RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

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Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2021-063

Considered at Board of Managers Meeting: April 6, 2022

Received complete: October 25, 2021 (RPBCWD extended the application-review period by 60 days on December 14, 2021 and the RPBCWD approved the applicant's request for a second extension until April 23, 2022)

Applicant: Kraus-Anderson Realty Company

Consultant: ISG Inc., Jerremy Foss P.E.

Project: Reserve at Autumn Woods – The applicant proposes the construction of a new single-family residential subdivision project, underground utilities, associated roadways, landscaping, and stormwater management facilities. Stormwater management facilities include surface water detention basins, infiltration basins, and a vegetated swale to provide volume control, water quality, and rate control.

Location: Southwest Corner of Autumn Woods Drive and Audubon Road, Chaska, MN

Reviewer: Dallen Webster E.I.T. and Scott Sobiech P.E., Barr Engineering

Potential Board Variance Action

Manager _____ moved and Manager _____ seconded adoption of the following resolution based on the permit report that follows, the presentation of the matter at the April 6, 2022, meeting of the managers and the managers' findings, as well as the factual findings in the permit report that follows:

Resolved that the variance request for Permit 2021-063 from compliance with Rule B, subsection 3.2b is approved, based on the facts and analysis provided by the RPBCWD engineer below and placed in the record at the April 6, 2022 meeting of the managers, and the managers' findings in the record of the April 6 meeting, and subject to the following conditions: 1. [CONDITION(S)],

Potential Board Exception Action

Manager _____ moved and Manager _____ seconded adoption of the following resolution based on the permit report that follows, the presentation of the matter at the April 6, 2022, meeting of the managers and the managers' findings, as well as the factual findings in the permit report that follows:

Resolved that the exception request from compliance with Rule G, subsection 3.2, for Permit 2021 063 is approved based on the facts and analysis provided by the RPBCWD engineer below and placed in the record at the April 6, 2022 meeting of the managers, and the managers' findings in the record of the April 6 meeting, and subject to the following conditions: 1. [CONDITION(S)],

Proposed Board Action

Manager _____ moved and Manager _____ seconded adoption of the following resolutions based on the permit report that follows and the presentation of the matter at the April 6, 2022 meeting of the managers:

Resolved that the application for Permit 2021-063 is approved, subject to the conditions and stipulations set forth in the Recommendations section of the attached report.

Resolved that on determination by the RPBCWD administrator that the conditions of approval have been affirmatively resolved, the RPBCWD president or administrator is authorized and directed to sign and deliver Permit 2021-063 to the applicant on behalf of RPBCWD.

Upon roll call vote, the resolutions were adopted, _____.

Applicable Rule Conformance Summary

Rule	Issue		Conforms to RPBCWD Rules?	Comments
B	**Floodplain Management and Drainage Alterations**		No	See Rule K Variance discussion for compensatory storage not being provided within the floodplain of the same waterbody.
C	**Erosion Control Plan**		See Comment	See rule-specific permit condition C1 related to name of individual responsible for on-site erosion control.
D	**Wetland and Creek Buffers**		See Comment	See rule-specific permit condition D1 related to recordation of buffer maintenance declaration.
G	**Waterbody Crossings and Structures**		No	See Rule K Exception discussion for the construction of a waterbody crossing in contact with the bed and bank of drainageway leaving Wetland D and rule-specific permit condition G1 related to recordation of a waterbody crossing maintenance declaration.
J	**Stormwater Management**	Rate	Yes	
		Volume	Yes	
		Water Quality	Yes	
		Low Floor Elev.	Yes	
		Maintenance	See Comment	See rule-specific permit condition J1 related to recordation of stormwater facility maintenance declaration.
		Chloride Management	See Comment	See stipulation #5 related to providing a chloride management plan prior to project close-out.
		Wetland Protection	Yes	

Rule	Issue	Conforms to RPBCWD Rules?	Comments
K	**Variance Request**	See Comment	See exception discussion for the construction of a waterbody crossing in contact with the bed and bank of drainageway leaving Wetland D and variance discussion for compensatory storage not being provided within the floodplain of the same waterbody.
L	**Permit Fee Deposit**	See Comment	$3,000 received July 27, 2021. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued and provide the addition $2,000 fee deposit for the variance request.
M	**Financial Assurances**	See Comment	The financial assurance is calculated at $876,352.

Background

The applicant proposes construction of an 86-lot single-family residential development on approximately 45 acres southeast of Hazeltine Lake. The project site is located between the intersections of Audubon Road and Autumn Woods Drive and Audubon Road and Butternut Drive at 9430 Audubon Road in Chaska, Minnesota. The existing site is currently a homestead with most of the area farmed. There are 5 wetlands onsite, three of which will be filled and replaced under a Wetland Conservation Act replacement plan approved by the city of Chaska, acting as the local governmental unit administering WCA. A large wetland at the north end of the site will be preserved and receives a majority of stormwater runoff from the northern portion of the site. Wetland D, a farmed wetland at the south end of the site, receives stormwater runoff from the southern portion of the site. Flows leaving this wetland are conveyed to a chain of stormwater ponds by a natural channel. The applicant is proposing a waterbody crossing on the natural channel from Wetland D to restore the wetland hydrology and off-set some of the lost wetland functions and values on-site due to filling of three other wetlands. The site will be mass graded prior to construction of public improvements for urban development, including utilities, streets, storm sewer and five stormwater best management practices. Proposed stormwater management facilities include stormwater detention basins, infiltration basins, and a vegetated swale to provide volume control, water quality, and rate control.

The following water resources are within the project site or downgradient of the proposed activities. The following table provides a brief explanation of how each resource is implicated by the project.

Water resources implicated by project

Water Resource	Potential resource impacts
Wetland A	Wetland is preserved; downgradient from proposed land-disturbing activities
Wetland B	A farmed wetland that will be filled during construction and the floodplain will be filled
Wetland C	A farmed wetland that will be filled during construction and the floodplain will be filled
Wetland D	A farmed wetland will be expanded and restored during construction and is downgradient from proposed land-disturbing activities
Wetland E	A farmed wetland that will be filled during construction and the floodplain will be filled
Watercourse connecting Wetland E to D	An eroded, non-public watercourse conveying flows from Wetland E to Wetland D that will be filled
Southern Watercourse	A waterbody crossing is proposed to aid in the restoration of Wetland D.

The project site information is summarized below:

Project Site Information	Area (acres)
Total Site Area	45.43
Existing Site Impervious	0.61
Disturbed Existing Impervious Area	0.61 (100% disturbance)
Proposed Site Impervious Area	12.08
Change in Impervious Area	11.47 (>100% increase)
Regulated Impervious Area	12.08
Total Disturbed Area	36.79

The following materials were reviewed in support of the permit request:

1. Permit Application received July 22, 2021 (Notified applicant on August 9, 2021 that submittal was incomplete); materials submitted to complete the application October 25, 2021.
2. Stormwater Management Report dated July 2, 2021 (revised October 1, 2021; October 22, 2021; January 3, 2022; February 4, 2022; and March 17, 2022)
3. Project Plan Set (39 sheets) dated July 6, 2021 (revised with 47 sheets October 1, 2021; 47 sheets October 25, 2021; 77 sheets January 4, 2022; 77 sheets on February 10, 2022; and 77 sheets on March 17, 2022)
4. Electronic HydroCAD models received on October 1, 2021 (revised October 25, 2021; January 4, 2022; and February 10, 2022)

5. Electronic p8 models received on October 1, 2021 (revised October 25, 2021 and February 10, 2022)
6. Electronic MIDS models received on October 25, 2021 (revised February 10, 2022)
7. Soil Boring Log by Braun Intertec Corporation dated May 21, 2021
8. Double Ring Infiltrometer Testing Results by Braun Intertec Corporation dated June 30, 2021
9. Wetland Delineation Report by ISG Inc dated June 23, 2021
10. Liberty On Bluff Creek Storm Sewer Record Drawing received October 1, 2021
11. Engineer's Opinion of Probable Construction Costs dated October 22, 2021 (revised March 17, 2022)
12. Draft Maintenance Agreement received on October 25, 2021
13. MnRAM Site Response Report for Wetland A received on October 25, 2021
14. MnRAM Site Response Report for Wetland B received on October 25, 2021
15. MnRAM Site Response Report for Wetland C received on October 25, 2021
16. MnRAM Site Response Report for Wetland D received on October 25, 2021
17. MnRAM Site Response Report for Wetland E received on October 25, 2021
18. Wetland Delineation Overview Map received on October 25, 2021
19. Draft Minnesota Wetland Conservation Act Application received October 25, 2021 (revised February 10, 2022)
20. Minnesota Wetland Conservation Act Notice of Decision dated March 7, 2022
21. Variance Request Letter dated October 26, 2021 (revised January 3, 2022)
22. Wetland storage computations received October 29, 2021
23. Section 6 of City of Chaska's Surface Water Management Plan received February 10, 2022
24. Wetland Replacement Plan Memo by Stantec dated December 1, 2021
25. Applicant's response to RPBCWD August 9, 2021 comments received October 1, 2021
26. Applicant's response to RPBCWD October 8, 2021 comments received October 25, 2021
27. Applicant's response to RPBCWD November 8, 2021 comments received January 4, 2022
28. Applicant's response to RPBCWD January 17, 2022 comments received February 10, 2022
29. Applicant's response to RPBCWD March 2, 2022 comments received March 18, 2022

Rule B: Floodplain management and drainage alteration

Because the proposed redevelopment project involves the placement of a total of 1.13 acre-feet of fill below the 100-year flood elevation of Wetlands B, C, D, and E and existing southern watercourse, the project activities must conform to the RPBCWD's Floodplain Management and Drainage Alterations rule (Rule B). No fill or land-disturbing activities are proposed in floodplain of Wetland A.

The proposed new structures must conform with low floor elevation requirements set forth by Rule B, Subsection 3.1 which references the low floor criteria in Rule J, subsection 3.6. All new buildings must be constructed such that the lowest floor is at least two feet above the 100-year high-water elevation or

one foot above the natural overflow of a waterbody according to Rule J, Subsection 3.6a. In addition, each of the planned stormwater-management facilities must be constructed at an elevation that ensures that no adjacent habitable building will be brought into noncompliance with this requirement according to Rule J, Subsection 3.6b. Low floor requirements were evaluated for 36 proposed structures adjacent to the 100-year floodplain extents. The results demonstrate the provided freeboard is greater than the minimum required.

Structure (Block – Lot)	Low Floor Elevation of Building (ft)	Waterbody	100-year Event Flood Elevation of Waterbody (ft)	Freeboard to 100-year Event (ft)
3 - 13	937.4	Wetland D	932.53	4.87
3 - 14	937.4	Wetland D	932.53	4.87
3 - 15	937.4	Wetland D	932.53	4.87
3 - 16	937.4	Wetland D	932.53	4.87
3 - 17	937.05	Wetland D	932.53	4.52
3 - 18	937.05	Wetland D	932.53	4.52
3 - 19	937.3	Wetland D	932.53	4.77
3 - 20	937.3	Basin C	933.49	3.81
3 - 21	936.3	Basin C	933.49	2.81
3 - 22	936.3	Basin C	933.49	2.81
3 - 23	936.05	Basin C	933.49	2.56
3 - 24	937.05	Basin C	933.49	3.56
3 - 25	935.8	Basin C	933.49	2.31
4 - 1	946.05	Basin F	939.96	6.09
4 - 2	945.55	Basin F	939.96	5.59
4 - 3	946.05	Basin F	939.96	6.09
4 - 4	946.8	Basin F	939.96	6.84
4 - 5	948.8	Basin F	939.96	8.84
4 - 6	950.05	Basin F	939.96	10.09
4 - 7	950.3	Basin F	939.96	10.34
4 - 8	949.45	Basin F	939.96	9.49
4 - 9	946.8	Basin F	939.96	6.84
4 - 10	943.8	Basin F	939.96	3.84
4 - 15	942.3	Basin F	939.96	2.34
4 - 16	942.3	Basin F	939.96	2.34
4 - 17	942.3	Basin F	939.96	2.34
4 - 18	943.8	Basin F	939.96	3.84
4 - 19	947.3	Basin F	939.96	7.34
4 - 20	947.3	Basin F	939.96	7.34
5 - 14	945.3	Basin E	941.49	3.81
5 - 15	945.3	Basin E	941.49	3.81
5 - 16	946.8	Basin E	941.49	5.31

Structure (Block – Lot)	Low Floor Elevation of Building (ft)	Waterbody	100-year Event Flood Elevation of Waterbody (ft)	Freeboard to 100-year Event (ft)
5 - 17	949.95	Basin E	941.49	8.46
5 - 18	950.55	Basin E	941.49	9.06
5 - 19	949.55	Basin E	941.49	8.06
5 - 20	946.8	Basin E	941.49	5.31

Because the low floor elevation of the nearest structures to Basin B, Basin F, and Basin E are below the 100-year high-water elevation, an alternative low floor analysis was conducted as outlined in Rule J, Appendix J.1 – Low-Floor Elevation Assessment. Groundwater was not discovered in the three borings in the vicinity of structures near Basin B, Basin F, and Basin E, thus the groundwater elevations were presumed to be at the elevation of the bottom of each individual soil boring nearest each structure. The engineer concurs with the applicant's seasonal groundwater adjustment determined by increasing the presumed water table elevation by 25% of the total annual rainfall for the area.

The results of the low floor analysis using *Appendix J1 Plot 1: Minimum Depth to Water Table for No Further Evaluation* is summarized in the following table. Low floor requirements were also evaluated for three existing habitable structures beyond the southern parcel boundary of the site on Butternut Drive. The results demonstrate the provided separation is greater than the minimum required, thus meeting the habitable structure requirements in Rule J, Subsection 3.6.

Structure (Block – Lot)	Low Floor Elevation of Building (ft)	Waterbody	100-year Event Flood Elevation of Waterbody (ft)	Freeboard to 100-year Event (ft)	Distance from Building to Adjacent Facility (ft)	Water Table Elevation[1] (ft)	Minimum Permissible Depth to Water Table[2] (ft)	Provided Depth from Low Floor Elevation to Water Table (ft)
1 - Ex 1	925.25	Basin B	932.78	-7.53	95	920.5	2.5	4.8
1 - Ex 2	923.63	Basin B	932.78	-9.15	95	920.5	2.5	3.1
1 - Ex 3	924.2	Basin B	932.78	-8.58	95	920.5	2.5	3.7
2 - 8	928.9	Basin B	932.78	-3.88	32	920.5	8.0	8.4
4 - 11	941.3	Basin F	939.96	1.34	81	933.8	3.0	7.5
5 - 1	938.9	Basin E	941.49	-2.59	108	929.5	2.5	9.4
5 - 2	937.65	Basin E	941.49	-3.84	68	929.5	5.0	8.2
5 - 3	937.8	Basin E	941.49	-3.69	63	929.5	5.5	8.3
5 - 4	938.05	Basin E	941.49	-3.44	69	926.7	5.0	11.4
5 - 5	937.3	Basin E	941.49	-4.19	71	926.7	5.0	10.6
5 - 6	937.8	Basin E	941.49	-3.69	76	926.7	4.5	11.1
5 - 7	939.04	Basin E	941.49	-2.45	88	926.7	3.5	12.3
5 - 8	940.28	Basin E	941.49	-1.21	88	933.6	3.5	6.7
5 - 9	941.09	Basin E	941.49	-0.4	86	930.9	3.5	10.2

Structure (Block – Lot)	Low Floor Elevation of Building (ft)	Waterbody	100-year Event Flood Elevation of Waterbody (ft)	Freeboard to 100-year Event (ft)	Distance from Building to Adjacent Facility (ft)	Water Table Elevation[1] (ft)	Minimum Permissible Depth to Water Table[2] (ft)	Provided Depth from Low Floor Elevation to Water Table (ft)
5 - 10	942.05	Basin E	941.49	0.56	65	930.9	5.0	11.2
5 - 11	942.05	Basin E	941.49	0.56	65	930.9	5.0	11.2
5 - 12	941.55	Basin E	941.49	0.06	65	930.9	5.0	10.7
5 - 13	941.8	Basin E	941.49	0.31	64	930.9	5.0	10.9
5 - 21	941.05	Basin E	941.49	-0.44	250	929.5	0.0	11.6

[1]Includes seasonal groundwater adjustment (1.3 feet)
[2]Based on Plot 1 of Rule J, Appendix J1

Placement of fill below the 100-year flood elevation is prohibited unless fully compensatory flood storage at or below the same elevation and within the floodplain of the same water basin is provided (Rule B, Subsection 3.2). Compensatory storage values are summarized in the following table. The supporting materials demonstrate, and the RPBCWD Engineer concurs, that 1.13 acre-feet of fill will be placed to facilitate site grading, and 5.11 acre-feet of excavation to create the compensatory storage below the 100-year floodplain, thus providing a net increase in floodplain storage. Because the compensatory storage will not be provided within the floodplain of the same waterbody, the applicant has requested a variance from this requirement of Rule B, Subsection 3.2b. See the Rule K discussion for additional information on the variance request.

Wetland Name	Proposed Fill below Existing 100-Year HWL (ac-ft)	Proposed Feature Providing Compensatory Storage	Provided Compensatory Storage (ac-ft)
B	0.82	Basin E	4.77
C	0.01	ST-48	0.02
D	0.10	Wetland D	0.25
Watercourse connecting Wetland E to Wetland D	0.12		
E	0.08	Swale from FES-39A	0.07

Because filling of wetlands onsite to facilitate site development and providing alternative storage areas will alter the timing and duration of flows leaving the site, the applicant must demonstrate that the alterations are not reasonably likely have an adverse offsite impact and will not adversely affect flood risk, basin or channel stability, groundwater hydrology, stream baseflow, water quality, or aquatic or riparian habitat (Rule B subsection 3.3). The applicant provided pre- and post-project water quality modeling to demonstrate the project is not reasonably likely to have an adverse impact to water quality. The modeling results show the total suspended solids and total phosphorus load leaving the site after

the development will be less than the existing load leaving the site. The water quality modeling also shows the proposed project will meet the water quality treatment criteria for areas tributary to the onsite wetlands (see Rule J Wetland Protection analysis).

In addition, consistent with the rate-control requirement in Rule J, the proposed peak discharge rates to Wetlands A and D, as well as discharge rate leaving the site, are less than existing for the 2, 10, and 100-year event. Because the flow rates are not increasing, the project is not likely to impact channel stability. The modeling provided by the applicant shows that the inundation periods for Wetland A during the 1, 2 and 10-year events are increased by between 6.0 to 6.4 hours while the 10-year bounce would be increase by 0.02 feet. The modeling provided by the applicant also shows that the inundation periods for Wetland D during the 1, 2 and 10-year events are increased by between 64.4 to 75.6 hours while the 10-year bounce would be 3.13 feet. Because these changes in inundation period and bounce align with guidance in the Board of Soils and Water Resources (BWSRs) Recommended Wetland Management Standards: Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.0, the RPBCWD engineer concurs that the change in hydrology will likely not adversely impact Wetland A or D. This also supports the engineer's determination that the project meets the requirements of Rule B, subsection 3.3.

		Wetland D			Wetland A		
		Existing	Proposed	Change	Existing	Proposed	Change
100-Year HWL (ft)		930.14	932.53	2.39	919.12	918.91	-0.21
Inundation Period (hours)	1-Year	11.6	76.0	64.4	74.8	81.2	6.4
	2-Year	13.6	80.0	66.4	80.8	86.8	6.0
	10-Year	14.0	89.6	75.6	93.2	99.2	6.0
	100-Year	15.6	108.0	92.4	111.2	117.6	6.4

Rule B, Subsection 3.4 does not allow placing, constructing or reconstructing structures or paved surfaces within 100 feet of the centerline of any watercourse. Because the impervious surface within 50 feet of the watercourse is associated with a waterbody crossing regulated under Rule G, the requirements set forth by Rule B, subsection 3.4 do not apply (see exception in subsection 3.4a). See Rule C analysis of the applicant's submitted erosion control plan to demonstrate conformance with Rule B, Subsection 3.5. A note on the plans indicates that activities must be conducted to minimize the potential transfer of aquatic invasive species conforming to Rule B, Subsection 3.6.

Rule C: Erosion Prevention and Sediment Control

Because the project will alter 36.79 acres of land-surface area, the project must conform to the requirements in the RPBCWD Erosion Prevention and Sediment Control rule (Rule C, Subsection 2.1).

The erosion and sediment control plans prepared by ISG Inc. includes installation of perimeter control, inlet protection for storm sewer catch basins, a rock construction entrance, protection of stormwater management facilities, placement of a minimum of 6 inches of topsoil (at 5% organic matter),

construction sequencing, decompaction of pervious areas compacted during construction, and retention of native topsoil onsite. To conform to RPBCWD Rule C requirements the following revisions are needed:

C1. The Applicant must provide the name and contact information of the individual responsible for erosion control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.

Rule D: Wetland and Creek Buffers

Because the proposed work triggers RPBCWD Rules B, G, and J and there are wetlands downgradient from the work for the proposed project, as well as WCA wetlands that will be disturbed, Rule D, Subsection 2.1a requires the applicant to establish buffer areas. Because the watercourse on the property Because B, C and E will be eliminated by the project, subsection 3.1b requires buffer on the edges of only Wetland A downgradient from the land-disturbing activities. The City of Chaska is the LGU administering WCA requirements and has approved a replacement plan for the filling of Wetlands B, C, and E as well as disturbance in Wetland D. Because the proposed construction activities disturb Wetland D, wetland buffers must be provided around the entire (remaining) wetland on the parcel (Rule D, subsection 3.1a)

A Minnesota Wetland Conservation Act Notice of Decision for the wetland boundaries, dated June 23, 2021, was included with the submittal. The MnRAM analyses submitted indicate that Wetland D and Wetland A located onsite are low and medium value wetlands, respectively. Rule D, Subsection 3.2.b.ii requires wetland buffer with an average of 20 feet from the delineated edge of the wetland, minimum 10 feet for low value wetlands. Rule D, Subsection 3.2.b.iii requires wetland buffer with an average of 40 feet from the delineated edge of the wetland, minimum 20 feet for medium value wetlands. Because Wetland A is encompassed by steep slopes averaging 18 percent or great over a distance of 50 feet or more, the required buffer must extend to the top of the slope. The proposed buffer for Wetland A extends to the top of the steep slope. The buffer widths are summarized in the table below.

Wetland ID	RPBCWD Wetland Value	Required Minimum Width (ft)	Required Average Width (ft)	Required Area (ft^2)	Provided Area (ft^2)	Provided Minimum Width (ft)	Provided Average Width (ft)
Wetland A	Medium	20	40	84,616[1]	84,616	40	N/A[1]
Wetland D	Low	10	20	29,863	30,116	10	20.2

[1]Buffer width cannot be averaged on steep slopes. The buffer area extends to the top of slopes that average steeper than 18% and results in a width greater than the required average, thus project conforms to Rule B, subsection 3.2b

The Landscaping Plan (sheets 26 and 27) indicates all disturbed areas within the buffer will be revegetated using a native seed mix and the existing vegetation will remain, thus conforming to Rule D, Subsection 3.3. The engineer's review of plan sheets shows that buffer markers will be installed consistent with Rule D, Subsection 3.4. A note is included on the plan sheet indicating the project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible conforming to Rule D, Subsection 3.6.

To meet the maintenance requirements in RPBCWD Rule D, Subsection 3.3, the applicant must address the following condition:

D1. Buffer areas and maintenance requirements must be documented in a declaration recorded after review and approval by RPBCWD in accordance with Rule D, Subsection 3.5.

Rule G: Waterbody Crossings and Structures

Because the project proposes to construct a waterbody crossing in contact with the bed and bank of the natural drainageway leaving Wetland D, the proposed project must meet the criteria of RPBCWD's Waterbody Crossings and Structures Rule (Rule G, Subsection 2).

The applicant is proposing a waterbody crossing on the southern natural watercourse leaving Wetland D to restore the wetland hydrology and off-set some of the lost wetland functions and values on-site due to filling of three other wetlands, thus demonstrating a specific need as required by Rule G, subsection 3.1b.

Rule G, Subsection 3.2.a requires that the construction of a waterbody crossing in contact with the bed or bank of a waterbody retain adequate hydraulic capacity and assure no net increase in the flood stage of the pertinent waterbody. Stormwater modeling provided by the applicant indicates that the 100-year flood stage for Wetland D will increase as a result of alterations to the existing outlet structure. The applicant has requested an exception to subsection 3.2.a because the proposed waterbody crossing will increase 100-year flood elevation upstream of the crossing from 930.14 feet to 932.53 feet (i.e. an increase of 2.39 feet) to restore the hydrology to the partially drained wetland. See the Rule K discussion for additional information on the exception request.

Due to the existing conditions of the outlet channel not providing navigational capacity, the requirements set forth by Rule G, subsection 3.2.b do not impose a requirement on the project. Because the provided construction plans indicate the installation of a skimmer structure for controlling flow rates from Wetland D to minimize erosion and reduce the potential for scour resulting from peak flows, the engineer concurs that the project is reasonable likely to prevent degradation of water quality in accordance with Rule G, Subsection 3.2.c.

Because the proposed waterbody crossing constitutes a potential impact to wildlife passage along each bank and riparian area near the outlet to Wetland D, the applicant must demonstrate that wildlife passage will be provided (Rule G, subsection 3.2.d). The watercourse is intermittent and does not support a fishery. Revegetation plans provided by the applicant propose native vegetation for the riparian areas along the waterbody crossing to enhance ecological benefit and native plantings upland for stabilization of the berm. Because wildlife native to the area will be able to continue using the native vegetated corridor over the crossing, the engineer concurs that the proposed project is in compliance with subsection 3.2.d.

Rule G, Subsection 3.2.e requires that a constructed waterbody crossing represent the 'minimal impact' solution to a specific need with respect to other reasonable alternatives, based on analysis of at least

two reasonable alternatives. The applicant provided two waterbody crossing alternatives for Wetland D: 1) the proposed outlet control structure and berm and 2) a footbridge with sheet piling and an orifice. The "do nothing" alternative was not a viable solution to restore the wetland hydrology and therefore dismissed from further consideration. The applicant maintains that the footbridge and sheet pile alterative present access and maintenance difficulties, thus the alternative not pursued.

The overall SWPPP plan sheet includes a note directing the contractor that no work affecting the bed or banks of a protected water shall occur between April 1 and June 15 (Rule G, Subsection 3.7a). Banks will be immediately stabilized after completion of permitted work and revegetated as soon as growing conditions allow (Rule G, Subsection 3.7b). A note is included on the plan sheet indicating the project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible (Rule G, Subsection 3.7c and Rule F, subsection 3.3e).

Rule G, Subsection 3.7d requires compliance with the applicable criteria in section 3 of Rule F. The proposed riprap placement extends from the 10 feet for the waterbody crossing which it the minimum distance needed to provide a stilling pool and, thus representing the minimal encroachment to prevent erosion (Rule F, subsection 3.3a). Based on the applicant's plans, the project proposes the use stone riprap having an average size of 9 inches, with a geotextile and transition layer of granular bedding sized consistent with the erosion intensity at the outfall locations, thus conforming to Rule F, Subsections 3.3b.

To meet the maintenance requirements in RPBCWD Rule G, Subsection 5, the applicant must address the following condition:

G1. Waterbody crossing maintenance requirements must be documented in a declaration recorded after review and approval by RPBCWD in accordance with Rule G, Subsection 5.

Rule J: Stormwater Management

Because the project will alter 36.79 of land-surface area, the project must meet the criteria of RPBCWD's Stormwater Management rule (Rule J, Subsection 2.1). The criteria listed in Subsection 3.1 apply to the entire project site because the project will increase the imperviousness of the entire site by more than 100 percent (Rule J, Subsection 2.3).

Proposed stormwater management facilities include stormwater detention basins (aka wet pond), infiltration basins, wetland retention areas, and a vegetated swale to provide volume control, water quality, and rate control. The proposed vegetated swale, sump catch basin manholes, and grass filter strips will serve as pretreatment for runoff.

Rate Control

In order to meet the rate control criteria listed in Subsection 3.1.a, the 2-, 10-, and 100-year post development peak runoff rates must be equal to or less than the existing discharge rates at all locations where stormwater leaves the site. The Applicant used a HydroCAD hydrologic model to simulate runoff

rates for pre- and post-development conditions for the 2-, 10-, and 100-year frequency storm events using a nested rainfall distribution, and a 100-year frequency, 10-day snowmelt event. The existing and proposed 2-, 10-, and 100-year frequency discharges from the site are summarized in the table below. The proposed stormwater management plan will provide rate control in compliance with the RPBCWD requirements for the 2-, 10-, and 100-year events. Thus, the proposed project meets the rate control requirements in Rule J, Subsection 3.1a.

Modeled Discharge Location	2-Year Discharge (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)		10-Day Snowmelt (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
From South Wetland D	3.6	1.5	12.6	3.3	48.3	6.2	5.5	2.7
To North Wetland A from Site	3.6	0.9	9.5	1.8	24.2	2.8	1.2	1.0
To Chanhassen Storm Sewer	1.0	0.8	3.5	1.5	8.8	2.8	0.5	0.1

Volume Abstraction

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from the new and disturbed impervious surface of the parcel. An abstraction volume of 48,264 cubic feet is required from the proposed 12.08 acres (35,542 square feet) of impervious area. The proposed wet pond, vegetated swale, sump catch basin manholes, and grass filter strips will serve as pretreatment for runoff into the three infiltration basins and wetlands (Rule J, Subsection 3.1.b.1).Soil borings performed by Braun Intertec on May 21, 2021 show that soils in the project area are primarily clayey sand and sandy lean clay. Braun Intertec conducted twelve double-ring infiltration tests on this site. Two infiltration tests were conducted at the proposed Basin B location on the southeastern end of the site, four tests at Basin E located in the center of the site, and two tests at Basin F located on the northeast portion of the site. The following table summarizes the infiltration testing results as well as the infiltration rate the applicant used for design of the stormwater management facilities. The engineer concurs with the applicant's design infiltration rates, which are lower than the measured rate to provide a factor of safety. The engineer concurs that the basins will draw down within 48 hours (Rule J, subsection 3.1b.3).

Infiltration Test ID	Location	Measured Infiltration Rate (in/hr)	Design Infiltration Rate (in/hr)
DRI-1 (06/17/21)	Basin B	0.3	0.15
DRI-2 (06/17/21)	Basin B	0.8	
DRI-8 (06/22/21)	Basin E	2.4	0.35
DRI-9 (06/21/21)	Basin E	0.8	
DRI-10 (06/21/21)	Basin E	2.84	
DRI-11 (06/21/2021)	Basin E	0.8	
DRI-14 (06/18/21)	Basin F	0.2	0.15
DRI-15 (06/18/2021)	Basin F	0.22	

Groundwater was not observed at soil borings under the proposed infiltration and detention basins. The subsurface investigation information summarized in the following table shows that groundwater is at least 3 feet below the bottom of the proposed stormwater management facilities (Rule J, Subsection 3.1.b.2.a).

Proposed BMP	Nearest Subsurface Investigation	Boring is within footprint?	Groundwater Elevation (feet)	BMP Bottom Elevation (feet)	Separation (feet)
Basin B (Infiltration Basin)	ST-12	Yes	No groundwater observed at boring bottom (approx. el 919.2)	930.50	11.3
Basin C (Detention Basin)	ST-9	Yes	No groundwater observed at boring bottom (approx. el 917.2)	926.0	8.8
Basin E (Infiltration Basin)	ST-6	No	No groundwater observed at boring bottom (approx. el 929.6)	937.25	7.65
Basin F (Infiltration Basin)	ST-5	No	No groundwater observed at boring bottom (approx. el 932.5)	936.50	4.0

While infiltration Basins B, E, and F are large enough to provide all the project's required abstraction volume, their location and site topography prevented roughly 5% of the project's impervious surfaces tributary to Wetland D, all of which is from rear roof drainage, from being routed to the infiltration basins. To provide abstraction of runoff from this rear roof drainage the applicant incorporated a better site design technique outlined in the MPCA MN Stormwater Manual by accounting for runoff directed into a vegetated swale or onto adjacent pervious areas where it can be infiltrated. Because the ability of the wetland buffer to perform as a better site design technique providing abstraction and water quality treatment is dependent on runoff being distributed across the pervious surface, the grading of Lots 15-20 must incorporate flow dispersion techniques or other measures to prevent channelized flow.

The table below summarizes the volume abstraction required and the volume abstraction achieved by the proposed stormwater management facilities on site. The proposed project is in conformance with Rule J, Subsection 3.3.a.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Depth (inches)	Provided Abstraction Volume (cubic feet)
1.1	48,236	1.11	48,883

Water Quality Management

Subsection 3.1.c of Rule J requires the Applicant provide volume abstraction in accordance with 3.1b or least 60 percent annual removal efficiency for total phosphorus (TP), and at least 90 percent annual removal efficiency for total suspended solids (TSS) from site runoff, and no net increase in TSS or TP loading leaving the site from existing conditions. Because the stormwater management facilities proposed by the applicant provide abstraction meeting 3.1b and the engineer concurs with the modeling, the engineer finds that the proposed project is in conformance with Rule J, Subsection 3.1.c.

Low floor Elevation

All new buildings must be constructed such that the lowest floor is at least two feet above the 100-year high water elevation or one foot above the emergency overflow of a stormwater-management facility according to Rule J, Subsection 3.6a. In addition, a stormwater-management facility must be constructed at an elevation that ensures that no adjacent habitable building will be brought into noncompliance with this requirement according to Rule J, Subsection 3.6b. The low floor elevation analysis presented above in the Rule B, Floodplain Management analysis section of this report demonstrates the proposed project is in conformance with Rule J, Subsection 3.6.

Maintenance

Subsection 3.7 of Rule J requires the submission of a maintenance plan. All stormwater management structures, facilities, and features must be designed for maintenance access and properly maintained in perpetuity to assure that they continue to function as designed. Because compliance with the RPBCWD stormwater-management requirements is dependent on wetland buffers area and vegetated swales remaining in a natural condition as well as flow dispersion across the buffer areas, these conditions and associated maintenance requirements must be documented in the maintenance declaration recorded after review and approval by RPBCWD.

J1. Permit applicant must provide a recorded maintenance and inspection declaration. A maintenance declaration template is available on the permits page of the RPBCWD website. (http://www.rpbcwd.org/permits/). The declaration must include the all stormwater management facilities as well as the buffers and vegetated swales. The maintenance plan must provide for predominantly native vegetation. A draft declaration must be provided for District review and approval, then recordation.

Wetland Protection

Because the proposed activities discharge to two wetlands on the site and alter the discharge the wetlands receive from the site, the project must conform to RPBCWD wetland protection criteria (Rule J, subsection 3.10). The applicant provided and the Engineer concurs with the below analysis of potential wetland impacts based on Table J1 of RPBCWD Rule J.

Wetland A has been assessed as medium value and Wetland D has been assessed as low value using the MNRAM analysis provided by the applicant. The following tables summarize the allowable change in bounce and inundation duration from Table J1 of RPBCWD Rule J as well as the applicant's analysis for

wetland protection and the potential impacts on the wetlands. The proposed project conforms to the wetland bounce and inundation requirements.

Summary of allowable impacts on onsite wetland from Rule J, Table J1

Waterbody (Wetland Value)	Permitted Bounce for, 10-Year Event	Inundation Period for 1- and 2-Year Event	Inundation Period for 10-Year Event	Runout Control Elevation
Wetland A (Medium)	Existing +/- 1.0 feet	Existing + 2 days	Existing + 14 days	0 to 1.0 ft above existing runout
Wetland D (Low)	No Limit	Existing + 7 days	Existing + 21 days	0 to 4.0 ft above existing runout

Impacts of Project on Wetlands

Wetland (Location)	RPBCWD Wetland Value	Change in Bounce for, 10-Year Event (feet)	1-year change in Inundation Period (days)	2-year change in Inundation Period (days)	10-year change in Inundation Period (days)	Runout Control Elevation (feet)
Wetland A (North)	Medium	+0.02	+0.27	+0.25	+0.25	No Change
Wetland D (South)	Low	+1.7	+2.68	+2.77	+3.15	+1.2

Rule J, Subsection 3.10b requires that any discharge to a low- to medium-value wetland be treated to the water quality treatment criteria in Rule J, subsection 3.1c. The applicant provided MIDs and P8 modeling as summarized in the table below demonstrating the runoff from the disturbed areas tributary to Wetland A and Wetland D will be treated in conformance with Rule J, Subsection 3.10b.

Wetland	Wetland Value	TSS Removal	TP Removal
Required		90%	60%
Wetland A	Medium	92.1%	82.2%
Wetland D	Low	95.5%	86.6%

Chloride Management

Subsection 3.8 of Rule J requires the submission of chloride management plan that designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan. The RPBCWD chloride-management plan requirement applies to the streets and common areas of the project site, but not the individual single-family homes. If the streets within the proposed residential development will be within public right of way that will be maintained by the city of Chaska, the City must provide its chloride management plan and its designated state-certified chloride applicator. To close out the permit and release the $5,000 in financial assurance held for the purpose of chloride management, the permit applicant must provide a chloride management plan that designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan at the site.

Rule K: Variances and Exceptions:

The Applicant has requested one variance from the RPBCWD floodplain rule requirements.

To approve a variance, Rule K requires the Board of Managers to find that because of unique conditions inherent to the subject property the application of rule provisions will impose a practical difficulty on the Applicant. Assessment of practical difficulty is conducted against the following criteria:

1. how substantial the variation is from the rule provision;
2. the effect of the variance on government services;
3. whether the variance will substantially change the character of or cause material adverse effect to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties;
4. whether the practical difficulty can be alleviated by a technically and economically feasible method other than a variance. Economic hardship alone may not serve as grounds for issuing a variance if any reasonable use of the property exists under the terms of the District rules;
5. how the practical difficulty occurred, including whether the landowner, the landowner's agent or representative, or a contractor, created the need for the variance; and
6. in light of all of the above factors, whether allowing the variance will serve the interests of justice.

It is the applicant's obligation to address these criteria to support a variance request. The applicant's variance requests cite several facts related to the development in support of each request, taken from their January 3, 2022 submittal, are attached to this review. Following is the RPBCWD engineer's assessment of information received relevant to the applicant's variance and exception requests.

Variance Request

The local governmental unit (LGU) administering the Wetland Conservation Act (WCA), City of Chaska, approved a replacement plan for the filling of three wetlands on the project site. Rule B subsection 3.2 requires compensatory flood storage within the floodplain of the same waterbody. The Applicant requested a variance from this provision of RPBCWD's Rule B – Floodplain Management and Drainage Alterations.

The applicant asserts that the need for the variance results from the unique condition of the LGU's having approved complete elimination of the three wetlands (Wetland B, Wetland C, Wetland E). Following is the RPBCWD engineer's assessment of information received relevant to the applicant's request for a variance from the compensatory flood storage criteria within the floodplain of the same waterbody:

- Regarding variance criteria 1 – The supporting materials demonstrate the proposed project will involve an aggregate total of 1.13 acre-feet of fill placed and 5.11 acre-feet of compensatory storage in aggregate will be created below the 100-year flood elevation, thus providing a net increase in the floodplain storage. The Comparative Flood Storage table below summarize the fill and compensatory flood storage volume by waterbody.

Waterbody	Existing Flood Elevation	Proposed Flood Elevation	Existing Flood Storage Filled (acre-feet)	Compensatory Flood Storage (acre-feet)
Wetland A	919.12	918.91	0.0	0.0
Wetland B	944.60	completely filled	0.82	0.0
Wetland C	946.85	completely filled	0.01	0.0
Wetland D	930.14	932.53	0.10	0.25
Wetland E	0.69*	completely filled	0.08	0.0
Watercourse connecting Wetland E to D	1.35*	completely filled	0.12	0.0
Basin B	N/A	932.78	N/A	0.0
Basin C	N/A	933.49	N/A	0.0
Basin E	N/A	941.49	N/A	4.77
ST_28	N/A	944.42	N/A	0.02
Swale from FES-39A	N/A	944.74	N/A	0.07
Total			**1.13**	**5.11**

*Value represents the 100-year flow depth (feet) as a surrogate due to feature being a sloped wetland or watercourse.

- Regarding variance criteria 2 and 3 – The rate control analysis, abstraction analysis, and water quality assessment submitted demonstrates compliance with Rule B, subsection 3.3, which requires no off-site adverse impacts. The Rule B discussion above illustrates that the proposed alternations will not have an adverse effect to offsite governmental services, water resources, flood levels, or neighboring properties. The proposed variance only impacts the applicant's property.

- Regarding variance criteria 4 - Technical measures incorporated into the project plan to alleviate the practical difficulty include creation of compensatory flood storage volume in infiltration basins and a wet detention basin to comply with RPBCWD regulatory requirements, but not within the same floodplain to facilitate site development. Because the wetlands will no longer exist the compensatory storage cannot be provided within the floodplain of the same waterbody.
- Regarding variance criterion 5 - The applicant has created the circumstances leading to the variances, though it did so with the approval of another relevant regulatory body, the LGU administering WCA. The applicant asserts that total avoidance of Wetlands, B, C, and E as well as the channel connecting wetland E to D would make the property less desirable to develop.
- Regarding variance criterion 6 – A stormwater management system is proposed to mitigate potential impacts and improve upon the overall conditions onsite by promoting the re-establishment of wetland vegetation within existing Wetland D.

The engineer finds there is an adequate technical basis for the managers to rely on to grant the requested variance.

Exception Request

The applicant also requested an exception from the Rule G, Subsection 3.2.a requirement to retain adequate hydraulic capacity and assure no net increase in the flood stage of Wetland D. The Board of Managers may approve an exception from a provision of the rules requiring a particular treatment or management strategy, or setting forth a design specification, if an applicant demonstrates that better natural resource protection or enhancement can be achieved by the project as proposed, with such further conditions as the Board of Managers may impose, than would strict compliance with the provision. Rule G, Subsection 3.2.a requires that the construction of a waterbody crossing in contact with the bed or bank of a waterbody retain adequate hydraulic capacity and assure no net increase in the flood stage of the pertinent waterbody. Stormwater modeling provided by the applicant indicates that the 100-year flood stage for Wetland D will increase as a result of the applicant proposed restoration of the Wetland D hydrology. As such, the applicant has requested that RPBCWD grant an exception to subsection 3.2a, as the proposed project provides better natural resource protection and enchantment (Rule K, Section 2). The engineer finds that:

- The elevation of the proposed normal water level of Wetland D was determined by the City of Chaska to establish a normal water level in the wetland to promote the re-establishment of native vegetation. As such, the proposed outlet elevation and normal water level of Wetland D were raised from existing elevations, resulting in an increase in the 100-year flood elevation. While not compliant with Rule G, Subsection 3.2a, the increase in the normal water level will promote the re-establishment of native, wetland plant communities within Wetland D.
- The information submitted by the applicant includes a restoration, planting, and vegetation establishment plan for Wetland D (sheet 69) to ensure the restoration health of the wetland.
- The configuration of the proposed outlet structure for Wetland D was deemed necessary by the applicant to provide rate reduction to the standard of the City of Chaska, which requires a maximum discharge rate of less than 6 cubic feet per second (cfs) from Wetland D (0.2 cfs/acre). This discharge rate is significantly lower than the RPBCWD requirement to be less than the existing 100-year rate of 48 cfs. Because the proposed extended detention of stormwater in Wetland D helps reduce discharge velocities and associated erosive forces in the downstream watercourse, the proposed design provides better resource protection.
- The construction plans prepared by ISG Inc. include the installation of a skimmer structure for controlling flow rates from Wetland D to minimize disturbance and erosion of natural shoreline and bed resulting from peak flows.

Because the proposed waterbody crossing and outlet configuration for Wetland D provide for enhanced ecological conditions that restore an otherwise farmed wetland, the RPBCWD engineer finds that there is ample factual and analytical basis for a determination by the managers that an exception is warranted from compliance with Rule G, subsection 3.2a.

Rule L: Permit Fee Deposit:

The RPBCWD permit fee schedule adopted in February 2020 requires permit applicants to deposit $3,000 to be held in escrow and applied to cover the $10 permit-processing fee and reimburse RPBCWD for permit review and inspection-related costs and when a permit application is approved, the deposit

must be replenished to the applicable deposit amount by the applicant before the permit will be issued to cover actual costs incurred to monitor compliance with permit conditions and the RPBCWD Rules. A permit fee deposit of $3,000 was received on July 27, 2021. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued. Subsequently, if the costs of review, administration, inspections and closeout-related or other regulatory activities exceed the fee deposit amount, the applicant will be required to replenish the deposit to the original amount or such lesser amount as the RPBCWD administrator deems sufficient within 30 days of receiving notice that such deposit is due. The administrator will close out the relevant application or permit and revoke prior approvals, if any, if the permit-fee deposit is not timely replenished.

L1. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued.

L2. Because the applicant requested a variance and an exception under Rule K, an additional permit fee deposit of $2,000 is required.

Rule M: Financial Assurance:

	Unit	Unit Cost	# of Units	Total
Rules C: Silt fence:	LF	$2.50	10,210	$25,525
Inlet protection	EA	$100	62	$6,200
Rock Entrance	EA	$250	1	$250
Restoration	Ac	$2,500	36.79	$91,975
Rules J: Stormwater Management: Stormwater Management Facilities: 125% of engineer's opinion of cost ($534,187)	EA	125% OPC	1	$667,734
Chloride Management Plan	EA	$5,000	1	$5,000
Contingency (10%)		10%		$79,668
Total Financial Assurance				**$876,352**

Applicable General Requirements:

1. The RPBCWD Administrator and Engineer shall be notified at least three days prior to commencement of work.
2. Construction shall be consistent with the plans and specifications approved by the District as a part of the permitting process. The date of the approved plans and specifications is listed on the permit.
3. Construction must be consistent with the plans, specifications, and models that were submitted by the applicant that were the basis of permit approval. The date(s) of the approved plans, specifications, and modeling are listed on the permit. The grant of the permit does not in any way relieve the permittee, its engineer, or other professional consultants of responsibility for the permitted work.
4. The grant of the permit does not relieve the permittee of any responsibility to obtain approval of any other regulatory body with authority.

5. The issuance of this permit does not convey any rights to either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
6. In all cases where the doing by the permittee of anything authorized by this permit involves the taking, using or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements or interests, the permittee, before proceeding therewith, must acquire all necessary property rights and interest.
7. RPBCWD's determination to issue this permit was made in reliance on the information provided by the applicant. Any substantive change in the work affecting the nature and extent of applicability of RPBCWD regulatory requirements or substantive changes in the methods or means of compliance with RPBCWD regulatory requirements must be the subject of an application for a permit modification to the RPBCWD.
8. If the conditions herein are met and the permit is issued by RPBCWD, the applicant, by accepting the permit, grants access to the site of the work at all reasonable times during and after construction to authorized representatives of the RPBCWD for inspection of the work.

Findings

1. The proposed project includes the information necessary, plan sheets, and erosion control plan for review.
2. The Applicant has requested a variance from compliance with the Rule B criteria related to providing compensatory storage within the same floodplain.
3. The proposed project will conform to Rules C, D, and J if the Rule Specific Permit Conditions listed above are met.
4. The project will conform to the requirement of Rule G should an exception from compliance with Rule G, subsection 3.2 be approved.

Recommendation:

If the managers grant the variance and exception (with such conditions as the managers may impose), the engineer recommends approval of the permit for a 2 year term, contingent upon:

1. Financial Assurance in the amount of $876,352.
2. Applicant providing the name and contact information of the individual responsible for erosion and sediment control at the site.
3. Receipt in recordation a maintenance declaration for the operation and maintenance all stormwater management facilities, buffers, and waterbody crossing. Drafts of all documents to be recorded must be approved by the District prior to recordation.
4. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued including the additional permit fee deposit of $2,000 because the applicant requested a variance and an exception.

By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. Continued compliance with General Requirements

2. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization, all the stormwater facilities conform to design specifications and function as intended and approved by the District. As-built/record drawings must be signed by a professional engineer licensed in Minnesota and include, but not limited to:

    a. the surveyed bottom elevations, water levels, and general topography of all facilities;

    b. the size, type, and surveyed invert elevations of all stormwater facility inlets and outlets;

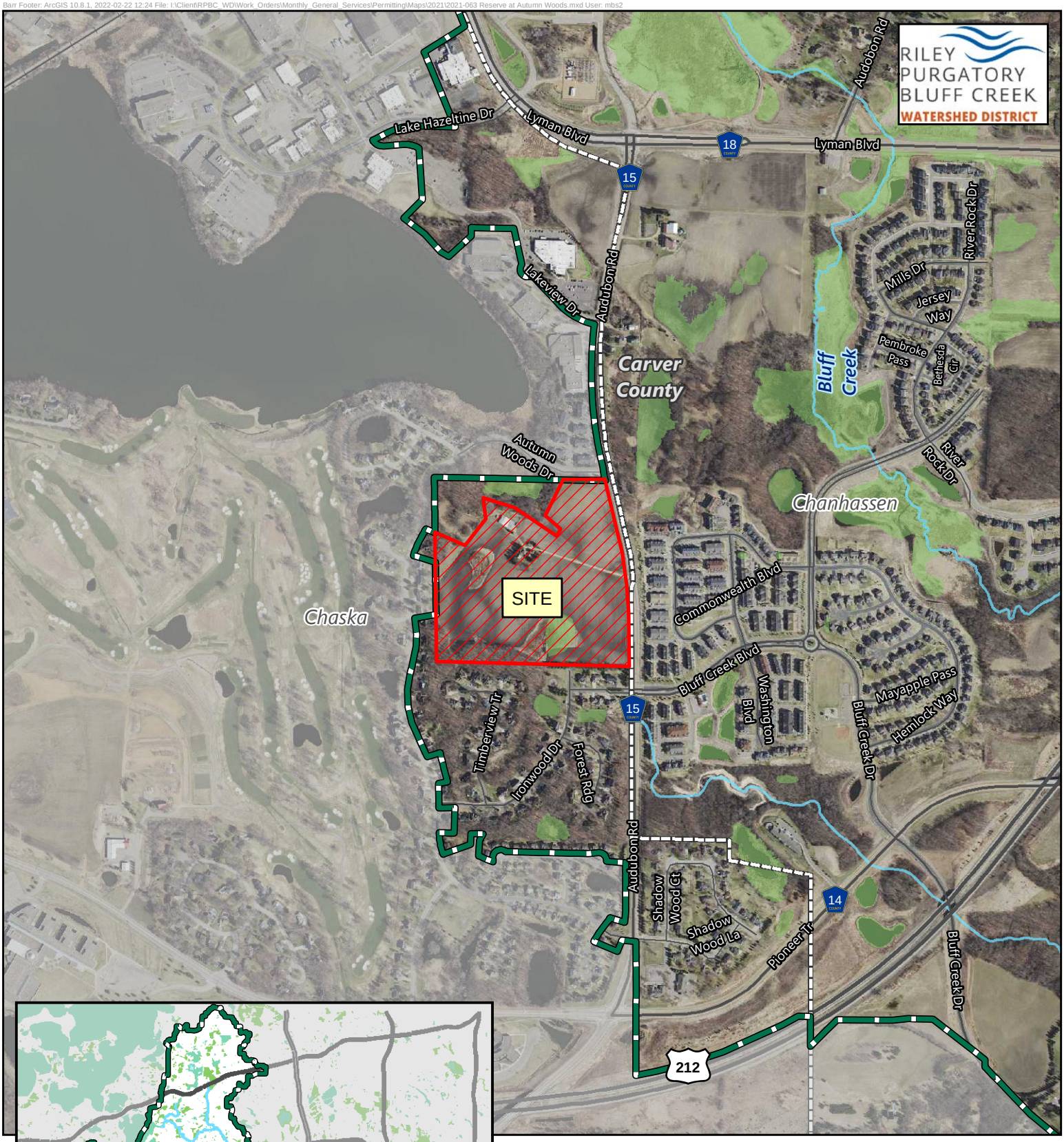
    c. the surveyed elevations of all emergency overflows including stormwater facility, street, and other;

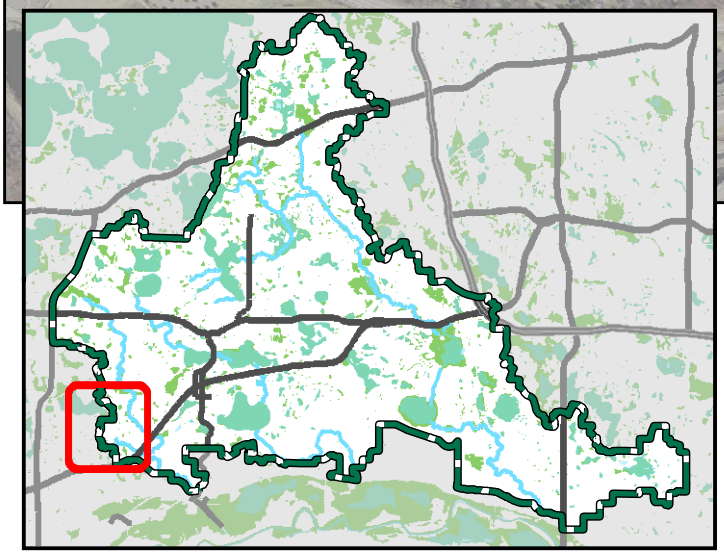
3. Providing the following additional close-out materials:

    a. Documentation that disturbed pervious areas remaining pervious have been decompacted per Rule C.2c criteria

4. To close out the permit and release the $5,000 in financial assurance held for the purpose of the chloride management, the permit applicant must provide a chloride management plan that designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan at the site.

5. Replenish the permit fee deposit to the original amount or such lesser amount as the RPBCWD administrator determines sufficient within 45 days of receiving notice that such deposit is due in order to cover continued actual costs incurred to monitor compliance with permit conditions and the RPBCWD Rules.





N

Feet

0 1,000

Permit Location Map

RESERVE AT AUTUMN WOODS

Permit 2021-063

Riley Purgatory Bluff Creek Watershed District

LENNAR
RESERVE AT AUTUMN WOODS
CHASKA, MINNESOTA — CONSTRUCTION PLANS — ISG PROJECT # 21-24984

PRELIMINARY NOT FOR CONSTRUCTION

LEGEND

EXISTING

- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- WETLAND / MARSH
- FENCE LINE
- CULVERT
- STORM SEWER
- SANITARY SEWER
- SANITARY SEWER FORCEMAIN
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND U'TILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- MANHOLE/STRUCTURE
- CATCH BASIN
- HYDRANT
- VALVE
- CURB STOP
- POWER POLE
- UTILITY PEDESTAL/ CABINET

PROPOSED

- LOT LINE
- RIGHT OF WAY
- EASEMENT
- CULVERT
- STORM SEWER
- STORM SEWER (PIPE WIDTH)
- SANITARY SEWER
- SANITARY SEWER (PIPE WIDTH)
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR
- MANHOLE (STORM,SANITARY)
- CATCH BASIN
- HYDRANT
- VALVE

LOCATION MAP

SCALE IN FEET

0 500 1000

SHEET INDEX

THIS PLAN SET CONTAINS 77 TOTAL SHEETS

ABBREVIATIONS:

AC	ACRE	CMP	CORRUGATED METAL PIPE	FDN	FOUNDATION	HR	HOUR	MB	MAIL BOX	PVC	POLYVINYL CHLORIDE	TEL	TELEPHONE
ADA	AMERICANS WITH DISABILITIES ACT	CO	CLEANOUT	FFE	FINISHED FLOOR ELEVATION	HWL	HIGH WATER LEVEL	MECH	MECHANICAL	PVMT	PAVEMENT	TEMP	TEMPORARY
ADD	ADDENDUM	CONC	CONCRETE	FPM	FEET PER MINUTE	HWY	HIGHWAY	MH	MANHOLE	QTY	QUANTITY	THRU	THROUGH
AFF	ABOVE FINISHED FLOOR	CONST	CONSTRUCTION	FPS	FEET PER SECOND	HYD	HYDRANT	MIN	MINIMUM	RAD	RADIUS	TNFH	TOP NUT OF FIRE HYDRANT
AGG	AGGREGATE	CONT	CONTINUOUS	FT	FOOT, FEET	I	INVERT	MISC	MISCELLANEOUS	RCP	REINFORCED CONCRETE PIPE	TRANS	TRANSFORMER
APPROX	APPROXIMATE	CY	CUBIC YARD	FTG	FOOTING	ID	INSIDE DIAMETER	NO	NUMBER	RD	ROOF DRAIN	TV	TELEVISION
ARCH	ARCHITECT, ARCHITECTURAL	C&G	CURB AND GUTTER	GA	GAUGE	IN	INCH	NTS	NOT TO SCALE	REBAR	REINFORCING BAR	T/W	TOP OF WALL
BFE	BASEMENT FLOOR ELEVATION	DEMO	DEMOLITION	GAL	GALLON	INV	INVERT	NWL	NORMAL WATER LEVEL	REM	REMOVE	TYP	TYPICAL
BIT	BITUMINOUS	DIA	DIAMETER	GALV	GALVANIZED	IP	IRON PIPE	OC	ON CENTER	ROW	RIGHT OF WAY	UT	UTILITY, UNDERGROUND
CAD	COMPUTER-AIDED DESIGN	DIM	DIMENSION	GC	GENERAL CONTRACTOR	IPS	IRON PIPE SIZE	OCEW	ON CENTER EACH WAY	R/W	RIGHT OF WAY		TELEPHONE
CB	CATCH BASIN	DS	DOWNSPOUT	GFE	GARAGE FLOOR ELEVATION	J-BOX	JUNCTION BOX	OH	OVERHEAD	SAN	SANITARY	VCP	VITRIFIED CLAY PIPE
CFS	CUBIC FEET PER SECOND	EA	EACH	GL	GUTTER LINE	JT	JOINT	OHD	OVERHEAD DOOR	SCH	SCHEDULE	W/O	WITHOUT
CF	CUBIC FOOT	ELEC	ELECTRICAL	GPM	GALLONS PER MINUTE	LF	LINEAR FEET	OZ	OUNCE	SF	SQUARE FOOT	W/	WITH
CI	CAST IRON	ELEV	ELEVATION	GV	GATE VALVE	LIN	LINEAR	PED	PEDESTAL, PEDESTRIAN	SPEC	SPECIFICATION	YD	YARD
CIP	CAST IRON PIPE	EOF	EMERGENCY OVERFLOW	HDPE	HIGH DENSITY POLYETHYLENE	LPS	LOW PRESSURE STEAM	PERF	PERFORATED	SQ	SQUARE	YR	YEAR
CIPC	CAST IN PLACE CONCRETE	EQ	EQUAL	HD	HEAVY DUTY	LS	LUMP SUM	PL	PROPERTY LINE	STA	STATION		
CJ	CONTROL JOINT	EX	EXISTING	HH	HANDHOLE	LSO	LOWEST STRUCTURAL OPENING	PP	POLYPROPYLENE	SY	SQUARE YARD		
CL	CENTERLINE	FDC	FIRE DEPARTMENT CONNECTION	HORIZ	HORIZONTAL	MAX	MAXIMUM	PSI	POUNDS PER SQUARE INCH	T/C	TOP OF CURB		

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS AND CLARIFICATIONS ISSUED BY THE ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN NTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL INPLACE UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS AND ELEVATIONS OF ALL INPLACE UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "GOPHER STATE ONE CALL" FOR UTILITY LOCATIONS, MINIMUM 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-252-1166).

PROJECT INDEX:

OWNER:

LENNAR
16305 36TH AVENUE NORTH
PLYMOUTH, MN 55446

PROJECT ADDRESS / LOCATION:

SECTION 27 / TWP. 116 / RGE. 23

CARVER COUNTY MN

CHASKA, MINNESOTA

MANAGING OFFICE:

BLOOMINGTON OFFICE
7900 INTERNATIONAL DRIVE
SUITE 550
MINNEAPOLIS, MN 55425
PHONE: 952.426.0699

PROJECT MANAGER: JERREMY FOSS
EMAL: JERREMY.FOSS@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE CITY OF CHASKA REQUIREMENTS AND MnDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2018 EDITION, AND THE STANDARD SPECIFICATIONS FOR SANITARY SEWER, STORM DRAIN AND WATERMAIN AS PROPOSED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA 2013, UNLESS DIRECTED OTHERWISE.

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1996 ADJUSTMENT (NAD83(1996)) ON THE CARVER COUNTY COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=954.44
TNFH SE INTERSEC"ION AUTUMN WOODS DR AND AUDUBON ROAD

B.M. ELEVATION=940.33
WEST SIDE AUDUBON ROAD, APPROX. 500' NORTH INTERSCTION WITH BUTTERNUT DRIVE

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN MURCH - APRIL 2021 BY ISG, INC.

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

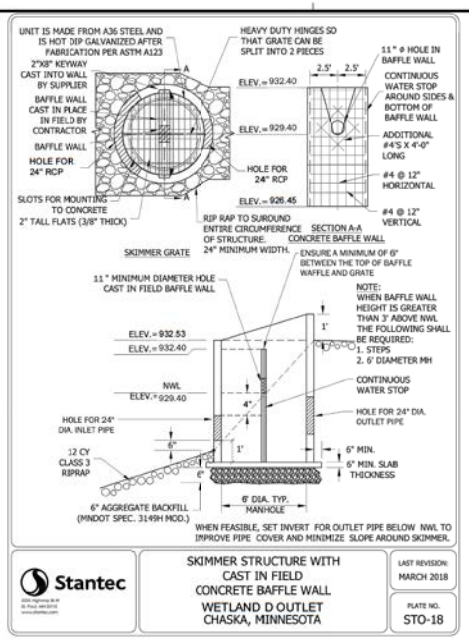
PROJECT NO.	21-24984
FILE NAME	24984 TITLE
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

TITLE SHEET GENERAL INFORMATION

SHEET 1 OF 77

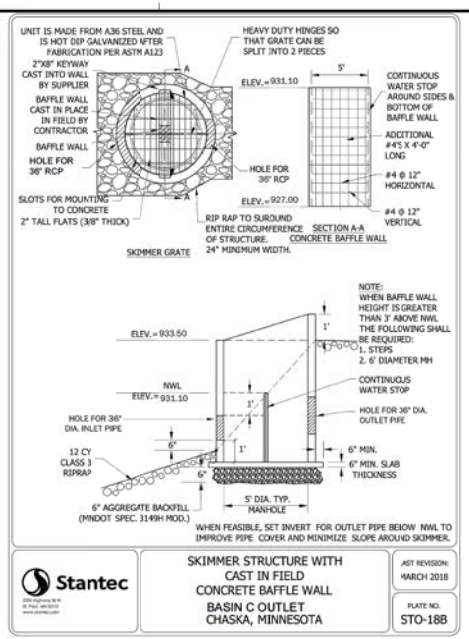
PLOT DATE: 3/17/2022 3:31 PM



Stantec

SKIMMER STRUCTURE WITH CAST IN FIELD CONCRETE BAFFLE WALL
WETLAND D OUTLET
CHASKA, MINNESOTA

LAST REVISION: MARCH 2018
PLATE NO. STO-18



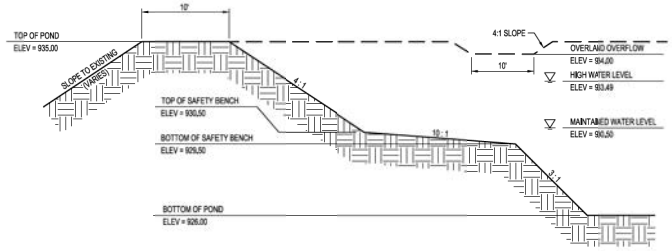
Stantec

SKIMMER STRUCTURE WITH CAST IN FIELD CONCRETE BAFFLE WALL
BASIN C OUTLET
CHASKA, MINNESOTA

LAST REVISION: MARCH 2018
PLATE NO. STO-18B

OUTLETS:
P-44 (15") TO BASIN B (INVERT = 930.50
P-44A (15") TO BASIN B (INVERT = 930.50)
P-45 (36") TO WETLAND D (INVERT = 930.40)

INSTALL ADS ENVIROHOOD OVER P-44 AND P-44A OUTLETS TO PROVIDE SKIMMING. ACHERE TO RETAINING WALL PER MANUFACTURER INSTALLATION INSTRUCTIONS.



BASIN C CROSS SECTION
NTS SD726

INFILTRATION BASIN CONSTRUCTION:

A. WORK SHALL INCLUDE - ALL EXCAVATION AND CONSTRICTION AS OUTLINED IN THE PLANS, SPECIFICATIONS AND DETAILS OUTLINING THE CONSTRUCTION OF THE INFILTRATION BASIN.
B. THE CONTRACTOR SHALL MAINTAIN SILT FENCE AROUND THE PERIMETER OF THE INFILTRATION BASIN DURING ALL PHASES OF CONSTRUCTION. THE INFILTRATION AREA MUST BE STAKED OFFAND MARKED TO KEEP ALL CONSTRUCTION TRAFFIC, EQUIPMENT AND MATERIAL STOCKPILES OUT OF THE PROPOSED INFILTRATION AREA.
C. THE CONTRACTOR SHALL ENSURE THAT THE INFILTRATON BASIN IS NOT USED AS A SEDIMENT TRAP DURING CONSTRUCTION AND THAT NO RUNOFF ENTERS THE BASIN PRIOR TO THE COMPLETION OF CONSTRUCTION AND COMPLETE STABILIZATION OF SURROUNDING AREAS DRAINING TO THE BASIN. ALL UPLAND DRAINAGE MUST BE DIVERTED TO PREVENT RUNOFF FROM ENTERING INFILTRATION BASIN WORK AREA.
D. INFILTRATION BASIN SHALL BE CONSTRUCTED AT THE END OF THE PROJECT AFTER ALL AREAS SURROUNDING IT AND DRAINING INTO IT HAVE BEEN CONSTRUCTED AND FULLY STABILIZED. THIS INCLUDES THE SANITARY SEWER. IN ORDER TO AVOID SOIL COMPACTION IN THE BASIN NO EQUIPMENT SHALL BE DRIVEN IN THE AREA OF THE BASIN PRIOR TO ITS CONSTRUCTION, AND WHEN IT IS CONSTRUCTED ONLY LIGHT EARTH MOVING EQUIPMENT WITH TRACKS SHALL BE USED.
E. AFTER FINAL GRADING THE BASIN'S FLOOR SHALL BE TILLED TO A DEPTH OF AT LEAST 6 INCHES TO PROVIDE A WELL-AERATED, POROUS SURFACE. SMEARING OF THE SOIL IN THE BASIN SHALL BE AVOIDED AND IF SMEARING DOES OCCUR IT SHALL BE CORRECTED BY RAKING OR RETILLING OF THE BASIN.
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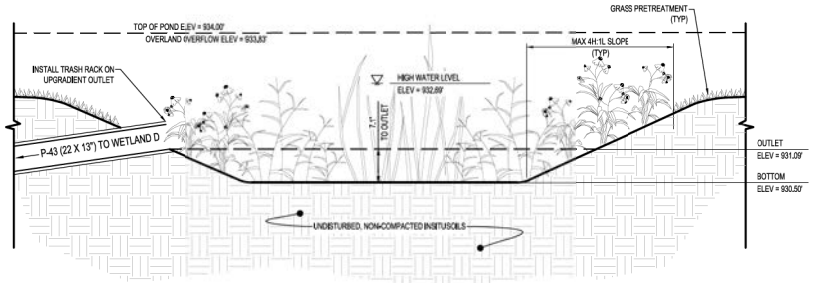
BASIN SEEDING:
REFER TO SITE RESTORATION PLAN FOR BASIN SEEDING REQUIREMENTS.



BASIN B INFILTRATION BASIN
NTS SD800

INFILTRATION BASIN CONSTRUCTION:

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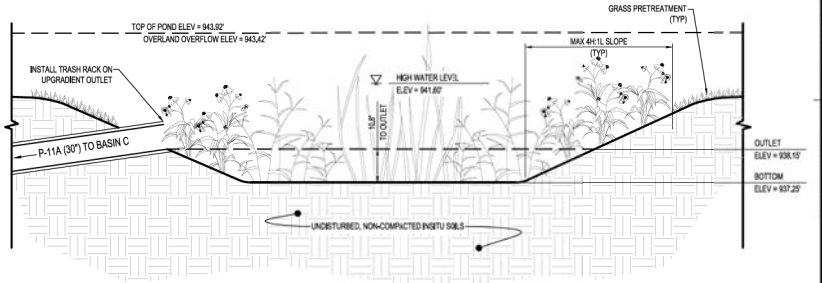

BASIN E INFILTRATION BASIN
NTS SD800

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
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PROJECT NO.	21-24984
FILE NAME	24984 DETAILS
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

STORM WATER BASIN DETAILS

SHEET

13

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/4/2022 1:05 PM

INFILTRATION BASIN CONSTRUCTION:

A. WORK SHALL INCLUDE - ALL EXCAVATION AND CONSTRICTION AS OUTLINED IN THE PLANS, SPECIFICATIONS AND DETAILS OUTLINING THE CONSTRUCTION OF THE INFILTRATION BASIN.
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BASIN SEEDING:
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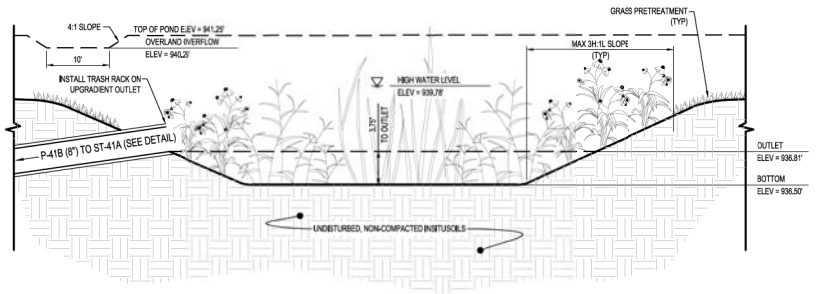
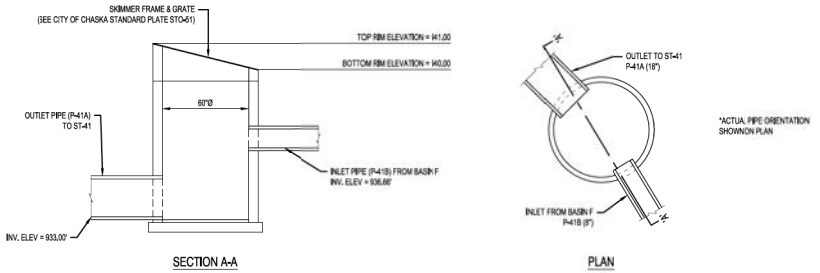


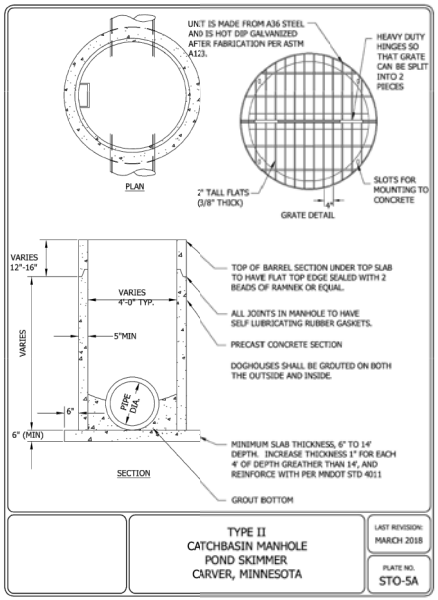
BASIN F INFILTRATION BASIN

NTS SD800



BASIN F OUTLET STRUCTURE

NTS SD700

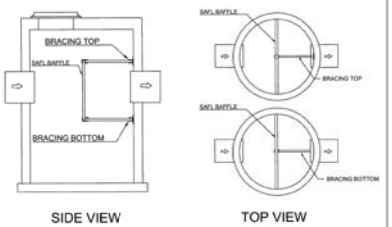


TYPE II CATCHBASIN MANHOLE POND SKIMMER CARVER, MINNESOTA	LAST REVISION: MARCH 2018
	PLATE NO. STO-5A

SAFL BAFFLES SHOULD BE LOCATED IN STRUCTURES ST-1, ST-3, ST-12, ST-14, ST-17, AND ST-31.

Rev A (11-12-2020)

SAFL BAFFLE BRACING REQUIREMENTS



Guidance for Cross Bracing - SAFL Baffle

Pipe Inside Diameter (inches)	Bracing Needed Above This Flow (CFS)	Max Flow with 2 Braces (1 top, bottom)	Max Flow with 4 Braces (2 top, 2 bottom)
24	20	30	40
30	30	45	60
36	40	60	75
42	55	70	90
48	75	105	130
60	110	160	206

Note: Flows shown are maximum design flows with a slope of less than 3%. Contact Upstream Technologies if pipe slopes are 3% or greater.

Also see: Stacking Guide & Sizing Guide

PATENT PROTECTED Patents: US #8663466B2 - US #8715507B2 - US #9506237B2 - CA #2742207

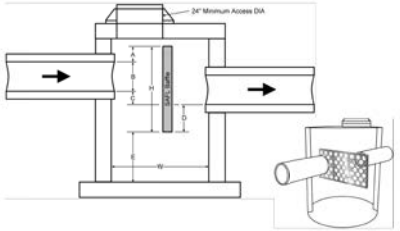
This generic detail does not encompass the sizing, fit, and applicability of the SAFL Baffle for this specific project. It is the ultimate responsibility of the design engineer to ensure that the design is in compliance with all applicable laws and regulations. The SAFL Baffle is a patented technology of Upstream Technologies, Inc. Upstream Technologies does not approve plans, sizing, or system designs.

SAFL BAFFLE BRACING DETAIL
UPSTREAM TECHNOLOGIES INC.
950 COUNTY ROAD D WEST, STE 14
NEW BRIGHTON, MN 55112
651-237-5123

SAFL BAFFLE

Rev B (11-12-2020)

SAFL BAFFLE SIZING REQUIREMENTS



A	0 to 6"	6" is ideal
B	Inlet pipe inside diameter	
C	0 to 6"	0" is ideal
D	1'-2"	
E	36" Minimum. 48" or greater is ideal and results in less frecuent sump cleanout	
W	W = Sump diameter if round or width if rectangular	
H	Baffle height = A + B + C + D	
Purchase Baffle Size	W x H	View the complete list of Available Baffle Sizes
		Also see: Bracing Guide & Stacking Guide
NOTE 1	If H is greater than 5'" two SAFL Baffles may be stacked.	
NOTE 2	75% of flow must be horizontal. No more than 25% falling from above	
NOTE 3	This detail does not cover sizing the sump for sediment removal efficiency. Contact Upstream for sump sizing or use SHSAM Software	
NOTE 4	For more information, see our Design Guide	

PATENT PROTECTED Patents: US #8663466B2 - US #8715507B2 - US #9506237B2 - CA #2742207

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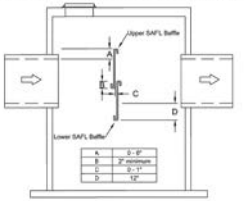
SAFL BAFFLE SIZING DETAIL
UPSTREAM TECHNOLOGIES INC.
950 COUNTY ROAD D WEST, STE 14
NEW BRIGHTON, MN 55112
651-237-5123

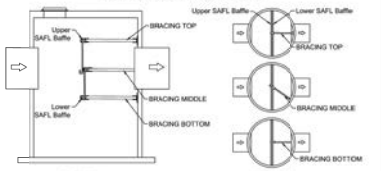
SAFL BAFFLE

Rev A (11-12-2020)

SAFL BAFFLE STACKING REQUIREMENTS



Bracing for Stacked Baffles



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SAFL BAFFLE STACKING DETAIL
UPSTREAM TECHNOLOGIES INC.
950 COUNTY ROAD D WEST, STE 14
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SAFL BAFFLE

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
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PROJECT NO.	21-24984
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TITLE

STORM WATER BASIN DETAILS

SHEET

14

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/4/2022 1:05 PM

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT LOCATION
PROJECT/SITE NAME: RESERVE AT AUTUMN WOODS
CITY/TOWNSHIP: CHASKA
COUNTY/STATE: CARVER CO, MINNESOTA
ZIP CODE: 55318
LATITUDE/LONGITUDE: 44.832528, -93.575482
SECTION, TOWNSHIP, RANGE: S 27, T 116, R 23

PROJECT DESCRIPTION
THE PROJECT INCLUDES CONSTRUCTION OF A LARGE RESIDENTIAL DEVLEOPMENT WITH VARIOUS STYLE HOMES AND SUPPORTING ROADS, DRIVEWAYS, SIDEWALKS, AND UTILITIES. THERE WILL ALSO BE SIX STORMWATER BASINS CONSTRUCTED WITHIN THE DEVELOPMENT.

TENTATIVE CONSTRUCTION SCHEDULE (OPERATOR SHOULD PROVIDE ESTIMATED CONSTRUCTION SCHEDULE TO THE OWNER'S REPRESENTATIVE)	
CONSTRUCTION ACTIVITIES:	**ESTIMATED DATES OF SOIL DISTURBANCE ACTIVITIES:**
CLEARING AND GRUBBING OPERATIONS, GRADING, POND	APRIL - AUGUST 2022
CURB & GUTTER/SIDEWALK	AUGUST – OCTOBER 2022
PAVING	SEPTEMBER – OCTOBER 2022
LANDSCAPING, FINAL TURF, MISC.	APRIL –AUGUST 2023

PRE-CONSTRUCTION IMPERVIOUS SURFACE AND DISTURBED AREA CALCULATIONS
TOTAL AREA TO BE DISTURBED = 34.22 ACRES MINIMUM AREA REQUIRING MPCA PERMIT = 1.00 ACRES
****AN MPCA NPDES PERMIT IS REQUIRED FOR THIS PROJECT****
IMPERVIOUS AREA: PRE-CONSTRUCTION = 0.60 ACRES
POST-CONSTRUCTION = 12.09 ACRES
NET INCREASE OF IMPERVIOUS AREA = 11.49 ACRES

MINIMUM NEW IMPERVIOUS SURFACE AREA CREATED REQUIRING PERMANENT STORMWATER MANAGEMENT = 5,000 SF (BASED ON WATERSHED REQUIREMENTS)

CONTACT INFORMATION/RESPONSIBLE PARTIES
THE OWNER OWNS THE LAND, ADJACENT ROADS, AND EASEMENT AREAS ASSOCIATED WITH THE PROJECT. THE OWNER IS THE OWNER CO-PERMITTEE APPLYING FOR PERMIT COVERAGE AND WILL BE RESPONSIBLE FOR COMPLIANCE WITH ALL TERMS AND CONDITIONS OF THE PERMIT INCLUDING DEVELOPING THIS SWPPP AND THE LONG-TERM MAINTENANCE PLAN OF THE PERMANENT STORMWATER MANAGEMENT SYSTEM FOR THIS PROJECT (IF APPLICABLE). THE OWNER WILL ENSURE THAT THE DESCRIBED WORK IN THE SWPPP IS BEING COMPLETED BY THE OPERATOR PERMITTEE.

OWNER/PERMITTEE: LENNAR (JOSH METZER, LAND ENTITLEMENT MANAGER)
16305 36TH AVE NORTH, SUITE 600
PLYMOUTH, MN 55446
952.249.3068/JOSH.METZER@LENNAR.COM

THE PRIMARY CONTRACTOR WILL ENTER INTO A CONTRACT WITH THE OWNER TO COMPLETE THE REQUIRED WORK FOR THIS PROJECT. THE PRIMARY CONTRACTOR WILL BECOME (UNDER CONTRACT) THE OPERATOR CO-PERMITTEE ON THE NPDES PERMIT (THROUGH EXECUTION OF A NPDES PERMIT MODIFICATION FORM), AND THEREBY AGREE TO IMPLEMENT THIS SWPPP IN COOPERATION WITH THE OWNER. THE OPERATOR IS RESPONSIBLE FOR IDENTIFYING AN EROSION CONTROL SUPERVISOR PRIOR TO STARTING CONSTRUCTION (REFER TO SWPPP AMENDMENT SECTION). THE NPDES PERMIT MODIFICATION FORM SHALL BE SUBMITTED TO THE MPCA AFTER THE PROJECT IS AWARDED TO THE OPERATION, PRIOR TO LETTING THE PROJECT.

THE OPERATOR WILL ENSURE THAT INDIVIDUALS OVERSEEING OR IMPLEMENTING THE SWPPP HAVE BEEN PROPERLY TRAINED AND THAT CERTIFICATIONS WILL BE MADE AVAILABLE UPON REQUEST. THIS INCLUDES ANY SUB-CONTRACTORS THAT THE OPERATOR EMPLOYS UNDER SEPARATE CONTRACT. THE OPERATOR WILL PROVIDE THE CONTACT INFORMATION FOR THE EROSION CONTROL SUPERVISOR, SITE SUPERINTENDENT/FOREMAN, AND BMP INSTALLERS. THE EROSION CONTROL SUPERVISOR SHALL BE A RESPONSIBLE EMPLOYEE OF THE PRIME CONTRACTOR AND/OR DULY AUTHORIZED BY THE PRIME CONTRACTOR TO REPRESENT THE PRIME CONTRACTOR ON ALL MATTERS PERTAINING TO THE NPDES CONSTRUCTION STORMWATER PERMIT COMPLIANCE. THE EROSION CONTROL SUPERVISOR SHALL HAVE AUTHORITY OVER ALL OPERATOR ACTIVITIES WHICH INFLUENCE NPDES PERMIT COMPLIANCE, INCLUDING GRADING, EXCAVATION, BRIDGE CONSTRUCTION, CULVERT INSTALLATION, UTILITY WORK, CLEARING/GRUBBING, DEWATERING, AND ANY OTHER OPERATION THAT INCREASES THE EROSION POTENTIAL ON THE PROJECT.

THE OPERATOR WILL PERFORM A PRECONSTRUCTION SITE VISIT TO ADDRESS ANY AREAS OF CONCERN PERTAINING TO ENVIRONMENTAL COMPLIANCE. THE OPERATOR WILL IMPLEMENT AND MAINTAIN BMPS FOR THE DURATION OF CONSTRUCTION PROJECT. THE OPERATOR WILL COMPLETE THE REQUIRED SITE INSPECTIONS, AND IS RESPONSIBLE FOR SECTION 3-4, 6-22, 24, AND APPLICABLE PARTS OF 23, TO REMAIN IN COMPLIANCE WITH NPDES PERMIT.

OPERATOR/PERMITTEE: (TO BE DETERMINED AND IDENTIFIED THROUGH TRANSFER OF NPDES-CSW PERMIT)

ISG INC. HAS BEEN CONTRACTED BY THE OWNER TO DEVELOP THE SWPPP PLAN FOR THIS PROJECT. THIS SWPPP WAS PREPARED BY AN INDIVIDUAL THAT HAS BEEN PROPERLY TRAINED IN ACCORDANCE TO SECTION 21 OF THE NPDES PERMIT (CERTIFICATION CARDS ARE AVAILABLE UPON REQUEST). ISG INC. WILL OFFER GUIDANCE FOR COMPLIANCE WITH THE NPDES PERMIT BEFORE, DURING, AND AFTER CONSTRUCTION OF THE PROJECT.

SWPPP DESIGNER:
ISG INC. (EMILY SHAW)
7900 INTERNATIONAL DR., SUITE 550
MINNEAPOLIS, MN 55425
952-426-0699/EMILY.SHAW@IS-GRP.COM

PERMENANT STORMWATER MANAGEMENT SYSTEM:
ISG INC. (EMILY SHAW)
7900 INTERNATIONAL DR., SUITE 550
MINNEAPOLIS, MN 55416
952-426-0699/EMILY.SHAW@IS-GRP.COM

AGENCY CONTACTS			
AGENCY	**PERMIT**	**NAME**	**PHONE NUMBER/E-MAIL**
MPCA (EMERGENCY)	N/A	STATE DUTY OFFICER	1-800-422-0798
MPCA	NPDES-CSW #MNR100001	MATT KING	218-846-8103/MATTHEW.KING@STATE.MN.US
WATERSHED DISTRICT	STORMWATER MANAGEMENT	TERRY JEFFERY	952-807-6885/TJEFFERY@RPBCWD.ORG

PERMANENT STORMWATER TREATMENT SYSTEMS
THE NPDES PERMANENT WATER QUALITY VOLUME (SECTION 15) FROM THE NET NEW IMPERVIOUS SURFACES OF THE PROJECT IS PROVIDED IN THE PROPOSED INFILTRATION BASINS AND WET SEDIMENTATION BASIN. HYDROLOGIC AND WATER QUALITY MODELING DATA AND THE CONTAMINATION CHECKLIST IS AVAILABLE UPON REQUEST. THE SITE IS ABLE TO MEET THE FULL VOLUME REDUCTION REQUIREMENT. INFILTRATION RATES WERE DETERMINED BY THE FIELD MEASURED INFILTRATION RATE AND DIVIDED BY 2.

LOCATION OF SWPPP COMPONENTS		
DESCRIPTION	**TITLE**	**LOCATION (SHEET NAME)**
SWPPP NARRATIVE	SWPPP NARRATIVE	SWPPP GENERAL INFORMATION, DETAILS AND NOTES
SITE CONDITIONS	SWPPP NARRATIVE	SWPPP GENERAL INFORMATION, DETAILS AND NOTES
SITE MAPS (SOILS, WATER RESOURCES, POTENTIAL POLLUTANT GENERATING ACTIVITIES)	SWPPP MAP, SWPPP NARRATIVE	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
CONSTRUCTION PHASING/STAGING, BUFFERS, & AREAS NOT TO BE DISTURBED	SWPPP NARRATIVE	SWPPP GENERAL INFORMATION, DETAILS AND NOTES
DIRECTION OF SURFACE WATER FLOW (PRE- & POST- CONSTRUCTION	DRAINAGE PLAN	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
IMPERVIOUS SURFACES	CONSTRUCTION PLAN & PROFILE	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
TEMPORARY EROSION & SEDIMENT CONTROL BMPS FOR STEEP SLOPES (3:1), DNR FISH EXCLUSION "WORK IN WATER RESTRICTIONS" REFER TO SWPPP	TEMPORARY EROSION AND SEDIMENT CONTROL PLAN, SWPPP NARRATIVE	SWPPP GENERAL INFORMATION, DETAILS AND NOTES
PERMANENT EROSION PREVENTION BMPS	TURF ESTABLISHMENT PLAN, SWPPP NARRATIVE	STORMWATER POLLUTION PREVENTION PLAN (SWPPP); SWPPP GENERAL INFORMATION, DETAILS AND NOTES; TURF RESTORATION PLAN
STORM SEWER	DRAINAGE PLAN	STORMWATER POLLUTION PREVENTION PLAN (SWPPP); OVERALL UTILITY PLAN
GRADING	GRADING PLAN	OVERALL GRADING PLAN, NOTES AND EARTHWORK CALCULATIONS
ESTIMATED BMP QUANTITIES	ESTIMATED QUANTITIES	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
BMP DETAILS/SPECIFICATIONS	MISC. DETAILS, SWPPP NARRATIVE	SWPPP GENERAL INFORMATION, DETAILS AND NOTES
HYDROLOGIC/WATER QUALITY MODELING		AVAILABLE UPON REQUEST

EXISTING SITE CONDITIONS, SOILS, & WATER RESOURCES
SOILS AND NATIVE TOPSOIL: NATIVE TOPSOIL WILL BE STRIPPED AND STOCKPILED FOR FINAL GRADING OPERATIONS, WHERE INDICATED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS. METHODS AND EQUIPMENT TO MINIMIZE SOIL COMPACTION (IN PROPOSED INFILTRATION AREAS, DRIP LINE OF TREES TO BE PRESERVED, ETC.) SHALL BE DETERMINED BY THE OPERATOR'S SWPPP AMENDMENT. TRACKED VEHICLES ARE PREFERRED AND WHEELED VEHICLES ARE DISCOURAGED IN THESE AREAS. THE FOLLOWING USDA-NRCS MAPPED SOILS ARE SHOWN AS "NOT HIGHLY ERODIBLE", "MODERATELY ERODED", AND "ERODED" IN THE COUNTY SOIL SURVEY MAP.

USDA-NRCS MAPPED SOIL SURVEY UNIT NO., NAME, TEXTURE, SLOPE PERCENTAGE	PERCENTAGE OF PROJECT AREA	APPROXIMATE PARTICLE SIZE RANGE (MM)		
		SAND (0.05-2.00+)	SILT (0.002-0.05)	CLAY (<0.002)
EX- ESSEXVILLE SANDY LOAM	2	50-70%	0-50%	15-20%
GL – GLENCOE CLAY LOAM, 0-1% SLOPES	16	26-52%	59-74%	26-41%
HM – HAMEL LOAM, 0-2% SLOPES	5	30-60%	74-92%	8-26%
KB – KILKENNY-LESTER LOAM, 2-6% SLOPES	40	30-60%	74-92%	8-26%
KB2 – LESTER-KILKENNY LOAM, 2-6% SLOPES, ERODED	16	30-60%	74-92%	8-26%
KC – LESTER-KILKENNY LOAMS, 6-12% SLOPES	1	30-60%	74-92%	8-26%
KC2 - LESTER-KILKENNY COMPLEX, 6-12% SLOPES, MODERATELY ERODED	16	NA	NA	NA
KF – LESTER-KILKENNY COMPLEX, 22-40% SLOPES	3	NA	NA	NA
MK – MUSKEGO HOUGHTON SOILS, 0-1% SLOPES	1	NA	NA	NA

DESCRIPTION OF RECEIVING WATERS (LOCATED WITHIN 1-MILE): STORMWATER FROM THIS PROJECT WILL BE CONVEYED INTO SEVERAL CONSTRUCTED STORMWATER PONDS. THE PROJECT HAS THREE SEPARATE DISCHARGE POINTS. ONE DISCHARGE POINT IS THROUGH THE SOUTHERN WETLAND. THE SECOND DISCHARGE POINT IS TO THE NORTH THROUGH THE NORTH WETLAND AND THEN INTO LAKE HAZELTINE. THE THIRD IS THE SMALLEST DISCHARGE AMOUNT AND GOES UNDER AUDUBON RD TO AN OFFSITE STORMWATER POND. HYDROLOGIC AND WATER QUALITY MODELING DATA IS AVAILABLE UPON REQUEST.

DESCRIPTION OF IMPAIRED WATERS OR WATER SUBJECT TO TMDLS: A SPECIAL AND IMPAIRED WATERS SEARCH WAS COMPLETED USING THE MPCA SEARCH ENGINE (HTTP://PCA-GIS02.PCA.STATE.MN.US/CSW/INDEX.HTML) ON 7/6/2021. BASED ON THIS REVIEW, THE FOLLOWING SPECIAL OR IMPAIRED WATERS (WITH CONSTRUCTION RELATED IMPAIRMENTS) ARE LOCATED WITHIN ONE MILE OF, AND DOWNSTREAM OF ANY PROJECT DISCHARGE POINTS: HAZELTINE LAKE IS IMPAIRED (NUTRIENTS) AND BLUFF CREEK IS IMPAIRED (FISHES BIOASSESMENTS, TURBIDITY), THEREFORE SECTION 23 REQUIREMENTS APPLY TO THIS PROJECT.

DISCHARGES TO SPECIAL (PROHIBITED, RESTRICTED, OTHER) OR IMPAIRED WATERS (SECTION 23)
ALL REQUIREMENTS IN SECTION 23 ARE IN ADDITION TO BMPS ALREADY SPECIFIED IN THE PERMIT. WHERE PROVISIONS OF SECTION 23 CONFLICT WITH REQUIREMENTS ELSEWHERE IN THE PERMIT, THE PROVISIONS IN SECTION 23 TAKE PRECEDENCE. ALL BMPS USED TO COMPLY WITH THESE ITEMS MUST BE DOCUMENTED IN THE SWPPP FOR THE PROJECT.

23.9 EXPOSED SOILS: OPERATOR SHALL STABILIZE ALL EXPOSED SOIL AREAS WITHIN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.

23.10 TEMPORARY BASIN: OPERATOR SHALL ADHERE TO THE REQUIREMENTS DESCRIBED IN ITEM 14.1-14.10 OF THE NPDES CONSTRUCTION PERMIT FOR COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH FIVE (5) OR MORE ACRES DISTURBED.

23.11 BUFFER ZONE: AN UNDISTURBED BUFFER ZONE OF NOT LESS THAN 100 LINEAR FEET FROM THE SPECIAL WATER (NOT INCLUDING TRIBUTARIES) SHALL BE MAINTAINED AT ALL TIMES. EXCEPTIONS FROM THIS REQUIREMENT FOR AREAS, SUCH AS WATER CROSSINGS, LIMITED WATER ACCESS AND RESTORATION OF THE BUFFER ARE ALLOWED IF THE PERMITTEE FULLY DOCUMENTS IN THE SWPPP THE CIRCUMSTANCES AND REASONS THAT THE BUFFER ENCROACHMENT IS NECESSARY. REPLACEMENT OF EXISTING IMPERVIOUS SURFACE WITHIN THE BUFFER IS ALLOWED UNDER THIS PERMIT. ALL POTENTIAL WATER QUALITY, SCENIC AND OTHER ENVIRONMENTAL IMPACTS OF THESE EXCEPTIONS MUST BE MINIMIZED BY THE USE OF ADDITIONAL OR REDUNDANT BMPS AND DOCUMENTED IN THE SWPPP FOR THE PROJECT.

23.12 TEMPERATURE CONTROLS: THE PERMANENT STORMWATER MANAGEMENT SYSTEM MUST BE DESIGNED SUCH THAT THE DISCHARGE FROM THE PROJECT WILL MINIMIZE ANY INCREASE IN THE TEMPERATURE OF TROUT STREAM RECEIVING WATERS RESULTING FROM THE 1-AND 2-YEAR 24-HOUR PRECIPITATION EVENTS. THIS INCLUDES ALL TRIBUTARIES OF DESIGNATED TROUT STREAMS WITHIN THE PLSS SECTION THAT THE TROUT STREAM IS LOCATED. ALL STORMWATER ROUTED TO THE STORMWATER SYSTEM MUST DISCHARGE WITHIN 24 HOURS. PROJECTS THAT DISCHARGE TO TROUT STREAMS MUST MINIMIZE THE IMPACT USING ONE OR MORE OF THE FOLLOWING MEASURES, IN ORDER OF PREFERENCE:
A. PROVIDE STORMWATER INFILTRATION OR OTHER VOLUME REDUCTION PRACTICES AS DESCRIBED IN ITEM 15.4-15.5.
B. PROVIDE STORMWATER FILTRATION AS DESCRIBED IN ITEM 17.1-17.11.
C. MINIMIZE THE DISCHARGE FROM CONNECTED IMPERVIOUS SURFACES BY DISCHARGING TO VEGETATED AREAS, OR GRASS SWALES, AND THROUGH THE USE OF OTHER NON-STRUCTURAL CONTROLS.
D. IF A DRY POND IS USED, THE DESIGN MUST INCLUDE AN APPROPRIATE COMBINATION OR MEASURES SUCH AS SHADING, VEGETATED SWALE DISCHARGES OR CONSTRUCTD WETLAND TREATMENT CELLS THAT LIMIT TEMPERATURE INCREASES.
E. OTHER METHODS THAT MINIMIZE ANY INCREASE IN THE TEMPERATURE OF THE TROUT STREAM.

12.13 INSPECTIONS: PERMITTEES MUST CONDUCT ROUTINE SITE INSPECTIONS ONCE EVERY THREE (3) DAYS AS DESCRIBED IN ITEM 11.2.

23.14 TREATMENT: IF DISCHARGES TO PROHIBITED WATERS CANNOT PROVIDE VOLUME REDUCTION EQUAL TO ONE (1) INCH TIMES THE NET INCREASE OF IMPERVIOUS SURFACES AS REQUIRED IN ITEM 15.4 AND 15.5, PERMITTEES MUST DEVELOP A PERMANENT STORMWATER TREATMENT PLAN THAT WILL RESULT IN NO NET INCREASE OF TSS OR PHOSPHORUS TO THE PROHIBITED WATER. PERMITTEES MUST KEEP THE PLAN IN THE SWPPP FOR THE PROJECT.

POTENTIAL FOR SEDIMENT AND/OR OTHER POLLUTANT(S) DISCHARGING FROM THE PROJECT SITE
THE TEMPORARY EROSION AND SEDIMENT CONTROL BMPS IN THIS SWPPP HAVE BEEN DESIGNED TO MINIMIZE THE POTENTIAL OF SEDIMENTS DISCHARGING OFF-SITE FROM A 0.5 INCH RAINFALL WITHIN A 24 HOUR PERIOD. THE NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATE FOR THE PROJECT LOCATION WAS REVIEWED AND USED FOR ANTICIPATED INSPECTION FREQUENCY, BMP DESIGN, AND ESTIMATING CONSTRUCTION ACTIVITIES IN THIS SWPPP. ATLAS 14 RESULTS DO NOT NECESSARILY REFLECT ANY DESIGN CRITERIA IN THE PERMANENT STORMWATER MANAGEMENT SYSTEM.

ROUTINE INSPECTION AND BMP MAINTENANCE BY THE OPERATOR IS CRUCIAL IN ENSURING THE FUNCTIONALITY OF EACH BMP. STEEP SLOPES AND OTHER ENVIRONMENTALLY SENSITIVE AREAS THAT ARE AT A HIGHER RISK OF SEDIMENTATION ARE DEFINED IN THIS SWPPP (IF APPLICABLE).

CONSTRUCTION PHASING/STAGING, BUFFERS, & AREAS NOT TO BE DISTURBED
THERE IS NO CONSTRUCTION PHASING OR STAGING DEFINED BY THE OWNER FOR THIS PROJECT. THE SCHEDULE FOR INSTALLING TEMPORARY BMPS SHALL BE INCORPORATED INTO THE OPERATOR'S WEEKLY SCHEDULE FOR EACH CONSTRUCTION STAGE AND PRESENTED TO THE OWNER'S REPRESENTATIVE (PER MNDOT SPEC 1717.D). THE PROJECT'S CONSTRUCTION PHASING AND STAGING IS DEFINED BY THE "CONSTRUCTION STAGING & TRAFFIC CONTROL PLAN" AND PROJECT SPECIFICATIONS.

ENVIRONMENTALLY SENSITIVE AREAS
STEEP SLOPES: EXISTING AND PROPOSED SLOPES 1 IN 3 (33.33%) AND STEEPER THAT ARE PROPOSED TO BE DISTURBED ARE ILLUSTRATED ON THE PLAN SHEETS. STEEP SLOPES MAY BE TEMPORARILY CREATED DURING GRADING OPERATIONS IF NECESSARY, AT WHICH TIME TEMPORARY BMPS MUST BE IMPLEMENTED BY THE OPERATOR (THROUGH AN APPROVED SWPPP AMENDMENT) WITHIN 7 DAYS OF NO LONGER WORKING THE STEEP SLOPE.

CONTAMINATED PROPERTIES: THE MPCA'S "WHAT'S IN MY NEIGHBORHOOD" DATABASE WAS REVIEWED ON 7/6/2021 (WWW.PCA.STATE.MN.US/DATA/WHATS-MY-NEIGHBORHOOD) AND A CONTAMINATION ASSESSMENT WAS PERFORMED (AVAILABLE UPON REQUEST). THE RESULTS OF THIS REVIEW SHOW NO KNOWN CONTAMINATED PROPERTIES OR LEAK SOURCES LOCATED WITHIN AND ADJACENT TO THE PROJECT LIMITS.

STORMWATER POLLUTION MITIGATION MEASURES (AS IDENTIFIED FROM ENVIRONMENTAL REVIEW): NO FORMAL ENVIRONMENTAL REVIEW WAS REQUIRED FOR THIS PROJECT, THEREFORE, NO ADDITIONAL STORMWATER RELATED MITIGATION MEASURES APPLY.

KARST AREAS: THERE ARE NO KNOWN ACTIVE KARST AREAS WITHIN OR ADJACENT TO THE PROJECT LIMITS.

SITE PLAN REQUIRED AREAS: NO AREAS OF "HIGH ENVIRONMENTAL RISKS" ARE KNOWN TO BE LOCATED WITHIN OR IMMEDIATELY ADJACENT TO THE PROJECT LIMITS.

FLOOD CONTINGENCY PLAN: PROJECT ACTIVITIES MAY NOT OCCUR WITHIN THE 100-YEAR FLOODPLAIN OR FLOODWAY, THEREFORE, THE PROJECT ENGINEER (AT THEIR DISCRETION) MAY REQUIRE A PREVENTATIVE FLOOD CONTINGENCY PLAN FOR SPECIFIC PROJECT ACTIVITIES AND AREAS IF SEASONAL PRECIPITATION POSSES A POTENTIAL RISK OF FLOODING WORK AREAS WITHIN THE PROJECT LIMITS. THIS PLAN SHALL BE SUBMITTED BY THE OPERATOR TO THE OWNERS REPRESENTATIVE FOR APPROVAL A MINIMUM OF 72 HOURS PRIOR TO THE SCHEDULED WORK AND/OR DURING ACTIVE WORK WITHIN THE FLOODPLAIN. NO WORK WITHIN THE FLOODPLAIN CAN COMMENCE UNTIL WRITTEN APPROVAL/NOTICE TO PROCEED FROM THE OWNERS REPRESENTATIVE IS RECEIVED.

FISH EXCLUSION DATES: FISH EXCLUSION DATES ARE NOT APPLICABLE TO THIS PROJECT LOCATION.

WETLANDS: THERE ARE SEVERAL WETLANDS WITHIN THE PROJECT AREA AND MUST BE PROTECTED TO THE MAXIMUM EXTENT POSSIBLE. APPROXIMATELY 1.03 ACRES OF WETLAND FILLED/EXCAVATION WILL BE PERMITTED. PERMITTED AREAS OF WETLAND IMPACT WILL BE PROTECTED WITH SILT FENCE ALONG THE PERIMETER OF THE FILL OR EXCAVATION LIMITS.

SEQUENCE OF CONSTRUCTION/TIMING OF BMP INSTALLATION
NO CONSTRUCTION OPERATIONS, INCLUDING REMOVALS, THAT REQUIRE EROSION & SEDIMENT CONTROL PER THE SWPPP CAN COMMENCE UNTIL THE OPERATOR'S EROSION CONTROL SUPERVISOR CERTIFIES THE PROPER INSTALLATION OF BMP'S AND A CHAIN OF RESPONSIBILITY FOR SWPPP IMPLEMENTATION IS CREATED FOR ALL OPERATORS ON THE SITE. PERIMETER SEDIMENT CONTROLS (SILT FENCE, INLET PROTECTION, CONSTRUCTION ENTRANCES, ETC.) SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION. THESE PRACTICES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ACHIEVED. OPERATOR SHALL IMPLEMENT THE NECESSARY ON SITE BMP'S IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS TO PREVENT NUISANCE CONDITIONS (MN RULES 7050.2010) FROM ANY DISCHARGES UNDER COVERAGE OF THE NPDES PERMIT. IN SOME CASES, MULTIPLE OR REDUNDANT APPLICATIONS OF SOME BMP'S MAY BE NEEDED TO MEET THESE REQUIREMENTS.

INSPECTION PROCEDURES, SWPPP AMENDMENTS, RECORD KEEPING, & TRAINING
1. THE SWPPP MUST BE AMENDED BY THE OPERATOR WHEN THE IDENTITY OF THE RESPONSIBLE SITE OPERATORS (EROSION CONTROL SUPERVISOR, SUB-CONTRACTORS, ETC.) ARE KNOWN.
2. THE OPERATOR MUST INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. THE OPERATOR SHALL PROVIDE A RAINFALL GAUGE ON-SITE, WITHIN ONE MILE OF THE SITE, OR SOURCE OF THE WEATHER REPORTING SYSTEM THAT USES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES. THE LOCATION AND SOURCE OF THE RAINFALL GAUGE OR REPORTING SYSTEM MUST BE DOCUMENTED IN THE FIRST SWPPP INSPECTION REPORT. THE INSPECTION FREQUENCY MAY BE REDUCED TO ONCE PER MONTH OR SUSPENDED, IF SITE CONDITIONS MEET ITEM 11.10 OF THE NPDES PERMIT. ALL INSPECTIONS AND MAINTENANCE CONDUCTED MUST BE RECORDED IN WRITING BY THE OPERATOR AND RETAINED WITH THE SWPPP. THE MPCA SITE INSPECTION FORM IS AVAILABLE FOR OPERATORS TO USE TO COMPLETE THE REQUIRED INSPECTIONS. THE FORM CAN BE FOUND ON THE MPCA WEBSITE OR AVAILABLE UPON REQUEST FOR THE PROJECT OWNER. RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY SHALL INCLUDE:
   A. DATE, TIME, AND NAME OF PERSON(S) CONDUCTING INSPECTIONS;
   B. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS;
   C. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); INCLUDING DOCUMENTATION/PHOTOS OF IMPLEMENTED BMPS INTENDED TO CORRECT A PROBLEM BUT FAILED.
   D. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCHES IN 24 HOURS;
   E. DOCUMENTATION OF CHANGES MADE TO THE SWPPP.
3. SWPPP AMENDMENTS AND SITE PLANS WILL BE PREPARED BY THE OPERATOR AND SUBMITTED TO THE OWNER FOR REVIEW AND WRITTEN APPROVAL BY THE PROJECT OWNER (OR DESIGNATED REPRESENTATIVE). ALL OWNER ACCEPTED AND DENIED SWPPP AMENDMENTS AND SITE PLANS MUST BE RECORDED IN WRITING AND RETAINED WITH THE SWPPP.
4. THE SWPPP SHALL BE AMENDED TO INCLUDE ADDITIONAL OR MODIFIED BMPS, DESIGNED TO CORRECT IDENTIFIED PROBLEMS OR ADDRESS SITUATIONS (UNDER SECTION 6 OF THE NPDES PERMIT), PRIOR TO CONDUCTING SPECIFIC STAGES/PHASES OF THE PROJECT, AS REQUIRED BY THE OWNER AND DEFINED IN THIS PROJECT SWPPP.

   THE TABLE BELOW IS A SUMMARY OF THE REQUIRED SWPPP AMENDMENTS:

SUMMARY OF OPERATOR PREPARED SWPPP AMENDMENTS (REQUIRED BY OWNER)		
SWPPP AMENDMENT NAME	**SWPPP AMENDMENT DETAILS**	**SUBMITTAL TIMEFRAME**
OPERATOR CHAIN OF RESPONSIBILITY	REFER TO "CONTACT INFORMATION/RESPONSIBLE PARTIES" SECTION	7 DAY PRIOR TO INITIATING WORK
BMP AMENDMENTS	SUBSTITUTED, ADDITIONAL, OR REDUNDANT BMPS TO COMPENSATE FOR FAILING/FAILED BMPS	DURING/AFTER CONSTRUCTION ACTIVITIES
METHODS TO MINIMIZE SOIL COMPACTION	REFER TO "EXISTING SITE CONDITIONS, SOILS, AND WATER RESOURCES" SECTION	7 DAYS PRIOR TO WORK WITHIN INFILTRATION BASINS AND PRESERVED TREE AREAS
STEEP SLOPES PHASING PLAN	REFER TO "ENVIRONMENTALLY SENSITIVE AREAS" SECTION	7 DAYS PRIOR TO INITIATING WORK
SPILL PREVENTION & RESPONSE PLAN	REFER TO "POLLUTION PREVENTION MANAGEMENT MEASURES"	7 DAY PRIOR TO INITIATING WORK
DEWATERING PLAN	REFER TO "DEWATERING" SECTION	7 DAYS PRIOR TO ACTIVITY
FLOOD CONTINGENCEY PLAN	REFER TO "ENVIRONMENTALLY SENSITIVE AREAS" SECTION	72 HOURS PRIOR TO ACTIVITY

5. THE SWPPP (ORIGINAL OR COPIES), ALL CHANGES TO THE SWPPP, PROJECT MANUAL, AND INSPECTIONS/MAINTENANCE RECORDS MUST BE KEPT AT THE SITE DURING CONSTRUCTION BY THE OPERATOR WHO HAS OPERATIONAL CONTROL OF THAT PORTION OF THE SITE. THE SWPPP CAN BE KEPT IN THE FIELD OFFICE OR ON SITE VEHICLE DURING NORMAL WORKING HOURS. THE PERMITEES MUST KEEP AND MAKE AVAILABLE TO FEDERAL, STATE, AND LOCAL OFFICIALS WITHIN THREE DAYS THE SWPPP, OTHER STORMWATER RELATED PERMITS, RECORDS OF ALL INSPECTION/MAINTENANCE, ALL PERMANENT OPERATIONS AND MAINTENANCE AGREEMENTS, ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORMWATER MANAGEMENT SYSTEMS AND OTHER INFORMATION REQUIRED BY THE GENERAL PERMIT FOR THREE YEARS FOLLOWING THE NOTICE OF TERMINATION.
6. THE OPERATOR MUST ASSIGN A TRAINED INDIVIDUAL(S) (PURSUANT TO SECTION 21) TO OVERSEE THE IMPLEMENTATION, MAINTENANCE, AND REPAIR OF BMPS. THIS INDIVIDUAL(S) SHALL ALSO PERFORM INSPECTIONS, REVISE/AMEND THE SWPPP (DOCUMENT IN SWPPP AS NECESSARY), AND BE AVAILABLE FOR AN ONSITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE PERMITTED OWNER (OR ITS DESIGNEE), LOCAL GOVERNMENT UNITS, OR MPCA. MNDOT LEAD PROJECTS REQUIRE AVAILABLE ONSITE INSPECTION WITHIN 24 HOURS.

POLLUTION PREVENTION MANAGEMENT MEASURES
POTENTIAL SOURCES OF POLLUTANTS FROM CONSTRUCTION ACTIVITIES INCLUDE:
- SEDIMENT AND FUGITIVE DUST GENERATED FROM CLEARING AND GRUBBING, IMPORT/EXPORT OPERATIONS, REMOVALS/COMPACTION, MASS/FINE GRADING, EXCAVATIONS, TRENCHING, TOPSOIL STRIPING STOCKPILING, WET/DRY PAVEMENT CUTTING, STREET CONSTRUCTION.
- BASIC/ACIDIC PH LEVELS FROM CURB AND GUTTER, MANHOLE STRUCTURES, SIDEWALKS, DRIVEWAY APRONS, FOUNDATIONS, BRIDGE ABUTMENTS, WET/DRY PAVEMENT CUTTING, MASONRY WASHOUT/CLEANOUT,
- EXCESS NUTRIENTS FROM LANDSCAPING INSTALLATIONS, SOIL ADDITIVES, FERTILIZATION, MULCHING
- HYDROCARBONS FROM STREET CONSTRUCTION, DEMOLITION/REMOVALS, WET/DRY PAVEMENT CUTTING

OPERATOR WILL COMPLY WITH ALL OF THE POLLUTION PREVENTION AND MANAGEMENT MEASURES IDENTIFIED IN THE NPDES-CSW PERMIT. OPERATOR WILL SUBMIT A SPILL PREVENTION AND RESPONSE PLAN (SPRP) TO THE ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITY. THE SPRP MUST SATISFACTORILY ADDRESS (AT A MINIMUM) THE FOLLOWING NPDES REQUIREMENTS BY THE PROPOSED IMPLEMENTATION AND MAINTENANCE OF APPROPRIATE BMPS:

NO-EXPOSURE: CONSTRUCTION AND BUILDING PRODUCTS (THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS), PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPING MATERIALS MUST BE UNDER COVER (PLASTIC SHEETING OR TEMPORARY ROOFS) TO MINIMIZE CONTACT WITH STORMWATER AND PRECIPITATION.

SOLID WASTE: (SEDIMENT, ASPHALT, CONCRETE MILLINGS, CONSTRUCTION, AND DEMOLITION DEBRIS) AND OTHER WASTES MUST BE DISPOSED OF PROPERLY AND SHALL COMPLY WITH MPCA DISPOSAL REQUIREMENTS (CH. 7035).

HAZARDOUS MATERIALS: (E.G. GAS, DIESEL, OIL, ANTIFREEZE, PAINT SOLVENTS, SOAPS, DETERGENTS, WOOD PRESERVATIVES, CLEANING SOLVENTS, CURING COMPOUNDS, ACIDS, ETC.) MUST BE STORED IN SEALED CONTAINERS. SECONDARY SPILL CONTAINMENT IS REQUIRED FOR ALL MATERIALS IF STORED ON-SITE FOR MORE THAN 24 CONSECUTIVE HOURS (DOUBLE WALLED TANKS ARE ACCEPTABLE FOR SECONDARY CONTAINMENT). STORAGE AND DISPOSAL OF HAZARDOUS WASTES AND MATERIALS MUST BE IN COMPLIANCE WITH MPCA REGULATIONS (CH. 7045).

PORTABLE TOILETS: MUST BE POSITIONED AND SECURED SO THEY ARE NOT TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE PROPERLY DISPOSED OF IN ACCORDANCE WITH MPCA REGULATIONS (CH. 7041).

SPILLED OR LEAKED CHEMICALS: REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICAL OR FUEL WILL BE LOADED OR UNLOADED. PROCEDURES FOR SPILL RESPONSE AND MATERIALS FOR CONTAINMENT, CLEANUP (DRIP PANS, ABSORBENTS, AND SPILL KITS) AND APPROPRIATE DISPOSAL SHALL BE AVAILABLE AT ALL TIMES ON-SITE. PERMITEES MUST REPORT AND CLEAN UP SPILLS IMMEDIATELY AS REQUIRED BY MINNESOTA STATUTE 115.061.

EQUIPMENT/VEHICLE WASHING: WHEN VEHICLE/EQUIPMENT WASHING MUST OCCUR ON-SITE, THE ACTIVITY IS LIMITED TO A CONTAINED PORTION OF THE STAGING AREA, UNLESS INFEASIBLE THROUGH A SWPPP AMENDMENT. SOAPS, DETERGENTS, AND SOLVENTS ARE TO BE USED AND STORED PROPERLY. RUNOFF MUST BE CONTAINED FROM THE WASHING AREAS AND DISPOSED OF PROPERLY.

CONCRETE, STUCCO, PAINT, CURING COMPOUNDS, SOLVENTS, AND OTHER WASHOUT WASTES: TEMPORARY OR LONG-TERM STORAGE OF WASHOUT WASTE IS PROHIBITED ON-SITE (SLURRY MUST BE HAULED IMMEDIATELY OFF-SITE). OPERATOR MUST SUBMIT A CONCRETE WASHOUT PLAN TO THE PROJECT ENGINEER FOR APPROVAL OF ALL ON-SITE WASHOUT LOCATIONS. ON-SITE WASHOUT LOCATIONS MUST BE LOCATED 200 FEET FROM AN ENVIRONMENTALLY SENSITIVE AREA AND SURFACE WATERS, HAVE "CONCRETE WASHOUT AREA" SIGNAGE, AND BE CONTAINED IN A LEAK PROOF CONTAINER OR IMPERMEABLE LINER. LIQUID AND SOLID WASTES SHOULD NOT CONTACT THE GROUND (UNLESS PERMITTED IN THE CONCRETE WASHOUT PLAN), BE CONTAINED TO PREVENT RUNOFF FROM THE WASHOUT LOCATION, AND MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS.

BURNING: BURNING OF GARBAGE, CONSTRUCTION DEBRIS, TREES, BRUSH, OR OTHER VEGETATIVE MATERIAL IS NOT ALLOWED ON SITE, UNLESS PRIOR APPROVAL IS GRANTED BY THE OWNER.

CONSTRUCTION ACTIVITY REQUIREMENTS: EROSION PREVENTION PRACTICES, PROCEDURES, & MAINTENANCE STANDARDS
THE OPERATOR IS RESPONSIBLE FOR THE INSTALLATION, OPERATION, AND CONTINUED MAINTENANCE OF ALL TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT BMPS, AS WELL AS ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE, UNTIL FINAL STABILIZATION IS ACHIEVED. ALL BMPS MUST BE ADEQUATELY LOCATED, DESIGNED, INSTALLED, AND MAINTAINED TO PREVENT EROSION FROM A MINIMUM 0.5 INCH TOTAL RAINFALL EVENT WITHIN 24 HOURS.

ALL NONFUNCTIONAL BMPS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS UNLESS ANOTHER TIME FRAME IS SPECIFIED IN THE SWPPP. ALL ERODED MATERIAL THAT LEAVES THE SITE SHALL BE COLLECTED BY THE OPERATOR AND RETURNED TO THE SITE AT THE OPERATOR'S EXPENSE AND INCIDENTAL TO THE PROJECT COST.

TEMPORARY OR PERMANENT STABILIZATION SHALL BE INITIATED AS SOON AS POSSIBLE, BUT NO LATER THAN THE END OF THE NEXT WORK DAY FOLLOWING THE DAY EARTH-DISTURBING ACTIVITIES IN THAT PORTION OF THE SITE HAS TEMPORARILY OF PERMANENTLY CEASED. ALL EXPOSED SOIL AREAS SHALL BE STABILIZED WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. INITIATED STABILIZATION IS DEFINED AS COMPLETING ONE (OR MORE) OF THE FOLLOWING: SOIL PREPARATION FOR VEGETATION, MULCHING (OR OTHER TEMPORARY NON-VEGETATIVE BMP), SEEDING/PLANTING, OR SCHEDULING STABILIZATION MEASURES TO BE FULLY INSTALLED AND COMPLETED WITHIN THE 7 DAY TIMEFRAME.

TEMPORARY STABILIZATION BMPS SHALL ONLY BE IMPLEMENTED WHEN PERMANENT STABILIZATION BMPS CANNOT BE IMPLEMENTED WITHIN THE 7 DAY TIMEFRAME FOR EXPOSED SOILS.

TEMPORARY/PERMANENT DRAINAGE DITCHES & SWALES: THE NORMAL WETTED PERIMETER (2-YEAR, 24-HOUR PRECIPITATION EVENT) OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH, CHANNEL, OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN THE LAST 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER WITHIN 24 HOURS OF CONNECTION. STABILIZATION REMAINING OF THE REMAINING PORTIONS OF THE CHANNEL MUST BE STABILIZED WITHIN 14 DAYS. ALL STORMWATER CONVEYANCE CHANNELS MUST USE EROSION CONTROL AND VELOCITY DISSIPATION DEVICES WITHIN AND ALONG THE LENGTH OF THE CHANNEL AND AT ANY OUTLETS. TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A TEMPORARY SEDIMENT CONTAINMENT SYSTEM (WITH PROPERLY DESIGNED ROCK DITCH CHECKS, BIO ROLLS, SILT DIKES ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS HOWEVER MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM. MULCH, HYDROMULCH, TACKIFIER, OR POLYACRYLAMIDE BELOW THE WETTED PERIMETER OF A DITCH, SWALE, OR OTHER SURFACE WATER CONVEYANCE IS NOT ACCEPTABLE STABILIZATION.

EROSION CONTROL BLANKETS/MATS: OPERATOR SHALL VERIFY DURING REGULAR INSPECTIONS THAT NO GULLIES, RILLS, OR SCOUR HOLES HAVE FORMED UNDER EROSION CONTROL BLANKETS AND MATS. ALL REPAIRS MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

MULCH: OPERATOR MUST APPLY MULCH IN A UNIFORM PATTERN OVER THE DISTURBED SOILS, TO ACHIEVE A MINIMUM OF 90% GROUND COVER.

DUST CONTROL: DUST FROM THE SITE WILL BE CONTROLLED BY INCREASED STREET SWEEPING AND/OR USING A MOBILE PRESSURE-TYPE DISTRIBUTOR TRUCK TO APPLY POTABLE WATER TO DISTURBED AREAS. THE MOBILE UNIT WILL APPLY WATER AT A RATE NECESSARY TO PREVENT RUNOFF AND PONDING.

STORM SEWER OUTLETS: PIPE OUTLETS MUST HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER HYDRAULIC CONNECTION TO A RECEIVING SURFACE WATER.

TEMPORARY & PERMANENT EROSION PREVENTION BMPS

TYPE 1 MULCH: APPLY TO DISTURBED SLOPES LESS THAN 1:3 WITH BLOWER EQUIPMENT OR CONCURRENTLY WITH HYDROMULCH AT 2 TONS/ACRE. IMMEDIATELY OVERSPRAY (IF NOT HYDROMULCHED) WITH TACKIFIER (PER MANUFACTURES' RECOMMENDED RATES) OR DISC-ANCHORED.

RAPID STABILIZATION METHOD #3: THIS WORK SHALL CONSIST OF OPERATIONS NECESSARY TO RAPIDLY STABILIZE SMALL CRITICAL AREAS WITHIN 200FT OF SURFACE WATERS, TO PREVENT OFF SITE SEDIMENTATION AND OR TO COMPLY WITH PERMIT REQUIREMENTS. INSTALL PER MNDOT SPECIFICATIONS 2575.3N.

RAPID STABILIZATION METHOD #4 (WOOD FIBER, NATURAL NET ONLY) IS AN ACCEPTABLE BMP FOR DISTURBED AREAS ADJACENT TO ENVIRONMENTALLY SENSITIVE AREAS, SURFACE WATERS, AND WITHIN THE LAST 200 FEET OF DITCH BOTTOMS.

TEMPORARY WINTER COVER: AREAS OF EXPOSED SOILS THAT ARE NOT COMPLETED BEFORE THE WINTER WILL BE STABILIZED WITH TYPE #3 (CERTIFIED AS WEED FREE) ADJACENT TO WETLAND OR STORMWATER PONDS. ALL OTHER DISTURBED AREAS SHALL BE STABILIZED WITH TYPE #1 MULCH, UNLESS ALTERNATIVE MORE PROTECTIVE BMPS ARE SPECIFIC WITHIN THE SWPPP. ALL EXPOSED SOILS SHALL BE STABILIZED BEFORE CONSTRUCTION IS COMPLETED FOR THE SEASON.

HYDRO-MULCH TYPE #5: HYDRAULIC SOIL STABILIZER IN COMBINATION WITH A TACKIFIER WILL BE INSTALLED PER MANUFACTURES SPECIFICATIONS TO EXPOSED SOILS AREAS TO PROVIDE TEMPORARY LONG-TERM OR PERMANENT COVER FOR VEGETATION ESTABLISHMENT.

CONSTRUCTION ACTIVITY REQUIREMENTS: SEDIMENT CONTROL PRACTICES, PROCEDURES, & MAINTENANCE STANDARDS

DOWNGRADIENT SYSTEMS: IF THE DOWNGRADIENT TREATMENT SYSTEM IS OVERLOADED, ADDITIONAL UP GRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS MUST BE INSTALLED TO ELIMINATE THE OVERLOADING, AND THE SWPPP MUST BE AMENDED TO IDENTIFY THESE ADDITIONAL PRACTICES.

PERIMETER CONTROL BMPS (SILT FENCES, CHIP/SLASH MULCH SACKS, BIOROLLS, FLOATING SILT CURTAIN, ETC.): PERIMETER CONTROL BMPS SHALL BE INSTALLED ON ALL DOWNGRADIENT PERIMETERS AND UPGRADIENT OF ANY BUFFER AREAS, PRIOR TO INITIATING UPGRADIENT LAND DISTURBANCE ACTIVITIES. UPLAND PERIMETER CONTROLS BMPS SHALL BE PLACED AS CLOSE AS POSSIBLE TO FOLLOW A SINGLE CONTOUR ELEVATION. ALL PERIMETER CONTROL DEVICES MUST BE REPAIRED, REPLACED, OR MAINTAINED WHEN THEY BECOME NONFUNCTIONAL, OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE DEVICE. FLOATING SILT CURTAIN SHALL BE INSTALLED AS CLOSE TO THE SHORELINE AS POSSIBLE FOR SHORELAND/IN-WATER SHORT-TERM CONSTRUCTION ACTIVITIES. IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY IN THAT AREA IS COMPLETE, AN UPLAND PERIMETER CONTROL MUST BE INSTALLED IF EXPOSED SOILS CONTINUE TO DRAIN TO THE SURFACE WATER.

TEMPORARY SEDIMENTATION BASINS: WHERE TEN (10) OR MORE ACRES OF DISTURBED SOIL DRAIN TO A COMMON LOCATION, A TEMPORARY SEDIMENT BASIN MUST BE PROVIDED PRIOR TO RUNOFF LEAVING THE CONSTRUCTION SITE OR ENTERING SURFACE WATERS. ALL TEMPORARY BASINS SHALL BE CONSTRUCTED AND OPERATIONAL PRIOR TO GRADING TEN (10) OR MORE ACRES. BASINS MUST PROVIDE A LIVE STORAGE VOLUME FROM A TWO YEAR 24-HOUR STORM EVENT FROM EACH ACRE (DISTURBED AND UNDISTURBED) DRAINING TO THE BASIN OR 1,800 CUBIC FEET OF LIVE STORAGE PER ACRE DRAINED, WHICHEVER IS GREATER. AT A MINIMUM, IF CALCULATIONS ARE NOT PERFORMED THE BASIN SHALL PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE FROM EACH ACRE. THE BASIN INTAKE MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE, PREVENT SHORT CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS, INCLUDE AN EMERGENCY OVERFLOW ABOVE THE LIVE STORAGE ELEVATION, AND PROVIDE ENERGY DISSIPATION AT THE BASIN OUTLET. BASINS MUST BE DRAINED AND SEDIMENT REMOVED WHEN THE DEPTH OF COLLECTED SEDIMENT IN THE BASIN REACHES 1/2 THE LIVE STORAGE VOLUME. IF A BASIN IS INFEASIBLE WITHIN THE PROJECT LIMITS, EQUIVALENT SEDIMENT CONTROL BMPS MUST BE IMPLEMENTED AND DOCUMENTED IN THE SWPPP OR SWPPP AMENDMENT.

TEMPORARY STOCKPILES: ALL STOCKPILES MUST HAVE SILT FENCE OR EQUIVALENT PERIMETER SEDIMENT CONTROLS IMPLEMENTED AND MAINTAINED AT ALL TIMES. PILES CANNOT BE PLACED IN BUFFER AREAS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE TO PREVENT STORMWATER RUN-ON INTO THE STOCKPILE. STABILIZATION ON TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY OR ORGANIC COMPONENTS IS NOT REQUIRED.

CONSTRUCTION SITE ENTRANCE/VEHICLE TRACKING: OPERATOR MUST MINIMIZE SEDIMENT FROM LEAVING THE CONSTRUCTION SITE (OR ONTO STREETS WITHIN THE SITE) BY IMPLEMENTING BMPS SUCH AS ROCK PADS, SLASH MULCH, CONCRETE OR STEEL WASH RACKS, OR EQUIVALENT SYSTEMS. STREET SWEEPING MUST BE USED DAILY DURING CONSTRUCTION OPERATIONS IF SUCH BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES (ON AND OFF-SITE) WITHIN 24 HOURS OF DISCOVERY, OR SOONER AS DIRECTED BY THE PROJECT OWNER. MULTIPLE STREET SWEEPINGS AT THE OPERATOR'S EXPENSE MAY BE REQUIRED ON ALL ENTRY/EXIT POINTS TO THE SITE AT THE DISCRETION OF THE PROJECT OWNER.

SURFACE WATERS: INCLUDING OFF-SITE AND DOWNSTREAM DRAINAGE DITCHES, CATCH BASINS, AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE REMOVAL AND STABILIZATION OF EXPOSED SOILS MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. THE PERMITTEES ARE RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AGENCIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK.

INLET PROTECTION: ALL STORM DRAIN INLETS (INCLUDING DOWNGRADIENT, OFF-SITE) MUST BE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. SILT FENCE IS NOT AN ACCEPTABLE CATCH BASIN INLET PROTECTION BMP. CONTACTOR SHALL CLEAN, REMOVE AND DISPOSE OF SEDIMENT, AND/OR REPLACE STORM DRAIN INLET PROTECTION ON A ROUTINE BASIS TO ENSURE THE DEVICE IS FULLY FUNCTIONAL PRIOR TO THE NEXT FORECASTED PRECIPITATION EVENT (30% OR GREATER). INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED BY THE PERMITTEE(S) OR THE JURISDICTIONAL AUTHORITY (E.G. CITY/COUNTY/TOWNSHIP/MNDOT ENGINEER). WRITTEN CORRESPONDENCE REGARDING THE NEED FOR REMOVAL MUST BE DOCUMENTED IN THE SWPPP.

CHEMICAL TREATMENTS: OPERATOR MUST AMEND THE SWPPP TO INCLUDE THE INTENDED USES AND LOCATIONS OF FLOCCULANTS, POLYMERS, AND OTHER SEDIMENTATION TREATMENT CHEMICALS. CHEMICAL TREATMENTS MAY ONLY BE APPLIED IN AREAS WHERE TREATED STORMWATER IS DIRECTED TO A RECEIVING SEDIMENT CONTROL SYSTEM (NOT DIRECTLY DISCHARGED TO NATURAL WATER BODIES). THIS INCLUDES DOCUMENTING THE EXPECTED SOIL TYPES, MANUFACTURER'S RECOMMENDED DOSING, APPLICATION RATES/QUANTITIES, AND MONITORING RESULTS (TURBIDITY, PH).

DEWATERING, STREAM DIVERSION, AND BASIN DRAINING
DEWATERING, STREAM DIVERSION, OR BASIN DRAINING IS ANTICIPATED DURING CONSTRUCTION OF THIS PROJECT. CULVERT CONSTRUCTION, AND NEW POND GRADING WILL REQUIRE SITE DEWATERING. WHEN DEWATERING OR BASIN DRAINING IS REQUIRED, THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN AND NARRATIVE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO UNDERTAKING THESE ACTIVITIES. DEWATERING PLAN MUST INCLUDE BMP'S TO PREVENT SEDIMENT TRANSPORT, EROSION, AND ADVERSE IMPACTS TO DOWNSTREAM RECEIVING WATERS. THE DEWATERING PLAN MUST ALSO INCLUDE ANY SPECIFIC CHEMICAL TREATMENTS (FLOC, POLYMERS, ETC.) THAT WILL BE USED. IF AN APPROVED TMDL WASTE LOAD ALLOCATION IS ESTABLISHED FOR CONSTRUCTION ACTIVITIES ON A RECEIVING WATERBODY, THE OPERATOR MUST IMPLEMENT ALL NECESSARY BMP'S TO MEET THE ASSIGNED WLA. THE DEWATERING PLAN AND DNR APPROPRIATIONS PERMIT WILL BECOME PART OF THE SWPPP. WATER THAT IS TURBID OR HAS SEDIMENT MUST BE DISCHARGED TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN (AND/OR OTHER APPROPRIATE BMPS) ON THE PROJECT SITE WHENEVER POSSIBLE. DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASIN MUST BE VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT IS OBTAINED IN THE BASIN AND THAT NUISANCE CONDITIONS (SEE MINN. R. 7050.0210, SUBP. 2), IMPACTS TO WETLANDS, AND EROSION IN RECEIVING CHANNELS OR ON DOWNSLOPE PROPERTIES WILL NOT RESULT FROM THE DISCHARGE. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SAND BAGS, PLASTIC SHEETING, OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES. ADEQUATE SEDIMENTATION CONTROL MEASURES AND ADDITIONAL FILTRATION BMPS ARE REQUIRED FOR DISCHARGE WATER THAT CONTAINS SUSPENDED SOLIDS, OIL, OR GREASE.

PERMIT TERMINATION CONDITIONS
PERMIT TERMINATION CONDITIONS ARE ACHIEVED WHEN THE FOLLOWING FOUR PARAMETERS ARE COMPLETED, PRIOR TO SUBMISSION OF THE NOTICE OF TERMINATION TO MPCA.

1. 70% VEGETATIVE COVER: ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND ALL EXPOSED SOILS ARE STABILIZED BY A UNIFORM, LIVE PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OVER THE ENTIRE PERVIOUS SURFACE AREA, OR OTHER EQUIVALENT MEANS NECESSARY TO PREVENT SOIL FAILURE UNDER EROSIVE CONDITIONS. REFER TO PART 13.7 IF THE PROJECT IS ON AGRICULTURAL LAND. FOR RESIDENTIAL CONSTRUCTION ONLY, PLEASE REFER TO PART 13.6 OF THE NPDES PERMIT.
2. FINAL CLEAN OUT OF PERMANENT STORMWATER MANAGEMENT SYSTEMS & CONVEYANCE SYSTEMS: ALL ACCUMULATED SEDIMENT MUST BE REMOVED FROM PERMANENT STORMWATER MANAGEMENT SYSTEMS, CONVEYANCE SYSTEMS, AND DITCHES MUST BE STABILIZED WITH PERMANENT COVER. ALL SYSTEMS MUST OPERATE AS DESIGNED.
3. REMOVAL OF ALL TEMPORARY SYNTHETIC BMPS: ALL TEMPORARY SYNTHETIC AND STRUCTURAL EROSION PREVENTION AND SEDIMENT CONTROL BMPS (SUCH AS SILT FENCE) MUST BE REMOVED ON THE PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE. BMPS DESIGNED TO DECOMPOSE ON SITE (SUCH AS SOME COMPOST LOGS) MAY BE LEFT IN PLACE.
4. OPERATOR PROVIDES THE OWNER ALL INSPECTION AND SWPPP AMENDMENT RECORDS FOR THE PROJECT. OWNER IS RESPONSIBLE FOR KEEPING ALL RECORDS (AS DEFINED IN PART 24.5) ON FILE FOR THREE YEARS AFTER SUBMITTAL OF THE NOTICE OF TERMINATION.

   THE CO-PERMITTEES (OWNER AND OPERATOR) MUST SIGN AND SUBMIT THE COMPLETED NOT TO THE MPCA WITHIN 30 DAYS AFTER SELLING/LEGALLY TRANSFERRING THE PROPERTY OR FINAL STABILIZATION IS ACHIEVED. PERMITTEE(S) MAY TERMINATE PERMIT COVERAGE PRIOR TO THE PROJECT COMPLETION IF THE CONDITIONS IN PART 4 OF THE NPDES-CSW PERMIT ARE MET.

ISG

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
JERREMY D. FOSS

DATE ______ LIC. NO. 55871

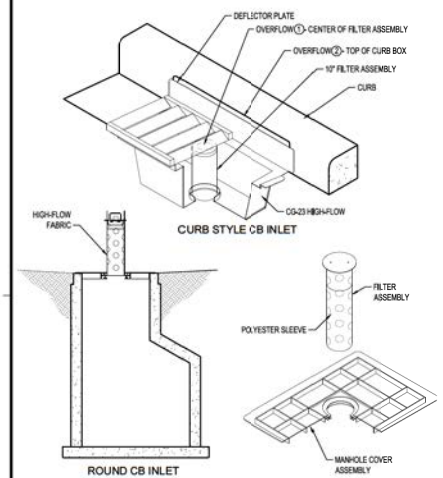
PROJECT
LENNAR
RESERVE AT AUTUMN WOODS
CHASKA MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP DETAILS
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

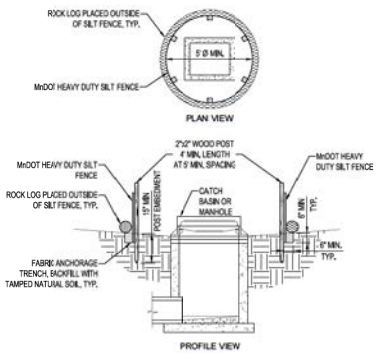
TITLE
SWPPP NARRATIVE

PRELIMINARY NOT FOR CONSTRUCTION



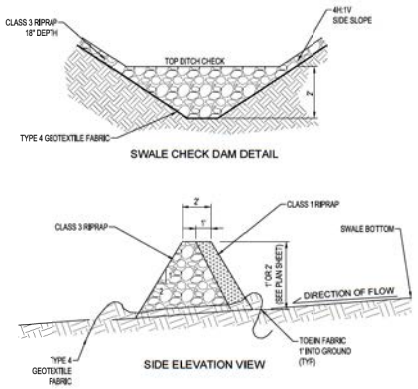
STREET INLET PROTECTION

NTS EC225



SILT FENCE INLET PROTECTION

NTS EC220

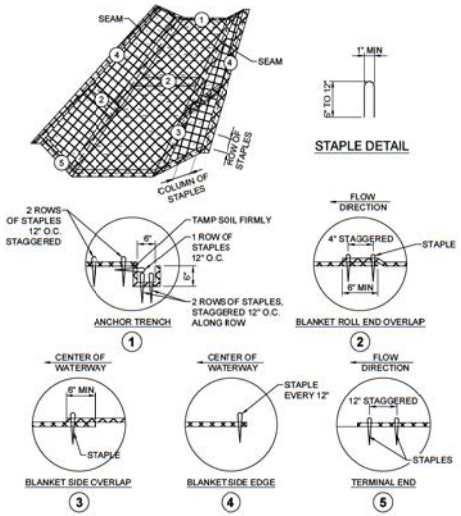


NOTES:

GEOTEXTILE FABRIC & RIPRAP ARE INCIDENTAL TO CHECK DAM CONSTRUCTION

ROCK CHECK DAM

NTS EC310



NOTES:

INSTALL EROSION CONTROL BLANKET (ECB) OVER WATERWAYS AS SHOWN IN THE STORM WATER POLLUTION PREVENTION PLAN.

THE ECB SHALL CONFORM TO MnDOT STANDARD SPECIFICATIONS SECTION 3885.

PREPARE SOIL PRIOR TO INSTALLING ECB, INCLUDING SEEDING AND FERTILIZING.

THE ECB SHALL BE PLACED IN FIRM CONTACT WITH THE SOIL AND NOT BE ALLOWED TO BRIDGE OVER SURFACE IRREGULARITIES. THE MAT SHALL NOT BE STRETCHED.

START LAYING THE MATS BY ROLLING CENTERMAT IN THE DIRECTION OF FLOW, CENTERED ON THE CENTERLINE OF WATERWAY. THERE SHALL NOT BE AN OVERLAP OF MATS AT THE CENTER OF THE WATERWAY.

THE ECB SHALL BE ANCHORED, OVERLAPPED, AND STAPLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS. IF NO MANUFACTURER'S INSTRUCTIONS ARE AVAILABLE, INSTALL THE MAT AS FOLLOWS.

STAPLES SHALL BE "U" SHAPED, 0.12" DIAMETER WIRE OR GREATER (#11 GAUGE). (SEE STAPLE DETAIL FOR DIMENSIONS)

① BURY UPSTREAM END OF MAT IN A TRENCH 6" WIDE BY 6" DEEP AND STAPLED IN STAGGERED ROWS ACROSS THE WIDTH AS SHOWN IN DETAIL 1.

② C. FOR JOINING ENDS OF ROLLS, OVERLAP END OF UP SLOPE MAT A MINIMUM OF 6" OVER DOWN SLOPE MAT (SHINGLE STYLE). USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART, AS SHOWN IN DETAIL 2.

③ D. MATS ON SIDE SLOPES SHALL OVERLAP A MINIMUM OF 6" OVER THE MAT BELOW (SHINGLE STYLE). STAPLE OVERLAP AT 12" INTERVALS. (SEE DETAIL 3)

④ E. THE OUTER EDGE ALONG SIDES OF THE MAT SHALL BE STAPLED EVERY 12". (SEE DETAIL 4)

F. STAPLES ARE TO BE PLACED ALTERNATELY IN COLUMNS (IN THE DIRECTION OF THE WATERWAY) 2' APART AND IN ROWS (ACROSS THE WATERWAY) 3' APART THROUGHOUT THE AREA COVERED BY THE ECB.

⑤ G. DOWNSTREAM (TERMINAL) END OF BLANKET SHALL BE STAPLED WITH A DOUBLE ROW OF STAGGERED STAPLES 12" APART. (SEE DETAIL 5)

EROSION CONTROL BLANKET INSTALLATION

NTS EC700

PLOT DATE: 1/27/2022 10:49 AM

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REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

SWPPP DETAILS

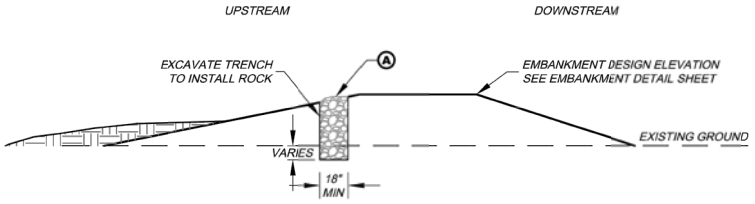
SHEET

26 OF 77

PRELIMINARY NOT FOR CONSTRUCTION PRELIMINARY NOT FOR CONSTRUCTION

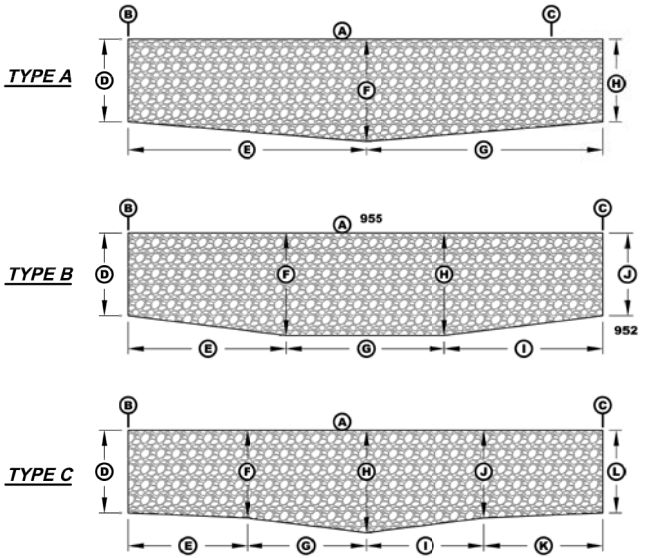
DESIGN TABLE

EMBANKMENT ID #	EMBANKMENT DESIGN ELEVATION (FEET)	ROCK LAYOUT TYPE (A, B, OR C)	Ⓐ TOP OF ROCK ELEVATION (FEET)	Ⓑ START STATION (FEET)	Ⓒ END STATION (FEET)	Ⓓ ROCK DEPTH (FEET)	Ⓔ ROCK LENGTH (FEET)	Ⓕ ROCK DEPTH (FEET)	Ⓖ ROCK LENGTH (FEET)	Ⓗ ROCK DEPTH (FEET)	Ⓘ ROCK LENGTH (FEET)	Ⓙ ROCK DEPTH (FEET)	Ⓚ ROCK LENGTH (FEET)	Ⓛ ROCK DEPTH (FEET)	ESTIMATED QUANTITY (SQ.FT.)
Wetland D	933.00	C	933.00	SEE SWPPP		3.0	22.5	3.2	12.1	5.4	5.6	4.1	24.0	3.0	



X-SECTION OF EMBANKMENT WITH RODENT PROTECTION

NOT TO SCALE



ROCK LAYOUTS FOR RODENT PROTECTION

NOT TO SCALE

ANGULAR ROCK GRADATION TABLE

ANGULAR ROCK GRADATION:
ONLY CRUSHED ANGULAR ROCK SHALL BE USED. ENGINEER RECOMMENDS CLASS I BALLAST ROCK (3/4" - 4"). SUBSTITUTE GRADATION SHALL BE APPROVED BY ENGINEER.

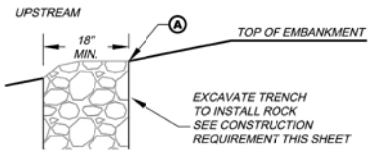
ROCK DIAMETER (INCHES)	PERCENT OF TOTAL SIZE SMALLER THAN A GIVEN SIZE (%)
2 - 4	100 - 30
< 2	29 - 0

CONSTRUCTION REQUIREMENTS

RODENT PROTECTION:
- ROCK TRENCH DEPTH MAY VARY.

- QUANTITIES ARE BASED ON A MINIMUM 18" WIDE EXCAVATED TRENCH, DEPTHS, AND LENGTHS SPECIFIED IN THE DESIGN TABLE. IF CONTRACTOR CHOOSES TO USE A WIDER BUCKET TO EXCAVATE TRENCH, CONTRACTOR WILL BE RESPONSIBLE FOR QUANTITY OVERAGES AND ADDITIONAL COSTS.

- BACK FILL AND BUCKET COMPACT PLACED ROCK IN 12" LIFTS.



TOP OF ROCK LOCATION

NOT TO SCALE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

PRINT NAME / SIGNATURE DATE: LIC. NO.

BWSR

STANDARD SHEET BWSR 103

WETLAND RESTORATION PLAN

ROCK RODENT PROTECTION DETAIL

PROJECT #:

SHEET NO.

OF

ISG

NOTE:
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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP DETAILS
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

SWPPP DETAILS

SHEET

27

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 1/27/2022 10:48 AM

EROSION CONTROL QUANTITIES

ITEM NO.	DESCRIPTION	UNITS	QUANTITY
2511.507	RANDOM RIPRAP, CLASS III	CY	143
2573.502	PROPOSED STORM DRAIN INLET PROTECTION	EACH	62
2573.501	STABILIZED CONSTRUCTION EXIT	EACH	1
2575.504	EROSION CONTROL BLANKET, CATEGORY 3N	SY	25,844
2575.504	TURF REINFORCEMENT MAT, CATEGORY 3	SY	400
	PERIMETER CONTROL	LF	10,210
	CONCRETE WASHOUT AREA	EA	1

QUANTITIES ARE FOR INFORMATIONAL PURPOSES TO MEET THE REQUIREMENTS OF THE CONSTRUCTION STORMWATER PERMIT. NO GUARANTEE IS MADE TO THE ACTUAL QUANTITIES REQUIRED.

RPBCWD STANDARD EROSION CONTROL NOTES (cont. from SWPPP Narrative Sheet)

a. Natural topography and soil conditions must be protected, including retention onsite of native topsoil to the greatest extent possible.

b. Additional measures, such as hydraulic mulching and other practices as specified by the District must be used on slopes of 3:1 (H:V) or steeper to provide adequate stabilization.

c. Final site stabilization measures must specify that at least six inches of topsoil or organic matter with at least 5% organic content (shall meet RPBCWD topsoil definition) be spread and incorporated into the underlying soil during final site treatment wherever topsoil has been removed.

d. Construction site waste such as discarded building materials, concrete truck washout, chemicals, litter and sanitary waste must be properly managed.

e. All temporary erosion and sediment control BMPs must be maintained until completion of construction and vegetation is established sufficiently to ensure stability of the site, as determined by the District.

f. All temporary erosion and sediment control BMPs must be removed upon final stabilization.

g. Soil surfaces compacted during construction and remaining pervious upon completion of construction must be decompacted to achieve a soil compaction testing pressure of less than 1,400 kilopascals or 200 pounds per square inch in the upper 12 inches of the soil profile while taking care to protect utilities, tree roots, and other existing vegetation.

h. Infiltration facilities must not be excavated to within 3-ft of final grade until contributing drainage area has been constructed and fully stabilized. Any accumulated sediment in an infiltration facility must be removed in a manner that prevents compaction of the facility bottom. To provide a well-aerated, highly porous surface, the soils below an infiltration practice must be loosened to a minimum depth of 18" prior to installation or planting.

i. All disturbed areas must be stabilized within 7 calendar days after land-disturbing work has temporarily or permanently ceased on a property that drains to an impaired water, within 14 days elsewhere.

j. The permittee must, at a minimum, inspect, maintain and repair all disturbed surfaces and all erosion and sediment control facilities and soil stabilization measures every day work is performed on the site and at least weekly until land-disturbing activity has ceased. Thereafter, the permittee must perform these responsibilities at least weekly until vegetative cover is established. The permittee will maintain a log of activities under this section for inspection by the District on request.

k. For any in water work, potential transfer of aquatic species (e.g. zebra mussels, Eurasian watermilfoil, etc.) shall be minimized to the maximum extent possible.

l. After inspection of all erosion prevention, sediment control facilities, and soil stabilization, the contractor shall repair, replace or supplement all non-functional BMPs with functional BMPs within 48 hours of discovery and prior to the next rainfall event or as soon as possible. When active land-disturbing activities are not underway, inspection and these responsibilities shall take place weekly until vegetative cover is established. Also a log of inspection and repair activities shall be maintained and available per request of the watershed district (RBPCWD).

m. No activity affecting the bed or banks of a protected water may be conducted between March 15 and June 15 on watercourses, or between April 1 and June 30 on all other public waterbodies, to minimize impacts or fish spawning and migration.

n. Banks must be stabilized immediately after completion of permitted work and re-vegetated as soon as growing conditions allow.

EROSION CONTROL LEGEND

SYMBOL	DESCRIPTION
	RANDOM RIPRAP, CLASS III
PC	PERIMETER CONTROL
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
	TURF REINFORCEMENT MAT, CATEGORY 7A
	STABILIZED CONSTRUCTION EXIT
	EROSION CONTROL BLANKET, CATEGORY 3N
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
101	EXISTING CONTOUR (MINOR INTERVAL)
100	EXISTING CONTOUR (MAJOR INTERVAL)
101	PROPOSED CONTOUR (MINOR INTERVAL)
100	PROPOSED CONTOUR (MAJOR INTERVAL)

ENSURE RIPRAP DOES NOT ACT AS FILL.

PERIMETER CONTROL CAN BE SILT FENCE OR SEDIMENT CONTROL LOG.

SEE SITE RESTORATION PLAN FOR FINAL TURF ESTABLISHMENT.

SLOPES 3:1 OR GREATER MUST BE STABILIZED IMMEDIATELY FOLLOWING EXCAVATION.

NOTE: SWPPP COVERAGE INCLUDES ELECTRIC, GAS, TELEPHONE, AND CABLE INSTALLATION. EACH COMPANY OR THEIR SUBCONTRACTOR IS RESPONSIBLE TO FOLLOW THE REQUIREMENTS OF THIS SWPPP INCLUDING PROVIDING THEIR OWN RESTORATION IF INSTALLATION OCCURS AFTER PRIMARY INSTALLATION OF SEEDING/SODDING/MULCHING DURING CONSTRUCTION OF EACH UTILITY.

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PROPOSED SWPPP (OVERALL)

SHEET

28

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/3/2022 10:47 AM

EROSION CONTROL LEGEND

SYMBOL	DESCRIPTION
	RANDOM RIPRAP, CLASS III
PC	PERIMETER CONTROL
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
	TURF REINFORCEMENT MAT,CATEGORY 74
	STABILIZED CONSTRUCTION EXIT
	EROSION CONTROL BLANKET, CATEGORY 3N
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
101	EXISTING CONTOUR (MINOR INTERVAL)
100	EXISTING CONTOUR (MAJOR INTERVAL)
101	PROPOSED CONTOUR (MINOR INTERVAL)
100	PROPOSED CONTOUR (MAJOR INTERVAL)

ENSURE RIPRAP DOES NOT ACT AS FILL.

PERIMETER CONTROL CAN BE SILT FENCE OR SEDIMENT CONTROL LOG.

SEE SITE RESTORATION PLAN FOR FINAL TURF ESTABLISHMENT.

SLOPES 3:1 OR GREATER MUST BE STABILIZED IMMEDIATELY FOLLOWING EXCAVATION.

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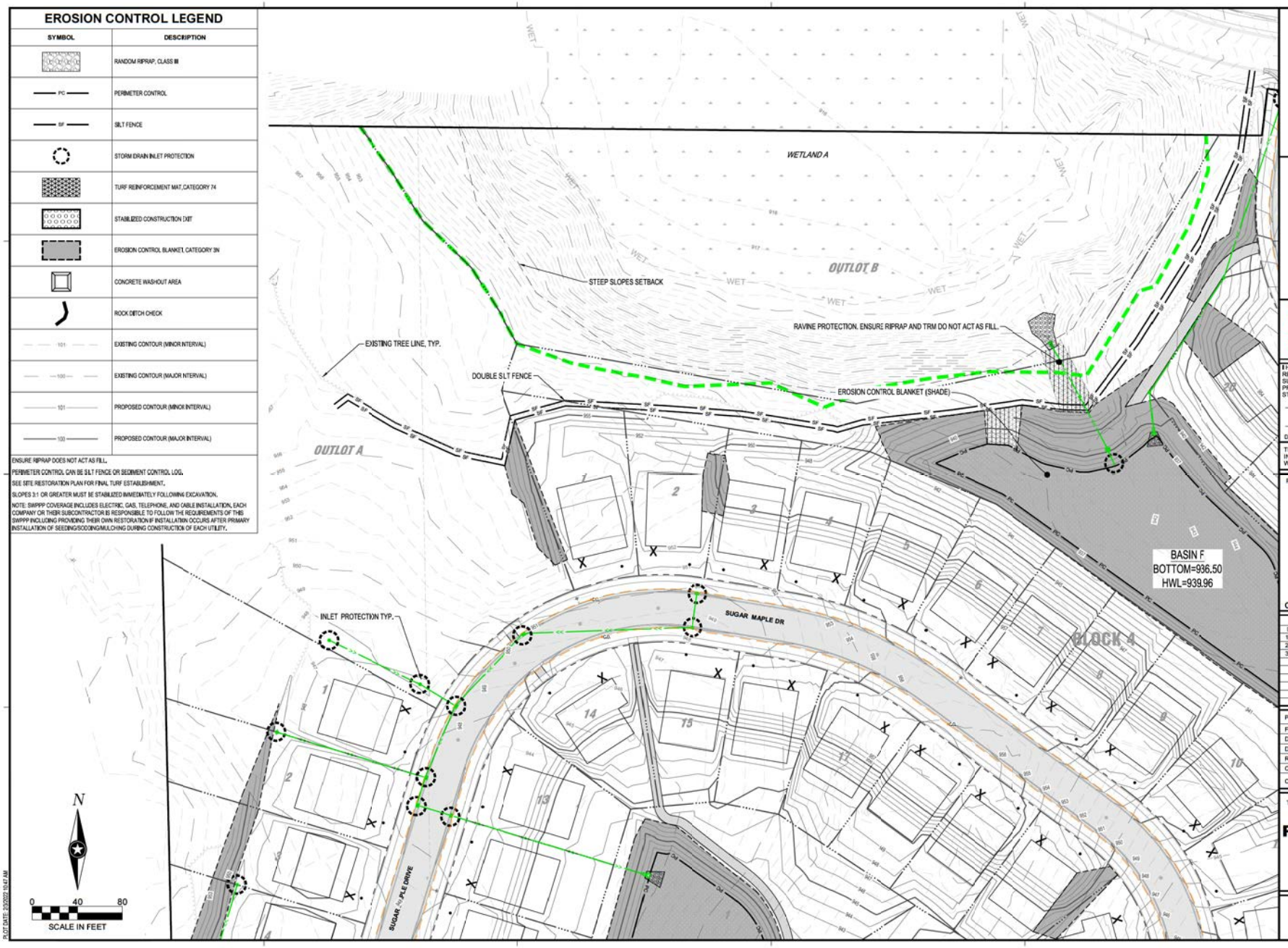

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PROPOSED SWPPP (NW)

SHEET

29 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/3/2022 10:47 AM

EROSION CONTROL LEGEND

SYMBOL	DESCRIPTION
	RANDOM RIPRAP, CLASS III
PC	PERIMETER CONTROL
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
	TURF REINFORCEMENT MAT, CATEGORY 7A
	STABILIZED CONSTRUCTION EXIT
	EROSION CONTROL BLANKET, CATEGORY 3N
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
101	EXISTING CONTOUR (MINOR INTERVAL)
100	EXISTING CONTOUR (MAJOR INTERVAL)
101	PROPOSED CONTOUR (MINOR INTERVAL)
100	PROPOSED CONTOUR (MAJOR INTERVAL)

ENSURE RIPRAP DOES NOT ACT AS FILL.

PERIMETER CONTROL CAN BE SILT FENCE OR SEDIMENT CONTROL LOG.

SEE SITE RESTORATION PLAN FOR FINAL TURF ESTABLISHMENT.

SLOPES 3:1 OR GREATER MUST BE STABILIZED IMMEDIATELY FOLLOWING EXCAVATION.

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N

0 40 80

SCALE IN FEET

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PROPOSED SWPPP (NE)

SHEET

30 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/30/2022 10:47 AM

EROSION CONTROL LEGEND

SYMBOL	DESCRIPTION
	RANDOM RIPRAP, CLASS III
PC	PERIMETER CONTROL
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
	TURF REINFORCEMENT MAT, CATEGORY 7A
	STABILIZED CONSTRUCTION EXIT
	EROSION CONTROL BLANKET, CATEGORY 3N
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
101	EXISTING CONTOUR (MINOR INTERVAL)
100	EXISTING CONTOUR (MAJOR INTERVAL)
101	PROPOSED CONTOUR (MINOR INTERVAL)
100	PROPOSED CONTOUR (MAJOR INTERVAL)

ENSURE RIPRAP DOES NOT ACT AS FILL.

PERIMETER CONTROL CAN BE SILT FENCE OR SEDIMENT CONTROL LOG.

SEE SITE RESTORATION PLAN FOR FINAL TURF ESTABLISHMENT.

SLOPES 3:1 OR GREATER MUST BE STABILIZED IMMEDIATELY FOLLOWING EXCAVATION.

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N

0 40 80

SCALE IN FEET

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PROPOSED SWPPP (SW)

SHEET

31

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/2/2022 10:47 AM

EROSION CONTROL LEGEND

SYMBOL	DESCRIPTION
	RANDOM RIPRAP, CLASS III
PC	PERIMETER CONTRO.
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
	TURF REINFORCEMENT MAT, CATEGORY 74
	STABILIZED CONSTRUCTION EXIT
	EROSION CONTROL BLANKET, CATEGORY 3N
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
101	EXISTING CONTOUR (MINOR INTERVAL)
100	EXISTING CONTOUR (MAJOR INTERVAL)
101	PROPOSED CONTOUR (MINOR INTERVAL)
100	PROPOSED CONTOUR (MAJOR INTERVAL)

ENSURE RIPRAP DOES NOT ACT AS FILL.

PERIMETER CONTROL CAN BE SILT FENCE OR SEDIMENT CONTROL LOG.

SEE SITE RESTORATION PLAN FOR FINAL TURF ESTABLISHMENT.

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 SWPPP
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PROPOSED SWPPP (SE)

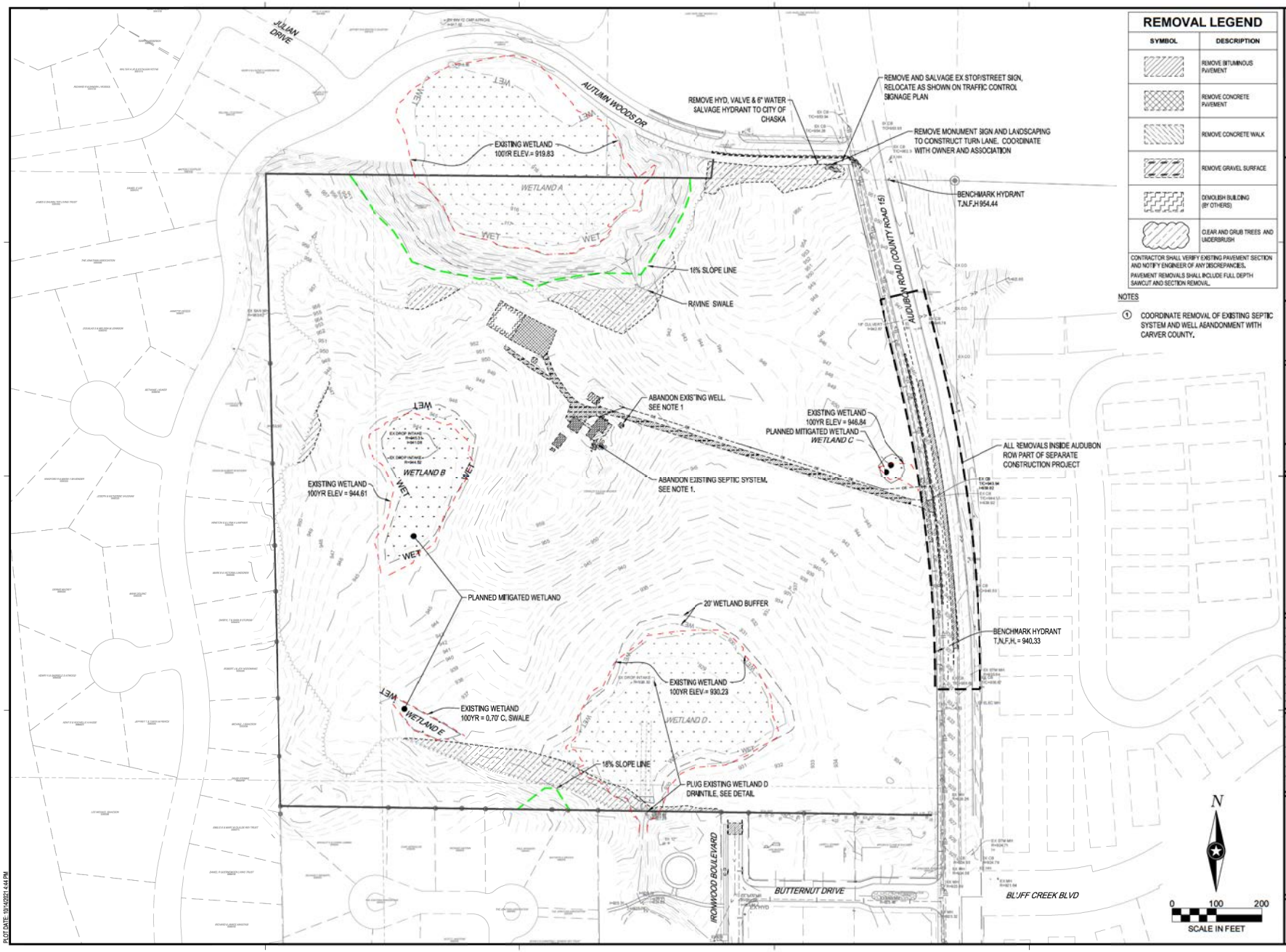
SHEET

32 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/3/2022 10:47 AM



REMOVAL LEGEND

SYMBOL	DESCRIPTION
	REMOVE BITUMINOUS PAVEMENT
	REMOVE CONCRETE PAVEMENT
	REMOVE CONCRETE WALK
	REMOVE GRAVEL SURFACE
	DEMOLISH BUILDING (BY OTHERS)
	CLEAR AND GRUB TREES AND UNDERBRUSH

CONTRACTOR SHALL VERIFY EXISTING PAVEMENT SECTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
PAVEMENT REMOVALS SHALL INCLUDE FULL DEPTH SAWCUT AND SECTION REMOVAL.

NOTES

1. COORDINATE REMOVAL OF EXISTING SEPTIC SYSTEM AND WELL AEANDONMENT WITH CARVER COUNTY.

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 EXIST
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

EXISTING SITE AND REMOVAL PLAN

SHEET

33

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 10/14/2021 4:44 PM

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 GRADE
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

GRADING PLAN (OVERALL)

SHEET

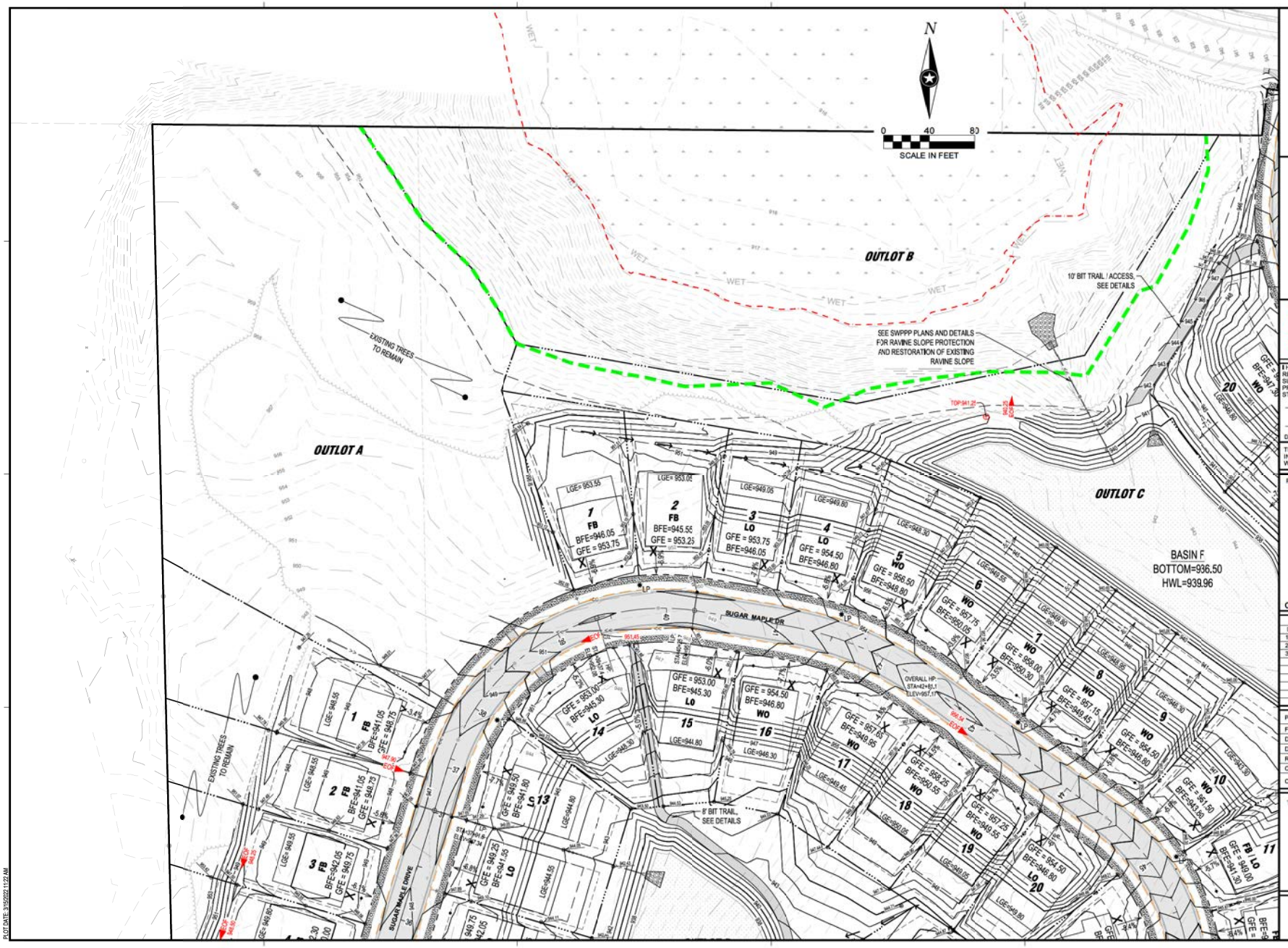
58

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/15/2022 11:22 AM



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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 GRADE
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

GRADING PLAN (NW)

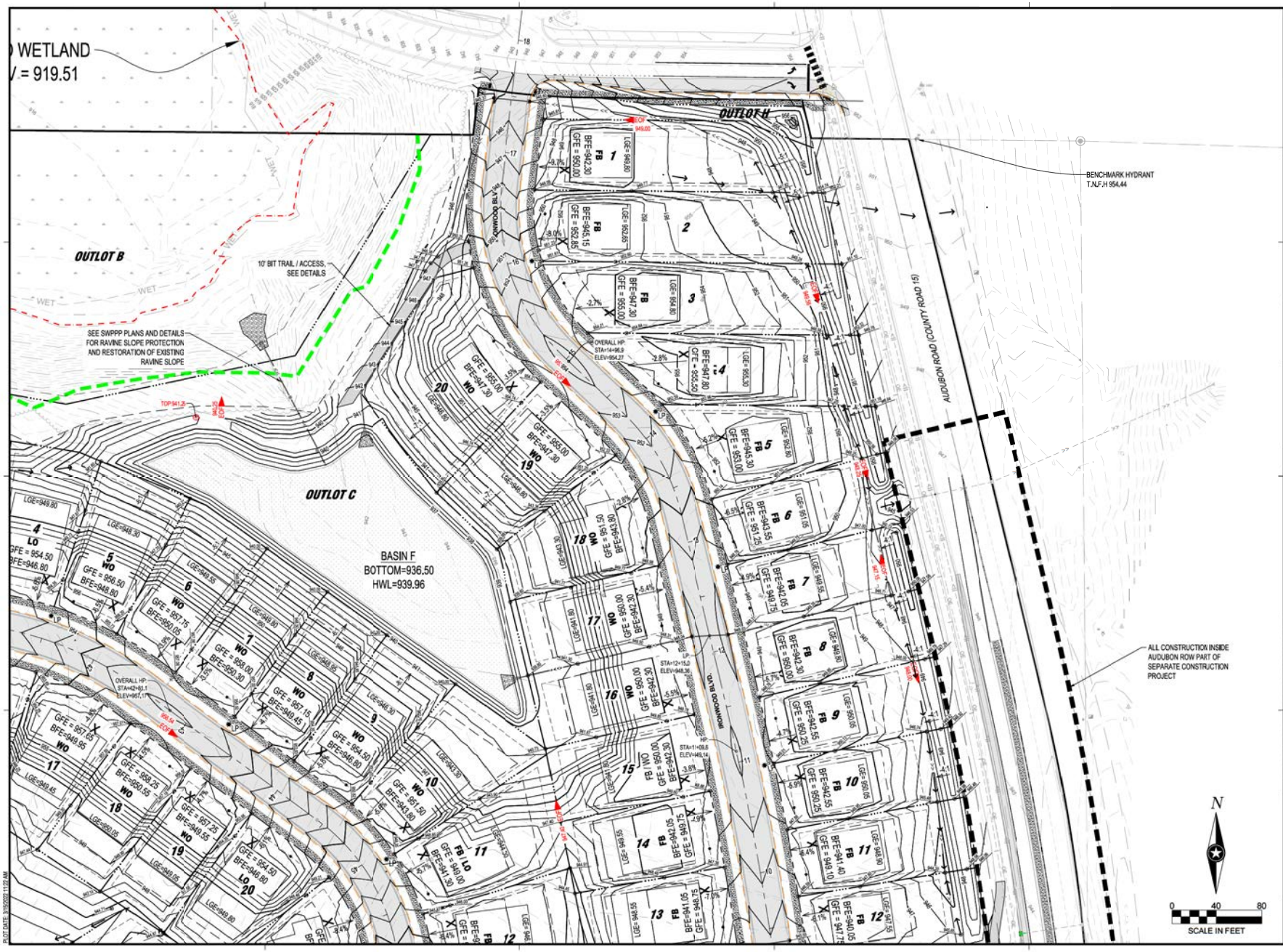
SHEET

59 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/15/2022 11:22 AM



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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 GRADE
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

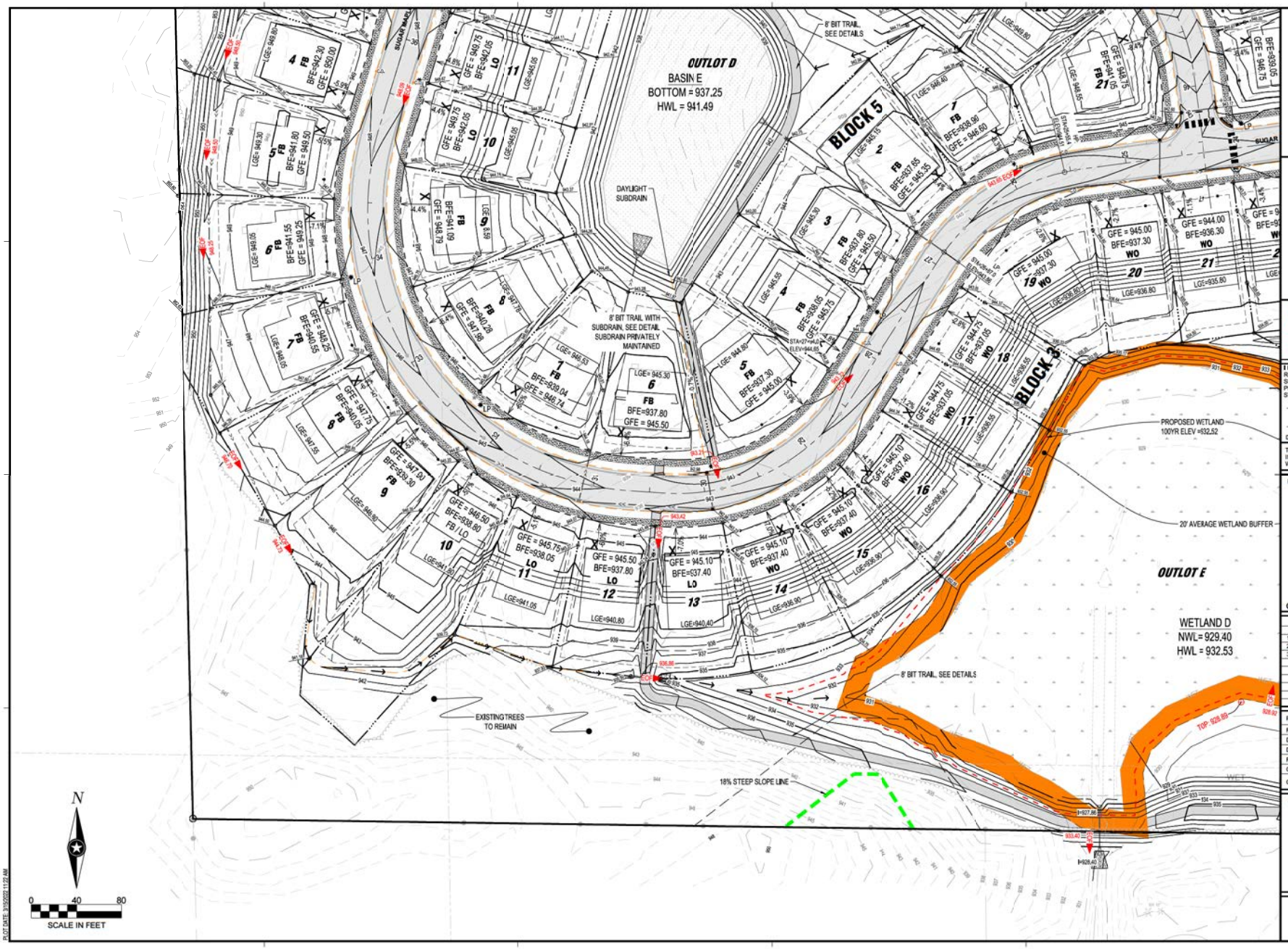
GRADING PLAN (NE)

SHEET

60 OF 77

PRELIMINARY NOT FOR CONSTRUCTION PRELIMINARY NOT FOR CONSTRUCTION

P_GT DATE: 3/15/2022 11:22 AM



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PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

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ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

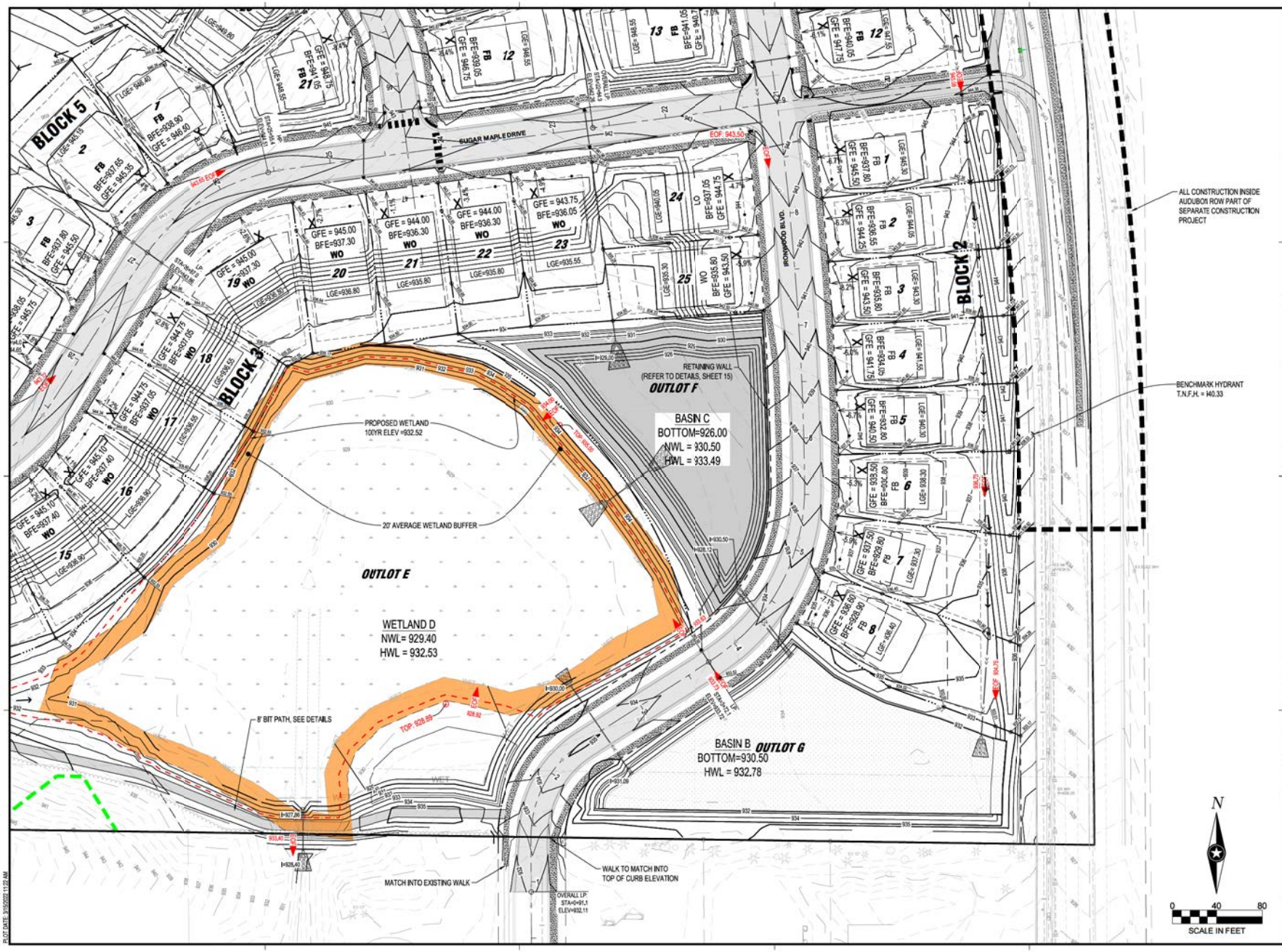
GRADING PLAN (SW)

SHEET

61 OF 77

PRELIMINARY NOT FOR CONSTRUCTION PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/15/2022 11:22 AM



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LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

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2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

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DESIGNED BY	JRS
REVIEWED BY	JDF
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CLIENT PROJECT NO.	-

TITLE

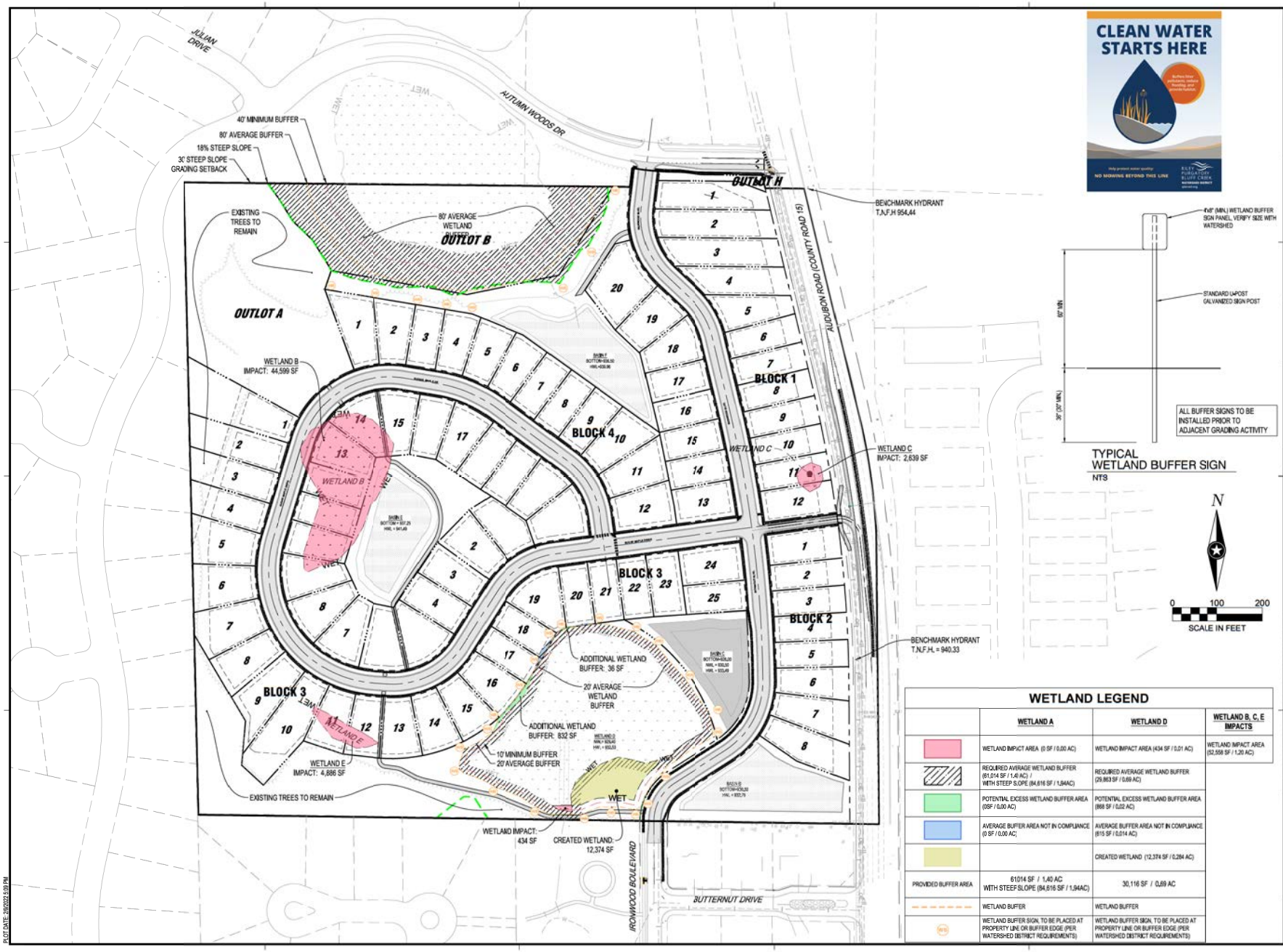
GRADING PLAN (SE)

SHEET

62 OF 77

PRELIMINARY NOT FOR CONSTRUCTION PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 3/15/2022 11:22 AM



TYPICAL
WETLAND BUFFER SIGN
NTS

WETLAND LEGEND

	WETLAND A	WETLAND D	WETLAND B, C, E IMPACTS
	WETLAND IMPACT AREA (0 SF / 0.00 AC)	WETLAND IMPACT AREA (434 SF / 0.01 AC)	WETLAND IMPACT AREA (52,558 SF / 1.20 AC)
	REQUIRED AVERAGE WETLAND BUFFER (61,014 SF / 1.40 AC) / WITH STEEP SLOPE (84,616 SF / 1.94AC)	REQUIRED AVERAGE WETLAND BUFFER (29,863 SF / 0.69 AC)	
	POTENTIAL EXCESS WETLAND BUFFER AREA (0SF / 0.00 AC)	POTENTIAL EXCESS WETLAND BUFFER AREA (868 SF / 0.02 AC)	
	AVERAGE BUFFER AREA NOT IN COMPLIANCE (0 SF / 0.00 AC)	AVERAGE BUFFER AREA NOT IN COMPLIANCE (615 SF / 0.014 AC)	
		CREATED WETLAND (12,374 SF / 0.284 AC)	
PROVIDED BUFFER AREA	61,014 SF / 1.40 AC WITH STEEP SLOPE (84,616 SF / 1.94AC)	30,116 SF / 0.69 AC	
	WETLAND BUFFER	WETLAND BUFFER	
	WETLAND BUFFER SIGN, TO BE PLACED AT PROPERTY LINE OR BUFFER EDGE (PER WATERSHED DISTRICT REQUIREMENTS)	WETLAND BUFFER SIGN, TO BE PLACED AT PROPERTY LINE OR BUFFER EDGE (PER WATERSHED DISTRICT REQUIREMENTS)	

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PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
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3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 WETLAND
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

WETLAND BUFFER AND SIGNAGE

SHEET

65 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 2/9/2022 5:09 PM

RESTORATION SCHEDULE

SEED MIX	QTY	DESCRIPTION
	67,562 SF	EMERGENT WETLAND MIX (MNDOT 34-181)
	95,699 SF	MESIC PRAIRIE GENERAL (MNDOT 35-241)
	105,925 SF	STORMWATER SOUTH AND WEST (MNDOT 33-261)
	64,491 SF	WET MEADOW SOUTH & WEST MX (MNDOT 34-271)

SOD	QTY	DESCRIPTION
	855,575 SF	SALT TOLERANT SOD

CODE REQUIREMENTS SUMMARY

STREET TREES REQUIREMENTS:
1 OVERSTORY TREE ON EACH SIDE OF THE STREET FOR EVERY 50 FEET OF CENTERLINE.
9,370 LF / 50 = (188) TREES
- TREES REQUIRED = 188
- TREES PROVIDED = 188

SCREEN REQUIREMENTS:
BERM REQUIRED ALONG ARTERIALS AND COLLECTORS WITH PLANT MATERIAL TO PROVIDE A VISUAL SCREEN.
- TREES PROVIDED FOR SCREENING: 76

EXISTING TREES:
- (722) SURVEYED TREES MEETING ORDINANCE THRESHOLD
- (148) TOTAL PROPOSED REMOVALS

SIGNIFICANT TREES:
- (262) TOTAL TREES
- (46) PROPOSED REMOVALS, (7) OF WHICH ARE DEAD

SOD REQUIRED IN RIGHT-OF-WAY AND IN FRONT YARDS.
SOD TO BE PLACED BY BUILDER WITH HOME CONSTRUCTION

PLANT SCHEDULE

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	SIZE	ROOT
AC	8	ABIES CONCOLOR WHITE FIR	6' HT MIN	B & B
AF	14	ABIES FRASERI FRASER FIR	6' HT MIN	B & B
PB	14	PICEA GLAUCA DENSATA BLACK HILLS SPRUCE	6' HT MIN	B & B
PN	17	PINUS NIGRA AUSTRIAN PINE	6' HT MIN	B & B
PR	14	PINUS RESINOSA RED PINE	6' HT MIN	B & B
TF	13	THUJA OCCIDENTALIS 'TECHNY' TECHNY ARBORVITAE	6' HT MIN	B & B

OVERSTORY TREES	QTY	BOTANICAL / COMMON NAME	SIZE	ROOT
AM	17	ACER X FREEMANII 'FIREFALL' FIREFALL MAPLE	2.5" CA.	B & B
AX	15	AESCULUS X 'AUTUMN SPLENDOR' AUTUMN SPLENDOR BUCKEYE	2.5" CA.	B & B
BC	17	BETULA NIGRA 'CULLY' TM HERITAGE RIVER BIRCH	2.5" CA.	B & B
CS	11	CATALPA SPECIOSA NORTHERN CATALPA	2.5" CA.	B & B
GT	26	GLEDITSIA TRIACANTHOS F. INERMIS THORNLESS HONEY LOCUST	2.5" CA.	B & B
GD	17	GYMNOCLADUS DIOICA 'ESPRESSO' KENTUCKY COFFEETREE	2.5" CA.	B & B
MA	15	MAACKIA AMURENSIS AMUR MAACKIA	2.5" CA.	B & B
OV	20	OSTRYA VIRGINIANA AMERICAN HOPHORNBEAM	2.5" CA.	B & B
QA	4	QUERCUS ALBA WHITE OAK	2.5" CA.	B & B
QB	12	QUERCUS BICOLOR SWAMP WHITE OAK	2.5" CA.	B & B
QE	6	QUERCUS ELLIPSOIDALIS NORTHERN PIN OAK	2.5" CA.	B & B
QO	15	QUERCUS ELLIPSOIDALIS 'BAILSKIES' TM MAJESTIC SKIES PIN OAK	2.5" CA.	B & B
QC	12	QUERCUS ROBUR X ALBA 'CRIMSCHMIDT' TM CRIMSON SPIRE OAK	2.5" CA.	B & B
QR	4	QUERCUS RUBRA RED OAK	2.5" CA.	B & B
TG	20	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LITTLELEAF LINDEN	2.5" CA.	B & B
PE	23	ULMUS 'PATRIOT' PATRIOT ELM	2.5" CA.	B & B

N

0 100 200
SCALE IN FEET

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 LANDSCAPE
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

RESTORATION AND PLANTING PLAN

SHEET

66 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 1/27/2022 11:10 AM

PLANT SCHEDULE

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	SIZE	ROOT
AC	8	ABIES CONCOLOR WHITE FIR	6' HT MIN	B & B
AF	14	ABIES FRASERI FRASER FIR	6' HT MIN	B & B
PB	14	PICEA GLAUCA DENSATA BLACK HILLS SPRUCE	6' HT MIN	B & B
PN	17	PINUS NIGRA AUSTRIAN PINE	6' HT MIN	B & B
PR	14	PINUS RESINOSA RED PINE	6' HT MIN	B & B
TT	13	THUJA OCCIDENTALIS 'TECHNY' TECHNY ARBORVITAE	6' HT MIN	B & B

OVERSTORY TREES	QTY	BOTANICAL / COMMON NAME	SIZE	ROOT
AM	17	ACER X FREEMANII 'FIREFALL' FIREFALL MAPLE	2.5" CA.	B & B
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CHASKA MINNESOTA

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3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 OVERALL
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

PLANTING AND UTILITY PLAN (OVERALL)

SHEET

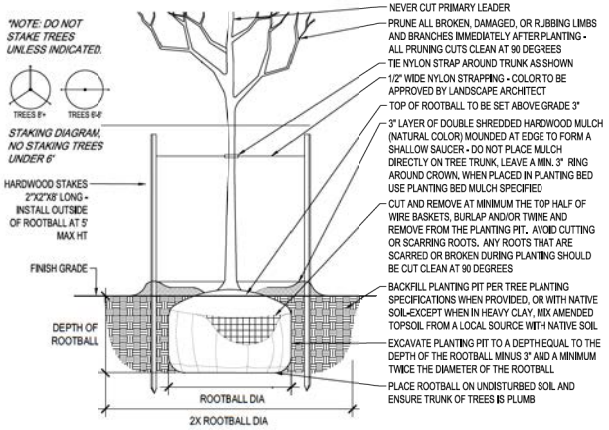
67

OF 77

PRELIMINARY NOT FOR CONSTRUCTION

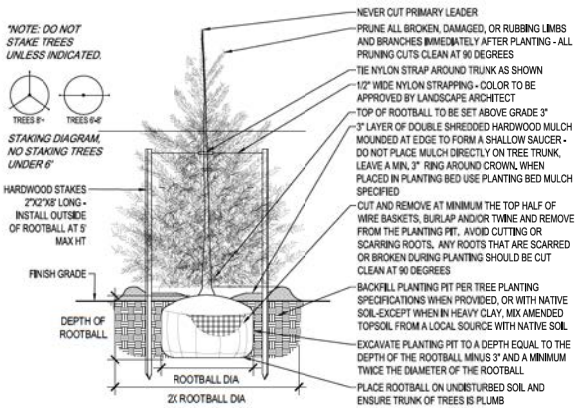
PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 12/21/2021 10:24 AM



DECIDUOUS TREE PLANTING DETAIL

SCALE: 1" = 1'-0



CONIFER / EVERGREEN TREE PLANTING DETAIL

SCALE: 1" = 1'-0

GENERAL PLANTING NOTES

1. COORDINATE LOCATION OF ALL UTILITIES (LINES, DUCTS, CONDUITS, SLEEVES, FOOTINGS, ETC.) WITH LOCATIONS OF PROPOSED LANDSCAPE ELEMENTS . CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE PRIOR TO WORK.
2. SAVE AND PROTECT ALL EXISTING TREES NOT NOTED TO BE REMOVED.
3. REMOVE ALL CONSTRUCTION DEBRIS AND MATERIALS INJURIOUS TO PLANT GROWTH FROM PLANTING PITS AND BEDS PRIOR TO BACKFILLING WITH PLANTING MIX.
4. ANY AREAS OUTSIDE THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO OWNER.
5. LAWN AREAS SHALL HAVE 6" MINIMUM DEPTH OF TOPSOIL OR ORGANIC MATTER SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE TREATMENT WHEREVER TOPSOIL HAS BEEN REMOVED. TOPSOIL SHALL BE COMPACTED TO 85% MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AND SHALL MEET WATERSHED DISTRICT'S (RPBCWD) TOPSOIL DEFINITION.
6. REFER TO PLANTING DETAILS PLAN FOR AMENDED SOIL DEPTH IN PLANTING BEDS AND SURROUNDING TREES.
7. FIELD STAKE PLANTINGS ACCORDING TO PLAN. OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO INSTALLATION. OWNER RESERVES THE RIGHT TO REVISE PLANTING LAYOUT AT TIME OF INSTALLATION.
8. ALL PLANT MATERIALS SHALL BE TRUE TO THEIR SCIENTIFIC NAME AND SIZE AS INDICATED IN THE PLANT SCHEDULE.
9. IF DISCREPANCIES EXIST BETWEEN THE NUMBER OF PLANTS DRAWN ON THE PLANTING PLAN AND THE NUMBER OF PLANTS IN THE SCHEDULE, THE PLANTING PLAN SHALL GOVERN.
10. OWNER RESERVES THE RIGHT TO REVISE QUANTITIES TO SUIT BUDGET LIMITATIONS. CONTRACTOR'S UNIT BID PRICES SHALL PREVAIL FOR ANY CHANGES IN QUANTITIES.
11. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE, AND ONLY AFTER WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE AND OWNER.
12. ALL PLANT MATERIALS MUST CONFORM TO AMERICAN STANDARDS FOR NURSERY STOCK (A.N.S.I.), LATEST EDITION PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, WASHINGTON D.C. LARGER SIZED PLANT MATERIALS OF THE SPECIES LISTED MAY BE USED IF THE STOCK CONFORMS TO A.N.S.I.
13. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN A LIVE AND HEALTHY GROWING CONDITION FOR ONE FULL GROWING SEASON (ONE YEAR) AFTER FINAL PROJECT ACCEPTANCE OR SHALL BE REPLACED FREE OF CHARGE WITH THE SAME GRADE AND SPECIES. ALL TREES SHALL HAVE A STRONG CENTRAL LEADER.
14. FOR TREES PROVIDE DOUBLE SHREDDED HARDWOOD MULCH RING (NATURAL COLOR) AT 3" DEPTH PER PLANTING DETAILS.
15. ALL TURF AREAS DISTURBED BY CONSTRUCTION SHALL BE SODDED OR SEEDED PER PLANS.

AUDOBON ROAD

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LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

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CLIENT PROJECT NO.	-

TITLE

PLANTING NOTES AND DETAILS

SHEET

68 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

PLOT DATE: 1/27/2022 11:10 AM

SITE PREPARATION

HERBICIDE APPLICATION

1. Weed Identification: Site evaluation shall be conducted prior to site preparation to determine the undesirable and non-native species of trees, shrubs, vines, and herbaceous plants on site. This site evaluation will either be done by the Contractor or the Architect/Engineer's Representative.
2. Weed Eradication: All existing undesirable and non-native plant vegetation should be killed and/or removed from the site with multiple herbicide applications. Common weed species found in wetlands include Reed Canary Grass, non-native Phragmites, and Cattails.
3. Herbicide Selection: In riparian or wetland areas, water-safe herbicides approved for use near water must be used. Pre-emergent herbicides should not be used. For more detailed guidance on herbicide selection, see Appendix 5B of the BWSR Minnesota Wetland Restoration Guide.
3. Herbicide Application: All herbicides should be applied in accordance with state and federal regulations and manufacturer's instructions. Herbicides should not be applied during or within 72 hours of a rain event or when wind velocities exceed 5 miles per hour. Ideally, 3 herbicide applications would be conducted in spring, summer, and fall with seeding occurring in early winter. This ideal schedule may need to be adapted to align with the construction timeline.

SEEDBED PREPARATION

1. All restoration areas should be free of any rocks, crop residue, trash, or debris. Mow or harvest oats if used as temporary erosion control.
2. Construction and grading activities can compact the soil. Prior to seeding, any compacted areas must be prepared to provide a loose, smooth, evenly textured seedbed. A good seedbed is one that an adult footprint sinks into the soil about ¼ to ½ inch. If the seedbed is too compacted, discing is recommended. On slopes, operate equipment at right angles to the direction of surface drainage. The disc should not invert the soil. Avoid soil inversion and tilling to preserve soil biology and prevent emergence of weed seeds.
3. Discing may need to be followed by rolling or cultipacking to firm the seedbed. If the seedbed is too loose and fluffy, seeds will be placed too deep for proper germination.

WETLAND SEEDING

1. Seeding will only be conducted after all grading, construction, and site preparation activities are completed. The Contractor must wait 3 days after glyphosate application to seed native species. If other herbicides have been used on site, consult the manufacturer's recommendation for safe re-entry period prior to seeding. Some herbicides can stay in the soil for months and hinder the germination of native plants.
2. Seeding should be conducted by hand broadcasting, mechanical broadcasting, or drilling.
3. The Contractor is responsible for calibrating equipment to deliver seed at the specified rate and to operate equipment in a manner necessary to evenly distribute the seeds over the specified area at the specified rate.
4. Seeded areas may have one pass with a roller or cultipacker to firm the soil and ensure good seed-to-soil contact.
5. Do not apply fertilizers in the areas seeded with native grasses and wildflowers.
6. If necessary, plant a cover crop and/or apply Type 3 weed-free straw mulch for temporary erosion control. Use Oats as a cover crop in spring and summer; use Winter Wheat as a cover crop in fall.

TABLE 1: WET MEADOW SEED MIX 34-271

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
GRASSES					
Fringed Brome	*Bromus ciliatus*	1.23	1.10	9.18%	445
Bluejoint Grass	*Calamagrostis canadensis*	0.06	0.05	0.41%	500
Virginia Wild Rye	*Elymus virginicus*	1.12	1.00	8.37%	155
Rice Cut Grass	*Leersia oryzoides*	0.28	0.25	2.07%	310
Tall Manna Grass	*Glyceria grandis*	0.17	0.15	1.26%	390
Fowl Manna Grass	*Glyceria striata*	0.11	0.10	0.83%	330
Fowl Bluegrass	*Poa palustris*	0.39	0.35	2.88%	1650
	Total Grasses	**3.36**	**3.00**	**25.00%**	**3780**
SEDGES + RUSHES					
Bristly Sedge	*Carex comosa*	0.24	0.21	1.78%	236
Pointed Broom Sedge	*Carex scoparia*	0.06	0.05	0.43%	160
Awl-fruited Sedge	*Carex stipata*	0.19	0.17	1.40%	210
Tussock Sedge	*Carex stricta*	0.03	0.03	0.21%	050
Fox Sedge	*Carex vulpinoidea*	0.16	0.14	1.13%	500
Path Rush	*Juncus tenuis*	0.04	0.04	0.34%	1500
Dark Green Bulrush	*Scirpus atrovirens*	0.20	0.18	1.48%	3000
Woolgrass	*Scirpus cyperinus*	0.09	0.08	0.67%	5000
	Total Sedges and Rushes	**1.01**	**0.90**	**7.44%**	**10656**
FORBS					
Marsh Milkweed	*Asclepias incarnata*	0.27	0.24	2.03%	043
Common Boneset	*Eupatorium perfoliatum*	0.02	0.02	0.18%	130
Grass-leaved Goldenrod	*Euthamia graminifolia*	0.01	0.01	0.06%	100
Spotted Joe Pye Weed	*Eutrochium maculatum*	0.02	0.02	0.18%	075
Sneezeweed	*Helhnium autumnale*	0.03	0.03	0.23%	130
Sawtooth Sunflower	*Helianthus grosseserratus*	0.04	0.04	0.30%	020
Great Blue Lobelia	*Lobelia siphilitica*	0.02	0.02	0.13%	290
Blue Monkey Flower	*Mimulus ringens*	0.01	0.01	0.07%	680
Virginia Mountain Mint	*Pycnanthemum virginianum*	0.07	0.06	0.53%	510
Giant Goldenrod	*Solidago gigantea*	0.02	0.02	0.14%	150
Eastern Panicled Aster	*Symphyotrichum lanceolatum*	0.03	0.03	0.22%	150
Red-stemmed Aster	*Symphyotrichum puniceum*	0.19	0.17	1.42%	500
Tall Meadow Rue	*Thalictrum dasycarpum*	0.01	0.01	0.12%	011
Blue Vervain	*Verbena hastata*	0.15	0.13	1.12%	481
Ironweed	*Vernonia fasciculata*	0.03	0.03	0.28%	030
Culver's Root	*Veronicastrum virginicum*	0.01	0.01	0.12%	420
Golden Alexanders	*Zizia aurea*	0.28	0.25	2.06%	100
	Total Forbs	**1.23**	**1.10**	**9.19%**	**3800**
COVER CROP					
Oats	*Avena sativa*	7.85	7.00	58.37%	312
	Total Cover Crop	**7.85**	**7.00**	**58.37%**	**312**
	Totals:	**13.45**	**12.00**	**100.00%**	**18548**
Purpose:	Wet meadow / Sedge meadow reconstruction for wetland mitigation or ecological restoration projects				
Planting Area:	Tallgrass Aspen Parklands, Prairie Parkland, and Eastern Broadleaf Forest Provinces. MnDOT Districts 2(west), 3B, 4, Metro, 6, 7 & 8.				

VEGETATION ESTABLISHMENT

YEAR 1

1. During the first growing season after planting, all seeded areas must be kept mowed to the extent possible to help control weed growth, allow sunlight to penetrate to the soil surface, and encourage root development on the native perennials. Wet areas should be mowed along with the upland and buffer areas; however, the equipment shall not cause ruts or compact the wet soil. Some sites may be too wet to allow mowing without causing ruts or compaction in which case it is allowable not to mow the area.
2. Mow to a height of 6-8 inches whenever the vegetation reaches 10-12 inches tall, approximately once every 1-4 weeks depending on the rate of vegetation growth.
3. Use of a flail mower or stalk chopper to prevent smothering of native plant seedlings. If a flail mower or stalk chopper is not available, the vegetation must by hayed/bagged and removed from the site, or mowing must be frequent enough to ensure cut vegetation is small enough to compost itself back into the site without creating a thick mulch and negatively effecting the native plant seedlings.
4. Spot-treat weeds such as Reed Canary Grass and Canada Thistle with an appropriate herbicide.
5. Do not hand-pull any weeds during the first growing season as to not disturb the soil or native seedlings.

LONG-TERM MANAGEMENT

YEAR 2

1. Mow to a height of 6-8 inches up to two times in the spring and early summer to help control weed growth.
2. Spot-treat aggressive perennial weeds such as Reed Canary Grass and Canada Thistle with an appropriate herbicide.

YEAR 3 + BEYOND

1. Periodically monitor wetland for weeds and hydrological issues at least once per year. Healthy stands of native vegetation are important to provide wildlife habitat, capture nutrient runoff, and reduce peak flows during large precipitation events. It is important to ensure that vegetation is sufficiently established, maintains diversity levels, and is out-competing invasive species. On-site observations are necessary to spot problems and get them resolved as soon as possible.
2. Spot-treat weeds such as Reed Canary Grass and Canada Thistle with an appropriate herbicide.
3. Consider periodic disturbance such as prescribed fire, mowing, or grazing once every 3-5 years. By necessity, some amount of flexibility is needed when managing wetland restorations. Changes in management strategies and timing are often necessary to react to changing or unexpected project conditions, whether they are due to natural circumstances or manmade circumstances. Adaptive management solutions tailored to site observations are encouraged.

ISG

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 WETLAND REST
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

RESTORATION AND PLANTING PLAN (WETLAND D)

SHEET

69 OF 77

PRELIMINARY NOT FOR CONSTRUCTION

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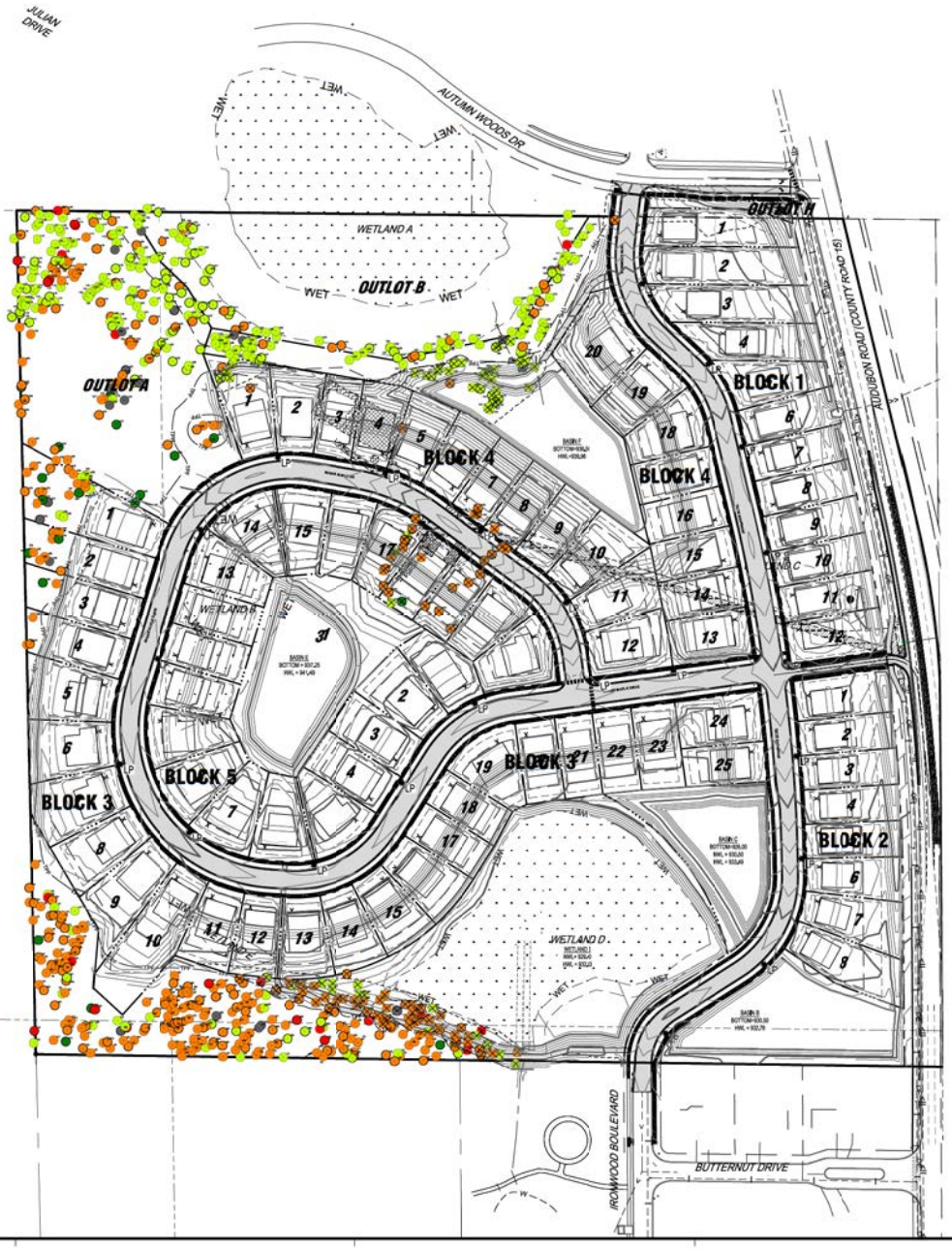
PLOT DATE: 1/3/2022 11:47 AM



TREE REMOVAL LEGEND

SYMBOL	DESCRIPTION
	EXCELLENT
	GOOD
	FAIR
	POOR
	DEAD

N

0 100 200

SCALE IN FEET

ISG

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PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 TREE PRES
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

OVERALL TREE PRESERVATION

SHEET

70

OF 77

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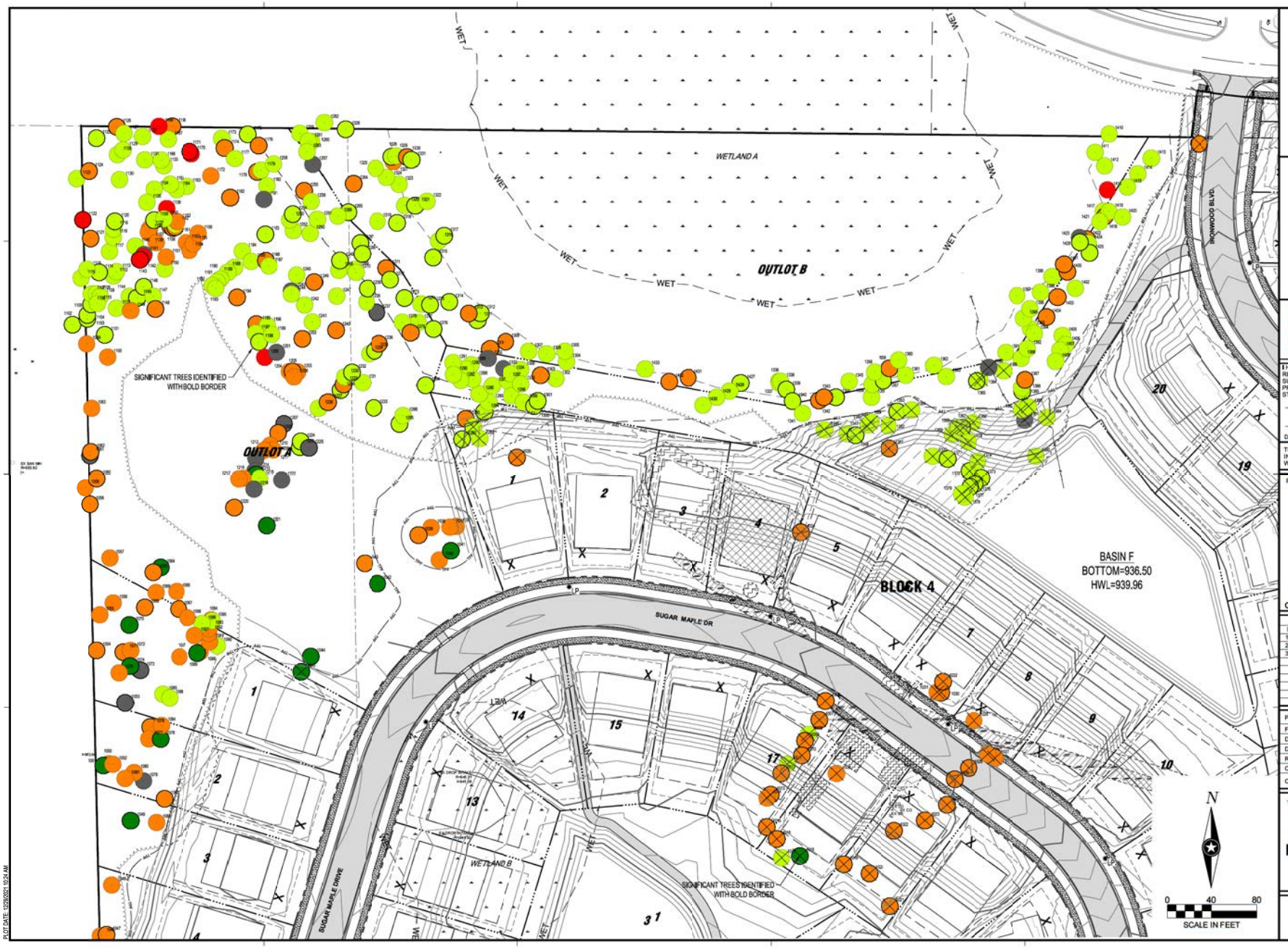

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JERREMY D. FOSS

DATE _____ LIC. NO. 55871

PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 TREE PRES
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

TREE PRESERVATION A

SHEET

71 OF 77

PRELIMINARY NOT FOR CONSTRUCTION PRELIMINARY NOT FOR CONSTRUCTION

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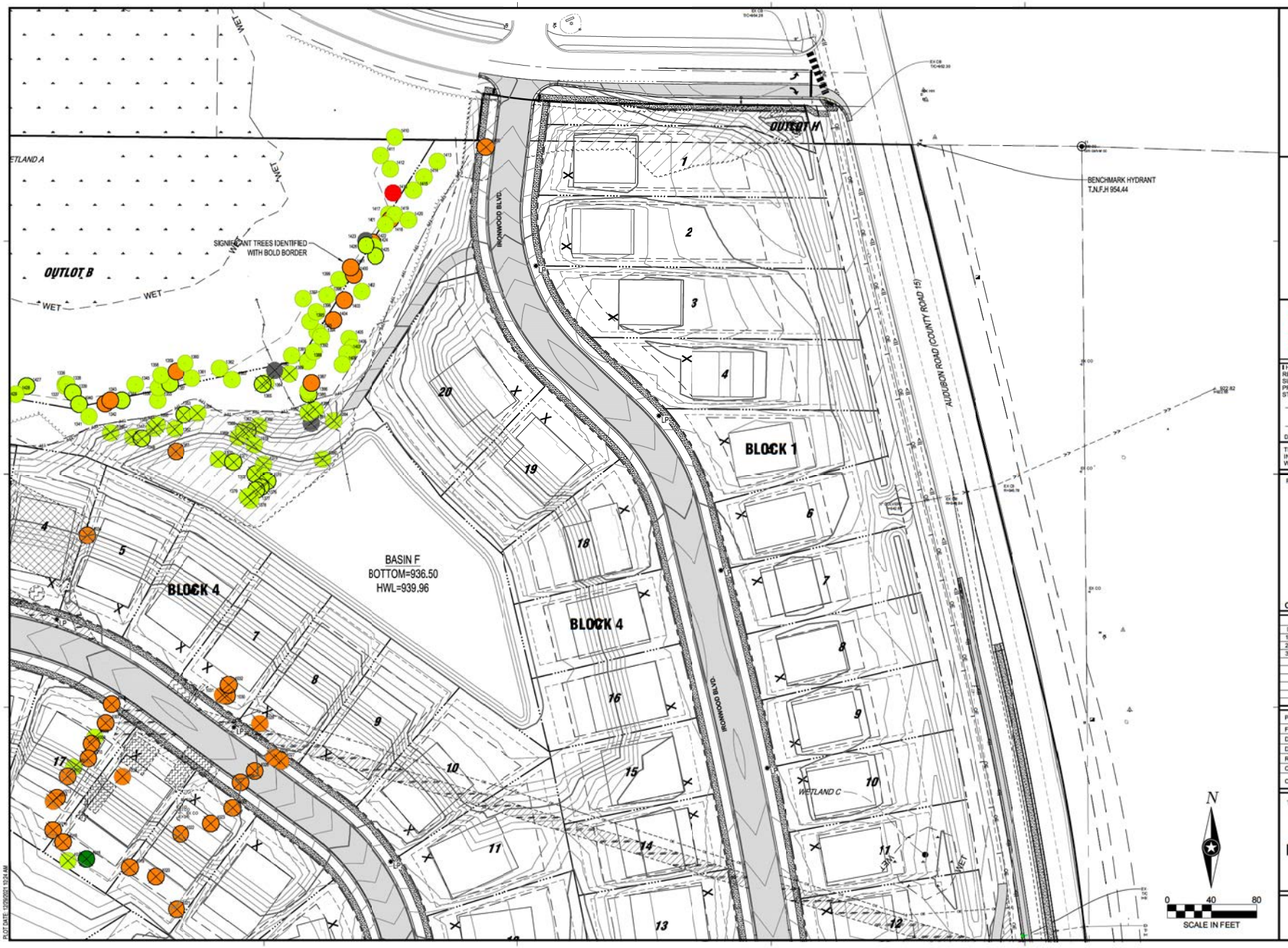

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PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 TREE PRES
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

TREE PRESERVATION B

SHEET

72 OF 77

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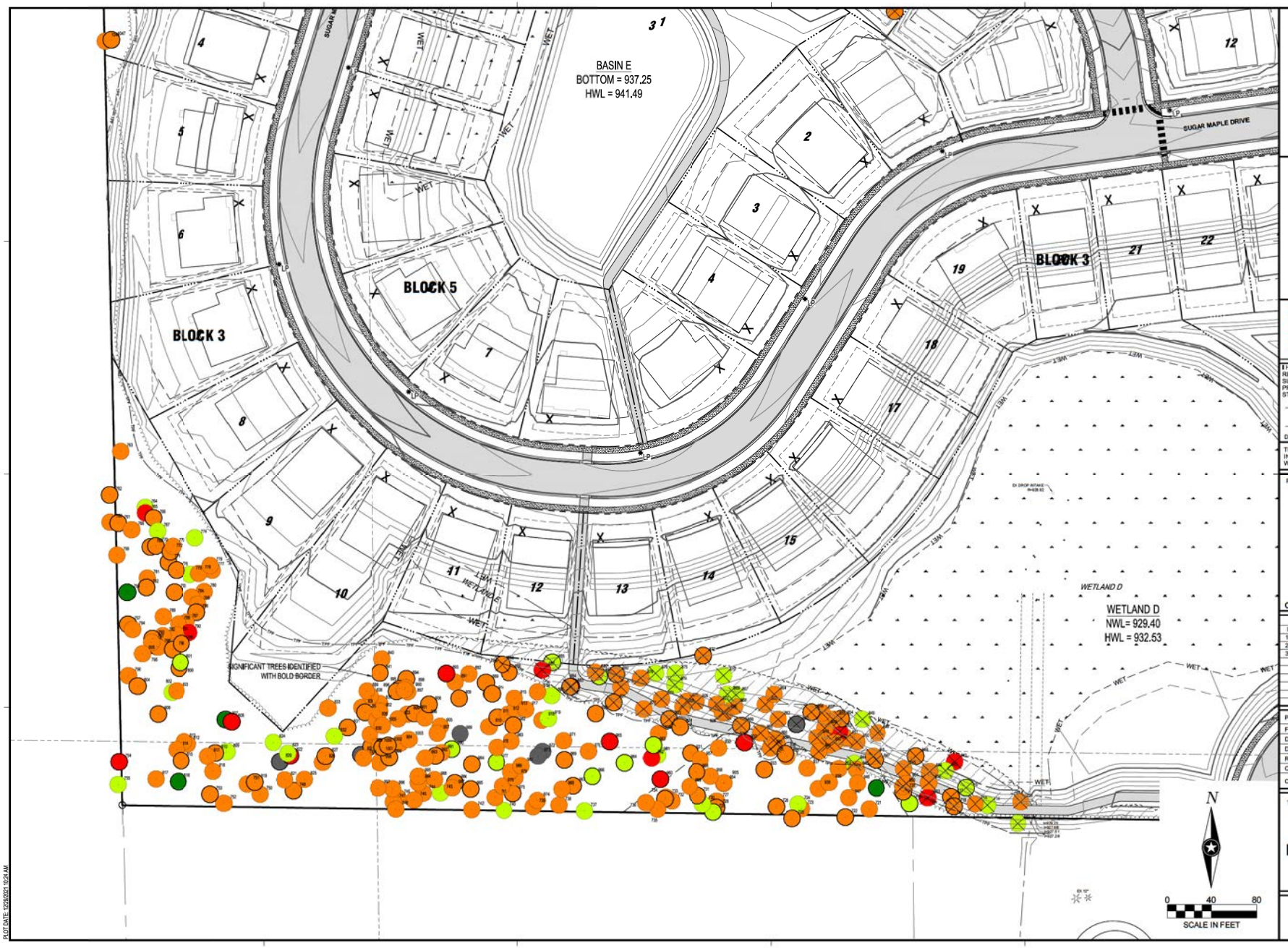

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PROJECT

LENNAR

RESERVE AT AUTUMN WOODS

CHASKA MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
1/27/22	CITY COMMENTS	JRS
2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 TREE PRES
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

TREE PRESERVATION C

SHEET

73 OF 77

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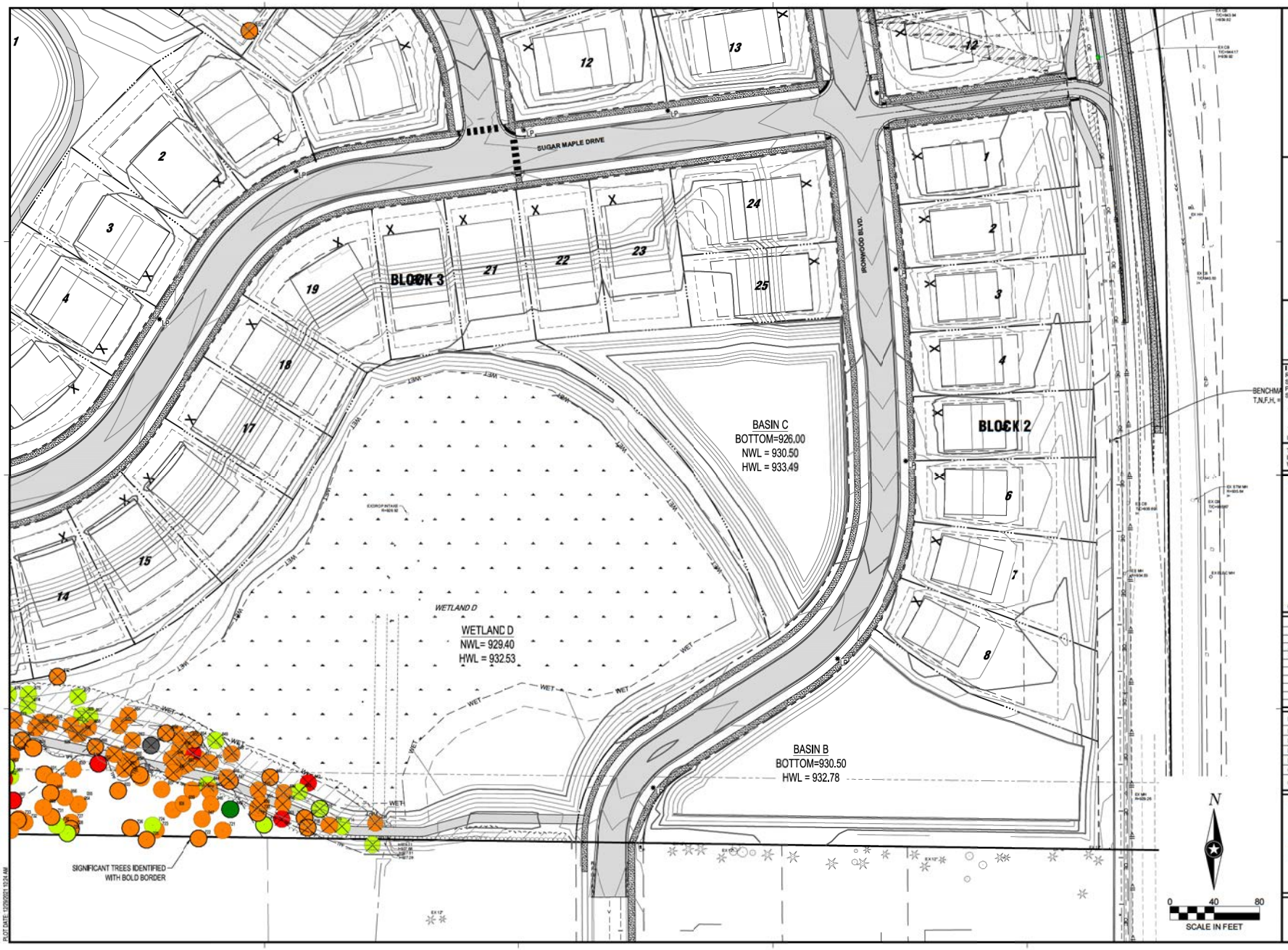

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CHASKA MINNESOTA

REVISION SCHEDULE

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2/04/22	CITY COMMENTS	JRS
3/17/22	CITY & WATERSHED COMMENTS	TTK

PROJECT NO.	21-24984
FILE NAME	24984 TREE PRES
DRAWN BY	JRS
DESIGNED BY	JRS
REVIEWED BY	JDF
ORIGINAL ISSUE DATE	01/03/22
CLIENT PROJECT NO.	-

TITLE

TREE PRESERVATION D

SHEET

74

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