

Reserve at Autumn Woods

Natural Resources Memorandum



To: Riley Purgatory Bluff Creek Watershed District
From: ISG
Date: April 22, 2022
Subject: Reserve at Autumn Woods Natural Resources Memorandum
cc: Lennar Corporation

This memorandum serves to address concerns of the watershed district with regard to natural resources associated with the planned Reserve at Autumn Woods development in the City of Chaska.

WETLANDS

ECOLOGICAL RESTORATION

The wetland delineation for the Wagner property identified 5 wetlands onsite (Wetlands A-E). Wetland A is surrounded by a woodland, while the other 4 wetlands (B-E) are located within a conventional agriculture field. Historically, these 4 wetlands have been degraded by agricultural activity. The field has been tilled and drained, altering the natural hydrology onsite. Continuous cropping has removed any historic native wetland vegetation, and likely has destroyed the native seed bank as well. Disturbance and nutrification have encouraged invasive species like Reed Canary Grass and Hybrid Cattails to establish onsite, causing further degradation of the wetlands.

Although development of the Wagner property will have impacts for the three smallest wetlands, the two largest wetlands will be preserved or restored as a part of this project. Wetland A, consisting of 1.3 acres onsite and extending offsite, will be preserved. The largest wetland, Wetland D covering 2.5 acres, will be restored both in terms of vegetation and hydrology. Vegetation will be restored by eradicating any invasive species present onsite, installing diverse native seed mixes, and adaptive management to ensure the native vegetation community establishes as planned. Hydrology will be restored by raising the outlet elevation of the wetland, which was historically altered by ditching, as well as by disabling the subsurface drain tile within the basin. An experienced, qualified contractor will work with the developer to ensure the wetland restoration is a success. These two wetlands represent a total of 3.8 acres, over 75% of the total wetland acreage onsite, which will be naturally vegetated following construction. Prior to this project, only 25% of the total wetland acreage onsite existed in a naturally vegetated state.

TREE CANOPY

NATIVE + KEYSTONE SPECIES

The current plan will preserve over 8.3 acres of existing tree canopy onsite to protect the natural state of those areas and maintain the ecological and aesthetic value of those areas. This includes preservation of 583 tagged trees which does not account for saved trees adjacent to the north existing wetland that were unable to be surveyed. In addition, of the 22 tree species included in the landscape plan onsite, 14 are straight-species or cultivars of trees native to Minnesota. An additional 3 species are native to North America. The remaining 4 species are non-native trees chosen for their resiliency and adaptability in urban environments.

To support the local ecology onsite, 'keystone species' were included in the landscape plan. Keystone species are crucial components of complex, connected food webs because they support a high diversity and abundance of insects, primary consumers in the trophic pyramid. These primary consumers provide a strong foundation for the food web. According to Douglas

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The logo for ISG (Institute for Science and Globalization) is located in the top right corner. It consists of the letters "ISG" in a white, sans-serif font, centered within a dark gray square.

Tallamy, entomologist at the University of Delaware, just 5% of our native plant genera host roughly 75% of our caterpillar species, and 96% of our terrestrial birds rely on insects like caterpillars to feed their young.

Oaks are the quintessential keystone trees of North America because they support the most insect biodiversity, up to 447 species of Lepidoptera (butterflies and moths). Five species of native oak trees were included in the plan to support the local ecology of the area.

STORMWATER

The proposed site is approximately 53 acres and consists of 11 separate drainage areas. Stormwater infrastructure is designed to meet rate control and water quality requirements set forth by the City of Chaska, the Riley Purgatory Bluff Creek Watershed District (RPBCWD), and the Minnesota Pollution Control Agency (MPCA). The site contains one wet pond (Basin C) and three infiltration basins (Basins B, E, and F). Basin C primarily discharges to Basin B, but also contains a higher outlet with a skimmer structure that discharges excess flows to Wetland D, supporting the hydrology restoration of the wetland. The proposed project as designed not only meets but exceeds treatment and rate control requirements.

The stormwater infrastructure will be vegetated with a diverse native seed mix that includes 23 different species. These native plantings will increase the biodiversity onsite and help support wildlife like birds and butterflies. In addition, the native plants once established will have deeper and more extensive root systems than non-native species that prevent erosion while also further enhancing the infiltration rates and filtration and nutrient uptake within these stormwater features.

A Minnesota Routine Assessment Methodology (MnRAM) functional assessment was completed for the proposed stormwater infrastructure utilizing assumptions such as established native vegetation. The results are included with this memo and include rankings of “High” for Vegetative Diversity/Integrity and Flood/Stormwater/Attenuation and “Medium” for all other applicable functions. The farmed wetlands onsite ranked “Low” for all applicable functions assessed with the exception of a “Medium” ranking for Commercial Uses due to the current agricultural land use. Therefore, it can be concluded that the established stormwater infrastructure planned for the site will provide greater functions and values than the existing farmed wetlands onsite. Lastly, the area of existing farmed wetlands impacted is 1.20 acres while the new infiltration basin areas will provide 1.87 acres of surface area. This is an increase in the quantity of the vegetative diversity from the existing condition.

MnRAM 3.4

FOR EVALUATING WETLAND FUNCTIONS

MnRAM 3.4 is designed to help assess functions and values associated with Minnesota wetlands. The Comprehensive Guidance document (available at www.bwsr.state.mn.us) contains explanations, references, definitions, and a ranking formula for each function. After using this tool, the Management Classification Reference will help to organize the results for managing local wetland resources.

GENERAL INFORMATION:

Project Number or Name: Reserve at Autumn Wood	Wetland Number: Proposed Basin E
Location: County; Carver Section; 27 , Township T116N Range R23W	
Major Watershed: 33 Subwatershed: 33116	City: Chaska
Evaluator(s): Jeremy Groskreutz	Date of Site Visit:

SCOPE AND LIMITATIONS:

- Note unusual climatic conditions experienced during this assessment due to seasonal considerations and/or unusual existing hydrologic and climatologic conditions:
- Describe the **purpose** of this assessment: inventory/planning/monitoring/regulatory/classification Regulatory

SUMMARY TABLE

ACTUAL CONDITIONS	FUNCTIONAL INDEX*		
	N/A	Functional Index Score	Comments
FUNCTIONS (and Related Values)			
Vegetative Diversity/Integrity**		High	
Plant Comm. #1			
Plant Comm. #2			
Plant Comm. #3			
Maintenance of Characteristic Hydrologic Regime		Medium	
Flood/Stormwater/Attenuation		High	
Downstream Water Quality		Medium	
Maintenance of Wetland Water Quality		Medium	
Shoreline Protection		N/A	
Maintenance of Characteristic Wildlife Habitat Structure		Medium	
Maintenance of Characteristic Fish Habitat		N/A	
Maintenance of Characteristic Amphibian Habitat		N/A	
Aesthetics/Recreation/Education/Cultural		Medium	
Commercial Uses		N/A	
Groundwater Interaction			
Additional Information			
Wetland Restoration Potential			
Sensitivity to Stormwater and Urban Development			
Additional Stormwater Treatment Needs			

*The functional index may be calculated manually using formulas in the Comprehensive Guidance.

**If more than 3 plant communities are present, use an additional summary table.

	Date	Wetland name / ID Proposed Basin E		Wetland name / ID		Wetland name / ID		Wetland name / ID	
	Special Features (from list, p.2--enter letter/s)	-		-		-		-	
#1	Community Number (circle each community which represents at least 10% of the wetland)	15B							
#2 & #3		~ Describe each community type individually below ~				~ Describe each community type individually below ~			
Plant Community #1	Community Type (wet meadow, marsh)	15B	Fresh(wet) Meadow	-	-	-	-	-	-
	Community Proportion (% of total)	100%							
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	H	1						
Plant Community #2	Community Type (wet meadow, marsh)	-	-						
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0						
Plant Community #3	Community Type (wet meadow, marsh)	-	-						
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0						
Plant Community #4*	Community Type (wet meadow, marsh)	-	-						
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0						
	Circular 39 Types (primary <TAB> others)								
	Cowardin Types								
	Photo ID								
	Highest rated community veg. div./integrity:	1.0	High						
	Average vegetative diversity/integrity:	1.00	High						
	Weighted Average veg. diversity/integrity:	1.00	High						
#4	Listed, rare, special plant species?	n	N						
#5	Rare community or habitat?	n	N						
#6	Pre-European-settlement conditions?	n	N						
Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]									
		Cover Class	Class Range						
		1	0 - 3%						
		2	3 - 10%						
		3	10 - 25%						
		4	25 - 50%						
		5	50 - 75%						
		6	75 - 100%						

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average

MnRAM #	Question Description	Rating
7	Hydrogeomorphology and Topography (circle one)	Depressional/Isolated
8	Maximum Water Depth (inches) : % inundation	0" : 0%
9	Local Watershed Area--immediate drainage (acres)	13.4
10	Estimated size of existing wetland (acres)	0.78
11	SOILS: Upland/Wetland (survey classification + site)	Wetland: Glencoe clay loam, 0 to 1 percent slopes / Upland: Lester-Kilkenny loams, 2 to 6 percent slopes, eroded
12	Outlet characteristics for flood retention	C
13	Outlet characteristics for hydrologic regime	A
14	Dominant upland land use (within 500 ft)	C
15	Soil condition (wetland)	A
16	Vegetation (% cover)	100%
17	Emerg. veg. flood resistance	B
18	Sediment delivery	A
19	<i>Upland soils (based on soil group)</i>	C
20	Stormwater runoff pretreatment & detention	A
21	<i>Subwatershed wetland density</i>	A
22	Channels/sheet flow	A
23	Adjacent naturalized buffer, average width (feet)	15 feet
24	Adjacent area management (to 50 ft.) (% of each, minimum 20%)	Full 30% Manicured 70% Bare 0%
25	Adjacent area diversity and structure (to 50 ft.) (% percent of each)	Native 30% Mixed 70% Sparse 0%
26	Upland area slope (to 50 ft.) (% in each category)	Gentle 70% Moderate 30% Steep 0%
27	<i>Downstream sensitivity/WQ protection</i>	B
28	Nutrient loading	B
29	Shoreline wetland	N
30	Shoreline - rooted vegetation (% cover)	N/A
31	Shoreline - wetland in-water width (in feet, average)	N/A
32	Shoreline - emergent veg. erosion resistance	N/A
33	Shoreline - erosion potential	N/A
34	Shoreline - bank protection/upslope veg.	N/A
35	<i>Rare Wildlife</i>	N
36	Scare/Rare/S1/S2 local community	N
37	Vegetation interspersed cover (see diagram 1)	N/A
38	Veg. community interspersed (see diagram 2)	N/A
39	Wetland detritus	C
40	Wetland interspersed on landscape	B
41	Wildlife barriers	C
42	Amph. breeding potential - hydroperiod	Inadequate
43	Amphibian breeding potential - fish presence	A
44	Amphibian & reptile overwintering habitat	N/A
45	Wildlife species (list)	
46	Fish habitat quality	N/A
47	Fish species (list)	
48	Unique/rare educ./cultural/rec. opportunity	N
49	Wetland visibility	A
50	Proximity to population	Y
51	<i>Public ownership</i>	A
52	Public access	B
53	Human influence on wetland	C
54	Human influence on viewshed	C
55	Spatial buffer	B
56	Recreational activity potential	C
57	Commercial crop--hydrologic impact	N/A
58	GW - Wetland soils	R
59	<i>GW - Subwatershed land use</i>	R
60	GW - Wetland size and soil group	R
61	GW - Wetland hydroperiod	R
62	GW - Inlet/Outlet configuration	R
63	<i>GW - Surrounding upland topographic relief</i>	D
64	Restoration potential w/o flooding	N
65	<i>Landowners affected by restoration</i>	N/A
66 A	Existing wetland size (acres) [same as #10]	N/A
66 B	Total wetland restoration size (acres)	N/A
66 C	Potential new wetland area (acres)=B-A	N/A
67	Average width of naturalized upland buffer (potential)	N/A
68	Ease of potential restoration	N/A
69	Hydrologic alteration type	N/A
70	Potential wetland type (Circ. 39)	N/A
71	Wetland sensitivity to stormwater	B
72	Additional stormwater treatment needs	B