious areas. The Commission's review will be for conformance to our 3rd Generation Stormwater Management Plan Appendix 0. It will cover stormwater management (Rule D), erosion and sediment controls (Rule E), floodplain alterations (Rule F) wetland alterations and buffer strips (Rules G & I)

Applicant & Agent: Lennar Homes, Attention Paul Tabone, 16305 36th Ave. N. Suite 600, Plymouth, MN 55443. Phone: 952-249-3075. Email: paul.tabone@lennar.com

Agent/Engineer: ISG, Attention Jerremy Foss, 7900 International Drive, Suite 550, Minneapolis, MN 55425. Phone: 952-426-0699. Email: Jerremy.foss@ISGInc.com

Exhibits:

- 1) ECWMC Request for Plan Review and Approval dated and received May 19, 2020.
- 2) Authorization to review received via email by the City of Medina May 18, 2020
- 3) Project review fees, \$2,375.00 received May 29, 2020.
- 4) Lennar Homes Meadow View Preliminary Plat site plan submittal by ISG. No signature or date. Original Issue Date on plan – May 15, 2020.
 - a. Sheet 1 of 30 Title Sheet
 - b. Sheet 2 of 30, Phasing Plan
 - c. Sheet 3 of 30, Street Section & Details
 - d. Sheets 4–7 of 30, Stormwater Pollution Prevention Plan, Notes and Details
 - e. Sheet 8 of 30, Existing Site Plan
 - f. Sheet 9 of 30, Existing Site Removal Plan
 - g. Sheets 10 to 12 of 30, Preliminary Plat
 - h. Sheet 13 of 30, Alta Survey
 - i. Sheets 14 to 16 of 30, Site plans
 - j. Sheets 17 to 21 of 30, Utility Plans, Hydrant Coverage and Fire Truck Plan
 - k. Sheets 21 to 24 of 30, Grading Plan
 - l. Sheet 25 of 30, Wetland Buffer Plan
 - m. Sheets 26 & 27 of 30, Site Restoration Plan
 - n. Sheets 28 to 30 of 30, Landscape Plans, Notes & Details

- 5) Lennar Homes Meadowview Development Stormwater Management Report by ISG dated May 15, 2020. Including HydroCAD report (print date May 15, 2020) with existing and proposed drainage maps, Geotechnical Evaluation Report by STS Consultants dated May 7, 2020.
- 6) ECWMC technical staff email to City of Medina dated March 11, 2020 regarding initial comments, Medina Project LR-20-256 Meadow View Townhome PUD Concept Plan.

Findings:

General

- 1) A complete application was received on May 29, 2020. The initial 60-day decision period per MN Statute 15.99 expires July 13, 2020.
- 2) Drainage on this site before and after development flows into Elm Creek in the NW corner of the intersection of CR 116 and Hwy 55.
- 3) The Hennepin County Soil Survey shows Shorewood silty clay loams and Hamel complex in this area. Geotechnical soil borings show clay loam soils with poor infiltration capabilities.
- 4) The City of Medina requires landowners assume responsibility for the long-term operation and maintenance of the stormwater basins. An O & M agreement must be approved by the City and Watershed and recorded within 90-days after final plat approval on the title to this property. A copy of the recorded agreements must be provided to the Commission.
- 5) Three wetland impacts, filling 6,867 sq. ft. of wetlands is proposed on this site plan.

Stormwater Management (Rule D)

General

- 1) Existing Site Area = 22.58 acres-Agriculture uses
 - a. no impervious areas
 - b. ~17 acres cropland and 5 acres meadow/hay/wetland.
- 2) Proposed Site Area = 22.58 acres-125 residential townhomes
 - a. 7.64 acres impervious areas
 - b. 14.95 acres grass cover
- 3) To manage stormwater two wet detention ponds with the westerly pond being connected into a biofiltration basin are proposed.
- 4) Typical details for outlet control structures, biofiltration basins and wet-detention ponds are necessary in the plan set or stormwater management plan.
- 5) Flared end section pipes must extend to the NWL of the ponds/basin.
- 6) Proposed HydroCAD routed into the west pond/basin will require separate subcatchments and ponding for drainage and routing water between the two.
- 7) Biofiltration basin specifics are necessary. Drain-tile placement, grade, elevations, cleanouts, and outlet control points are needed. Specific design information on the biofiltration basin is necessary. The ECWMC recommends the following guidelines on filter/biofilter basins.

- a. Underdrains must be constructed with Schedule 40 or SDR smooth wall PVC pipe (or a similar pipe and corresponding 'n' value)
- b. Minimum 3" #57 (3/4-1") stone around the pipe
- c. Minimum 2" chocking stone (1/2" minus)
- d. Minimum 0.5% pipe slope
- e. One underdrain for every 1000 sq. ft. of surface area.
- f. Include at least 2 observation /cleanouts for each underdrain, one at the upstream end and one at the downstream end. Cleanouts should be at least 4 inches diameter vertical non-perforated schedule 40 PVC pipe, and extend to the surface. Cap cleanouts with a watertight removable cap.
- g. For underdrains that daylight on grade, include a marking stake and animal guard
- h. Avoid filter fabric. (Pipe socks may be needed for underdrains imbedded in sand. If pipe socks are used, then use circular knit fabric)
- i. Use solid sections of non-perforated PVC piping and watertight joints wherever the underdrain system passes below berms, down steep slopes, makes a connection to a drainage structure, or daylights on grade.
- j. Filter basin sequencing must be specific as it relates to your site. The basin sequencing must ensure the basin is constructed or reconstructed after the site has permanent stabilization established or the plan must state how it will be protected during the interim (perimeter silt fence alone is not adequate)

Rate Controls (based on the limited design information received, rate controls cannot be adequately evaluated)

- 1) Overall peak flows will be controlled at the two pond discharge points. These flow south and east into the floodplain wetland for about 300 feet before entering Elm Creek.

Rate Control Summary

		2-yr (cfs)	10-yr (cfs)	100-yr (cfs)
South/East to Elm Creek (22.58 Acres)	Pre-Development			
	Post-Development			

Abstraction Controls (7.63 acres new impervious areas. Based on the design information abstraction controls cannot be adequately evaluated)

- 1) After development there will be 7.63 acres of new impervious areas. To meet the ECWMC requirements, new impervious area water volume must be abstracted.
- 2) True abstraction will not occur because soil infiltration rates (based on geotechnical report) are too low to absorb a 1.1" rainfall event over 48 hours.
- 3) In lieu of true abstraction, one biofiltration basins will be installed to filter the required 1.1" volume of runoff from all new imperious areas (7.63 acres).
 - a. Required abstraction = $7.63 \times 1.1/12 = 0.699$ -acre feet (30,467 cubic feet)
 - b. Total filtration provided in the west filter basin cannot be determined. Plan narrative says 0.48-acre feet. This is 0.21-acre feet short of the ECWMC requirements.
 - c. No pre-treatment of the raw water from impervious areas draining into the biofiltration pond is provided.
 - d. Drawdown on abstraction volumes cannot be determined at this time.

Water Quality Controls Cannot be determined at this time.

- 1) Water quality controls cannot be determined based on HydroCAD and modeling issues listed above and because the MIDS information was not provided with the submittals.

Stormwater Summary

CONDITION (AC.)	TP LOAD (LBS/YR)	TSS LOAD (LBS/YR)	FILTRATION (CU. FT.) (38.73-ACRES IMPERVIOUS)	ANNUAL VOLUME (AC. FT.)
Pre-development (baseline)				
Post-development without BMPs				
Post-development with BMPs				
Net Change				

Buffer Strips (Rule I).

- 1) The ECWMC requires a 25' average and 10' minimum buffer width for all wetlands.
 - a. Where slopes within a buffer are graded, any final slope steeper than 6:1 must increase buffer widths 5' horizontally for every 1' vertical increase (i.e. 5:1=30', 3:1 = 45' average).
- 2) Based on plan sheet 25, it cannot be determined where the specific buffer areas are located throughout this development.
 - a. It appears that 20' average buffer widths were used to determine buffer areas. Confirmation is necessary.
 - b. If 20' average is used, the buffer areas will not meet the Commission standard.
- 3) Wetland buffer areas are shown to be restored and maintained with native vegetation. This will meet the Commission buffer vegetations standard.
- 4) Wetland buffer monumentation locations must be provided on the site plans.

Wetland Alterations (Rule G)

- 1) The City of Medina is the LGU in charge of administering the MN Wetland Conservation Act. Three wetland impacts are proposed that will fill 6,867 sq. feet.
 - a. The City of Medina's wetland and zoning codes follow the ECWMC wetland alteration rules.
 - b. Wetland replacement plans have not been received as of this review.
 - c. Per statute, the ECWMC will be provided a copy of the replacement plan public notice.
 - d. Comments from the ECWMC will take place outside of this review's purview.
- 2) We recommend the NWL of wetland 2A be determined and an outlet pipe established at said elevation be routed to CBMH A-8A.

Floodplain (Rule F) does not meet the Commission's standards.

- 1) The stormwater management plan interprets the base flood elevation (BFE) at 980.0 using LIDAR elevations in relation to the FEMA overlay maps. We recommend using 982.26 based on the following information.
 - a. This floodplain area and BFE is being re-evaluated by the ECWMC/MN-DNR and FEMA at this time. A new BFE has not been determined as of this review.
 - b. The ECWNC did a HEC-2 study this area in 1987 and established a BFE of 980.36 (1929 NGVD) between Hwy 55 and Meander Road.
 - c. This same area was evaluated using updated modeling techniques (HEC-RAS) and a revised BFE was recommended to be 982.26 (1988 NAVD)..
- 2) Floodplain impacts and mitigation must be determined on this site using the most up to date information (982.26 BFE).

Erosion and Sediment Control (Rule E)

- 1) Only preliminary reviewed at this time.
 - a. Filter basin erosion control sequencing is needed.
 - b. Temporary and permanent seeding specifications are needed.

Recommendation: None currently

On Behalf of Barr Engineering
Advisor to the Commission



James C. Kujawa
Surface Water Solutions LLC

June 9, 2020
Date

Location Map

