



Memo

To: Environmental Board
From: Marty Asleson
Date: April 27, 2016
Re: Pre-Meeting Site

As we discussed at the last meeting it was decided that the Board would meet out by the Watermark site. I have attached a map of where Eagle Brook Church is. I will be in the Eagle Brook parking lot at 5:30 PM, on the evening of 4/27/16 prior to the Environmental Board meeting.



**City of Lino Lakes
Environmental Board Meeting**

**April 27, 2016
6:30 p.m.**

AGENDA

Pre-Meeting Field Visit: Mattamy Homes, Watermark Site. Meet on 77th and 20 Ave at 5:30 PM on April 27th before the Environmental Board Meeting.

1. Call to Order
2. Approval of Agenda
3. Approval of Minutes
4. Open Mike
5. Action Items
 - A. Mattamy Homes/Watermark Preliminary Plat Watermark PUD Residential Community
6. Discussion Items
 - A. Site Visit to Watermark Discussion
 - B. Earth Day Discussion
 - C. Annual Recycling Day, May 7th
 - D. Organics Recycling
 - E. Other Recycling Updates
7. Adjourn

**CITY OF LINO LAKES
ENVIRONMENTAL BOARD MINUTES**

| | |
|------------------------|--|
| DATE | : March 30, 2016 |
| TIME STARTED | : 6:32 P.M. |
| TIME ENDED | : 9:00 P.M. |
| MEMBERS PRESENT | : Barbra Bor, Paula Andrzejewski, Liz Kaufenberg, Nancie Klebba, Alex Schwartz, John Sullivan |
| MEMBERS ABSENT | : Steve Heiskary |
| STAFF PRESENT | : Marty Asleson, Aubrey Fonfara |

I. CALL TO ORDER AND ROLL CALL:

Ms. Bor called the Lino Lakes Environmental Board meeting to order at 6:32 p.m. on March 30, 2016.

II. APPROVAL OF AGENDA

Mr. Sullivan made a MOTION to approve the agenda with the above changes. Motion was supported by Ms. Klebba. Motion carried 6 - 0.

III. APPROVAL OF MINUTES:

Ms. Andrzejewski made a MOTION to approve the February 24, 2016 Meeting Minutes. Motion was supported by Mr. Schwartz. Motion carried 6 - 0.

IV. OPEN MIKE

Ms. Bor declared Open Mike at 6:34 p.m.

There was no one present for Open Mike.

Ms. Bor closed Open Mike at 6:34 p.m.

V. ACTION ITEM

A. NE Drainage Area Study Update

Ms. Thompson from WSB & Associates presented an update from the February meeting. The NE Area Drainage feasibility study models the drainage for 1400 acres of land on the east and west side of I-35E, and north of Main Street. The draft feasibility study was completed in January 2016 and submitted to City staff for review. After review, an additional option was requested to be considered. The new option includes an open-channel greenway between Peltier Lake and 20th Ave. The meandering channel will be used so it doesn't look like a drainage ditch and it would have a 60' to a 100' top width and a 10' bottom width.

Total phosphorus concentrations were provided by RCWD for use in the permit application. Mr. Heiskary also provided some additional concentrations for evaluation. Don't want to over treat or under treat the site for concentrations.

Ms. Bor asked if the landowners are aware of the project and if they have been notified

Ms. Thompson said they have been notified and they are aware of the study. And when the concept is closer to be finalized the effected landowners will be brought in for a discussion of the plan.

Ms. Kaufenberg asked how will you go forward and figure out which phosphorus concentrations numbers to use in the loading calculations since there is a variety of numbers in this report.

Ms. Thompson said they will be reaching out to the RCWS and MPCA and also using numbers from other studies that have been done in the area.

Mr. Sullivan asked will the Environmental Board be able to see the revised study before it goes to Council.

Ms. Thompson said yes the board will be seeing the revised study before it goes to Council.

Ms. Klebba asked who would be maintaining of the meandering channel.

Ms. Thompson the City would be in charge of maintaining of the waterway. Plantings would be grasses and no trees.

Ms. Bor voiced her concern into the current drainage that occurs into Peltier Lake. As of now the water does run over the city road.

Ms. Thompson said that RCWS will look at the study after there is a finalized plan.

B. Mattamy Storm Water Reuse and Irrigation System

Erin Heydinger, water engineer from WSB & Associates, presented the overview of three options for Stormwater reuse in the proposed Mattamy development. The board was first presented the feasibility study was at the January 2016 meeting.

Why water reuse – water conservation, White Bear Lake settlement –reducing water usage by 17% and storm water maintenance.

There was a water balance study using 50 years of rainfall data making sure the lake in the development would be sufficient for water reuse project.

The options were:

1. Reusing Stormwater to irrigate public places
2. Reusing Stormwater to irrigate public places and the townhome
3. Reusing storm water to irrigate the entire development

The City would own the system and would be involved in maintaining of the pumps

The recommendation based on the water balance and cost analysis is option 2. This is watering of the townhome area, the park and the berm.

Some grant funding maybe available through RCWS and the Metropolitan Council they do have some funds for storm water reusing projects.

There was discussion and concerns on:

- Depth of the pond
- Size of the berm and plantings on the berm
- Greenway plantings
- How would the system be controlled for option 2
- Association agreement of when to water and winterization of the system
- Size of sprinkler heads
- Health concerns with reuse storm water
- Aeration of the lake
- Pump filters being used to take out sediments, sensor for chloride
- Stormwater fees will be charged to residents of development for irrigation
- Number of units – 840
- Signage around the lake notifying residents of water quality
- Grass buffers around lake
- The water level of a drawdown of the lake
- More information of hybrid system

Mr. Schwartz made a motion to pass this on to the council in favor of option 3. But we need more numbers to see how much water would be needed for option 3.

Ms. Klebba was in favor of option 2 for this phase of the development and maybe in the next phase we could look at option 3.

Ms. Bor stated as we look at this project and all the environmental considerations and as goes through it phases and then on to Planning and Zoning our impact here is to make a recommendation.

Ms. Hankee mentioned that more studies would cost more money and having multiple options would also have to go through council to approve using tax payers money for the new studies.

Ms. Bor asked if it is possible to have Mattamy representative at the next meeting.

Ms. Hankee said yes they should be here and she will contact them.

Ms. Bor asked for a new motion.

Mr. Sullivan would like to use the water from the lake to go to all areas. So when there is not enough water then people would have to use their sprinklers.

Ms. Bor asked for a revised motion that would somehow build in with fairly clear directions that as this development builds out that at each phase that additional creativity will be used to see how to conserve water.

Mr. Asleson stated with our recommendation we could add- to the most reasonable extent possible and have the engineers look at it.

Phase 1 will take 6 – 7 years.

Ms. Bor made a MOTION that we are recommending at a minimum the feasibility study which encompass option 2. In addition we are encouraging the opportunity of further enhancements of the stormwater utilizations on this project. Motion was supported by Ms. Andrzejewski. Motion carried 6-0.

C. Wellhead Protection Plan

Ms. Heydinger presented the Adoption and Implementation of Wellhead Protection Plan. On February 26, 2016 the MDH notified the City of Lino Lakes, that Part 2 Wellhead Protection Plan was officially approved. The goal of the plan is to prevent human-caused contaminants from entering the water supply wells and to protect all who use the water supply from adverse health effects associated with groundwater contamination. The plan falls under the jurisdiction of the MDH and consists of two parts.

Part 1 was completed in 2014 and is a technical exercise that uses groundwater modeling to delineate the wellhead protection area (WHPA), Drinking Water Supply Management Area(DWSMA) and includes a well and aquifer vulnerability assessment. Part 1 addresses the three municipal water supply wells used by the City and associated water aquifer.

Part 2 of the WHPP describes how the results of the Part 1 can be applied to best protect a community's water supply. Once adopted, the City must begin implementation of these objectives.

Part 2 plan of action are listed with a few objectives for each:

- Well Management- maintain record of public/private wells within the DWSMA. Educate private well owners
- Public Education-use the City's newsletter, website or water bill to provide information on wellhead and groundwater protection.
- Storage Tank Management-notify owners and educate them
- Septic Systems-Coordinate with Anoka County to educate property owners
- Stormwater Management-educate the public on waste water management, turf management and proper lawn care and water conservation
- Hazardous Waste Management-educate the public on the proper disposal of hazardous waste items
- Data Collection-continue to collect and maintain data in order to improve and make revisions to the plan
- Water Conservation-Implement a community-wide water conservation program
- Land Use Planning and Zoning-Eliminate or reduce the potential risks to the source water aquifer
- Implementation-Track and report WHP activities to aid in implementing WHP objectives
- Evaluation-Complete an evaluate plan every 2 years

Cost up to \$10,000 per year to implement this plan. Grants are available twice a year from MN Department of Health to assist in funding. As of this time there is no cost-share at this time.

Next step would the City Council formally adopts Plan. Implement the Plan and MDH evaluation –every 2 ½ years and WHPP amendment every 10 years.

For those that have a private well – they would have to get the information off the website or newsletter. There is a list of all the private wells within the DSMA

Mr. Schwartz made a MOTION to approve the Plan as written. Motion was supported by Ms. Kaufenberg.

Mr. Sullivan would like to add information to the newspaper and would like more teeth in the well head protection plan. Items that he would like to educate public about are water over usage, the poor quality of our lakes and proper mowing practices.

Ms. Bor said that we can visit this again at the next meeting but would need a real united effort by all boards and City Council to get behind an item that we are passionate about. Put in on the web page and do weekly updates on how we are improving.

Ms. Andrzejewski made a MOTION to recommend adopting the Well Head Plan. It was supported by Ms. Kaufenberg. Motion carried 6-0

VI DISCUSSION ITEMS

A. Earth Day

Annual Earth Day is Saturday, April 23 at Wargo Nature Center from 12:30 – 3:00pm.

Any updated photos should be sent to Mr. Heiskary so that he can upload them to the power point presentation.

Seed balls will be the activity and Ms. Bor will order seeds and other supplies will be gathered and made ready for event.

B. Site Visit Recommendations

Ms. Bor suggested in adding Mattamy development site and also the outlet at Peliter Lake.

C. Organics Recycling

Most of responses came from the southern and western sections of the city. The drop off sites will be Marshan Park and Birch Park.

Ms. Klebba suggested the fire station as a drop off site also.

Starting on May 2 there will be a soft opening and limited hours. There will be someone there and also signage during the limited hours. Then a month of limited hours and then on June 6 people that are signed up will receive the code for the locked container so residents on the program can drop off whenever they like.

There is information on the city's web site about the program.

Natur-Tec® donated bags and a limited number of pails as a hand out for the residents that have signed up for the program. Also will be contacting home owners associations to get them interested.

Long term look out -don't see too much increase right away. During the summer we will see what happens. This is a pilot program. Hoping that if it goes well the county will pick up it up.

D. Other Recycling Updates

The City Council was presented with the Anoka County 2016 Agreement for Residential Recycling Program and the 2016 Environmental Board Goals on March 14, 2016. Both items were approved.

Recycling Saturday on March 19, 2016 had paper shredding as an added event. It was the most successful paper shredding event in Lino Lakes so far with approximately 1200 pounds of paper shredded.

Next Recycling Saturday will be April 6, 2016.

Lino Lakes Annual Recycling Day will be Saturday, May 7, 2016 from 9AM – 3PM.

VII. ADJOURNMENT

Ms. Andrzejewski made a MOTION to adjourn the meeting at 9:00 p.m. Motion was supported by Ms. Klebba. Motion carried 6 - 0.

Respectfully submitted,

Mary Fogarty

**ENVIRONMENTAL BOARD
AGENDA ITEM 5A**

STAFF ORIGINATOR: Marty Asleson, Environmental Coordinator

MEETING DATE: April 27, 2016

REQUEST: Preliminary Plat and Site Plan Review
Watermark

APPLICANT: Mattamy Partnership
Attn: Rick Packer
7201 Washington Avenue S.
Edina, MN 55439

PROPOSED DEVELOPMENT/BACKGROUND

The Mattamy proposed development site is a 372 ac. land mass on the NE side of the city. See Location Map attachment. The site is bounded by I 35E on the East side, 20th avenue on the west side, the Park and Ride area on the south side, and Rehbein Street to the north. The site consists of a residential density mix of single family lots and townhomes totaling 876 housing units. The proposed development is called “Watermark”. The Area Watershed Calculations for Watermark are attached.

SITE CHARACTERISTICS

The Watermark site is an agricultural use area. The site is heavily drain-tiled in many areas. The site is fairly flat. There are approximately 1800 trees on the site. Most of these trees are on the western periphery along 20th Avenue. The soils are for the most part clay. The site receives noise from the freeway and from 20th Ave.

ANALYSIS

Soils

Soils management in the Watermark proposal site is most important consideration from a water management and plant growth perspective. The soils in the Watermark proposal site are very thick glacial deposits of unconsolidated glacial till. These soils are clay with everything else including rocks, boulders and gravel areas. The soils are classified as B/D soils that signifies the soils are drained, and have little infiltration (see attachment). Project soil borings show a fairly consistent subsoil consisting of sandy clay with some occasional traces of gravel down to 16 feet. Water elevations in some the test borings

show up around 6 to 8 feet down. Further discussion of soils management is under Surface Water Management and Landscaping in this report.

Recommendation: Soils should be monitored for impacts to the Drinking Water Service area contamination, and existing wetland resources. Impacts can be created by uncovering a “gravel-vein” where polluted water can enter into a DWSMA water source, and where wetlands can be drained by creating a drain situation in regards to the wetland. Gravel and or other pervious areas encountered in excavation areas for ponds and created wetlands and general excavation must be sealed. Special consideration must be given to site horticultural practices, and compacted soils discussed later in this report.

As with all developments, environmental concerns for soil compatibility has been a recommendation that no soils shall be imported on to the site without City staff approval.

Land Cover

For the most part, this area has been cropped, and the area is classified as upland with cropped vegetation. There are approximately 1800 trees on the western periphery of the site.

Before cropping on this site, “Marschner” Original Vegetation Map, showed this area as partly as big woods, and partly bogs, and swamps.

Lino Lakes is fortunate to be geographically located in the mixing area of at least two of the three state biomes; the Deciduous Forest Biome and the Prairie grassland biome. These two original vegetation types were mixed into this area. Areas that historically had high water tables and poor drainage were swamps, and areas that had higher infiltration and better drainage had Big Woods (Hardwood Forest).

Recommendation: Consideration for the “Big-woods, Eastern Hardwood Forest” types of tree and vegetation should be incorporated into the landscape plan.

Comprehensive Plan

The Resources Management System Plan section of the City Comprehensive Plan directs citywide development to:

- Apply a conservation design framework to development
- Create a system of incentives to achieve the goals of the Resources Management Plan
- Establish a volume reduction overlay
- Implement the updated Parks, Greenways and Trail System

The Resources Management Plan calls out for the preservation of Lino Lakes’ natural resources and amenities. DNR Regionally Significant Ecological Areas (RSEA’s) shows that none of their mapped RSEA’s fall into the project area.

The Watermark proposal has a system of open space, trails and park integration that fall into the design considerations of the Lino Lakes Parks, Open Space and Trails Plan. The Watermark site plan includes:

- Total open space of 143.79 acres or 38.6% of the project acreage.

| LAND AREA CALCULATIONS | |
|-------------------------------------|---------------|
| | Acres |
| Gross Area = | 372.24 |
| | |
| Wetlands (remaining + mitigation) = | 23.07 |
| Lake = | 24.19 |
| Storm ponds = | 19.53 |
| Water Subtotal = | 66.79 |
| | |
| Public Park = | 5.38 |
| Public Open Space = | 57.23 |
| Private Park = | 1.59 |
| Private Open Space (TH) = | 9.43 |
| Private Open Space Roadway (TH) = | 3.37 |
| Park Subtotal= | 77.00 |
| | |
| Arterial Road ROW (CSAH 54)= | 5.46 |
| Local Road ROW = | 48.88 |
| Road ROW Subtotal= | 54.34 |
| | |
| Single Family Lots = | 164.66 |
| Townhome Lots = | 9.45 |
| Lot Area Subtotal= | 174.11 |

Recommendation: This Greenway addresses the intentions of the Resource Management Plan as much as practical using the multi-functional use approach including integrating passive and active recreational opportunities, cultural integration, as well as ensuring the natural resource preservation of existing site elements (wetlands and soils) through the use of stormwater design, wetland protection, native plantings, and design for the benefit of people and wildlife of concern.

Surface Water Management

City and Rice Creek Watershed District Rules state that development creating impervious surfaces shall address “Better Site Design” (BSD) techniques. BSD techniques used in the site design include but are not limited to:

- Reduced street widths
- Soil amendments are suggested
- Open space design
- Management of open space
- Included wetlands within outlots with buffers
- Conservation of existing trees
- Use of native vegetation
- Extended easements for buffer purposes

Water quality treatment standard is required for the first 1.1-inch rainfall on impervious areas. This treatment is for phosphorous removal. Factors for approved BMP's are given in the rule. Infiltration has a Phosphorous removal factor of 1.0; water reuse, 1.0; bio filtration .65; filtration, .5; stormwater wetlands, .55; stormwater ponds, 60.

The development must provide infiltration where feasible. If that is not possible, then any BMP can be chosen for an equivalent runoff volume reduction. Infiltration is not possible on this site because of the soils

Where infiltration is not possible treatment alternatives include:

- Water Reuse
- Bio-filtration
- Filtration
- Stormwater Wetlands
- Stormwater Ponds.

The developer has chosen an approved method of volume and water quality treatment. That treatment is pipes from the street to a connected system of stormwater wetlands, pretreatment ponds, and then into National Urban Runoff Ponds (NURP) and water reuse. Native plants are proposed for greenway areas. Native plants can eventually allow for some infiltration, and also have filtration benefits.

Re-use is one of the BMP's that can be used, and is being proposed to be used for water quality/volume treatment in the Watermark proposal. The City is proposing to require water reuse through the use of an irrigation system for open space areas and possibly the town home area. This is a BMP that is being used more and more and would help to reduce volume and phosphorous loading to the watershed. Reuse would also reduce the use of fresh groundwater pumping for landscape. The Environmental Board had previously recommended that water reuse be used to the maximum amount practical.

A watershed district permit is required for development on this site for water quality and Wetland Conservation Act (WCA) requirements. National Pollutant Discharge Elimination System (NPDES) permit from the Minnesota Pollution Control Agency (MPCA) must be obtained. A City **permit** obtained that incorporates an approved stormwater management plan for the Mattamy project.as per City Ordinance 1011.011.

The Resources Management System Plan Section of the City Comprehensive Plan embraces the concept of sustainability. Sustainability as a driving force in the Comprehensive Plan that links ecological integrity, social equity, and economic prosperity. The Resources Management System Plan provides the Conservation Design Framework for the Comprehensive Plan and Sustainable decisions regarding growth and development.

It is from this Design Framework that at least from a natural resources management perspective that water treatment and volume retention in a Treatment Train approach is most desirable. As in past projects, the Environmental Board has recommended a surface water treatment train approach to development in order to create a more natural area hydrograph. Other BMP's that should be considered are filtration berms and swales, and check dams in areas where surface water drainage occurs on the slope sides of lots where appropriate.

Filtration systems can be integrated into the design in swale areas in rear yards as noted in the City Engineer's report. Ripping, or spade tilling compacted yard subsoils, along with adequate topsoil, will keep more water on site. Another very simple BMP is requiring direction of rain gutter down spouts to pervious areas. Small volume reductions along the surface water-way can help to reduce volumes of stormwater leaving the site.

Recommendation: Enhance the BMP's for stormwater treatment train to the maximum amount practical including the use of berms, sand and iron filtration systems, and soil modifications.

Stormwater Pollution Prevention Plan

A Storm-Water Pollution Prevention Plan (SWPPP) must be designed that addresses all aspects of the contract signed with the MPCA. The SWPPP must address all the specifics of unique site design, BMP's and Minimal Impact Design Standards (MIDS) that will be used for the project.

AUAR Considerations

Watermark is in the Alternative Urban Area-Wide Review (AUAR) study and implementation area. The Final AUAR, was prepared for the City of Lino Lakes in accordance with Minnesota Rules Chapter 4410, in 2005. The AUAR was subsequently updated in 2010 and 2015. The following review of the AUAR was done by WSB and City Engineer Diane Hankee:

1. Based on this review the Watermark development is generally in conformance with the AUAR.
2. AUAR Mitigation Item 11.1. The Conservation Design Framework shows two greenways going North-South. The Watermark plan appears to show one corridor that is connected with a second less connected corridor. The City has reviewed the plan and has determined that it meets the intent of the Conservation Design Framework.
3. AUAR Mitigation Item 11.7. The AUAR requires surmountable curb for turtle and wildlife passage. The City Environmental Coordinator verified that this is not a Blanding's Turtle site; however, to accommodate wildlife passage approximately 90 percent of the roadways within the proposed development include surmountable curb.
4. AUAR Mitigation Item 11.8. The AUAR requires an eagle nest survey. There are not many trees on the site and thus it is not anticipated that there would be eagle nests. A site investigation by the City Environmental Staff was performed and found no eagle nest on the subject property.
5. AUAR Mitigation Item 11.10. The AUAR requires a rare plant survey to be completed in wetlands and other designated areas. City Environmental Staff performed the rare plant survey review and concluded that no rare plants were found on the subject property.
6. AUAR Mitigation Section 13 and 18 – Water Use and Wastewater. The plan is in conformance with the AUAR (per WSB memo dated March 16, 2016 regarding the water main review).
7. AUAR Mitigation Item 19.1. The AUAR requires all underground tanks be removed. A Phase 1 and 2 Environmental Site Assessment has been completed for site. A storage tank in the basement of the residence on the northwestern corner of the site was noted. As part of development, tanks will need to be removed in conformance with State standards.
8. AUAR Mitigation Item 25.1. The AUAR requires a Phase 1 cultural resource study to be completed. This study has been completed and no sites were identified. The plan is in conformance with the AUAR.
9. AUAR Mitigation Item 27.2. The AUAR requires clustering, buffering, and/or screening. The plans show screening options between I-35 and the development. This is in conformance with the AUAR.
10. The updated Noise Study, dated March 3rd 2016 was reviewed. The following comments should be addressed by the applicant:
 - a. The site that was shown in the wrong location on Figures 1.1, 2.1 and 2.2 has been revised with the updated study memo.

The AUAR included review and analysis of the ecologically sensitive areas within the study area. For the AUAR recent update, the DNR Natural Heritage Database information was updated. This update contains additional known occurrences of rare species or natural communities within a one-mile radius of the study area as compared to the data from the original AUAR.

Within one mile of the Watermark site, there is a colonial water bird nesting area (our Heron Rookery), a documented Bald Eagle nesting site (no longer there), undocumented Water Willow around Peltier Island, an upland Sandpiper to the south and east, and a Blanding's Turtle to the South and East.

There are no site specific indicators that would place rare plants on the site.

There is a City Managed Heron Rookery less than a mile from parts of the site. Consideration for the Herons and the loss of habitat is an issue that could be addressed in the preservation of wetlands and the creation of new water features. The Great Blue Heron and Great White Egret both nest on Peltier Lake Island, but often fly to outside Peltier Lake Locations to feed. Benches in the pond design could be designed to create a wading/fishing area for the birds, as well as safety features for residents.

Recommendation: Incorporate shallow areas/benches in pond/mitigation area where practical.

Additional Cultural Elements

Creating and enhancing wetlands and new lake areas will provide enhanced foraging for the Herons and provide a nice amenity to resource viewing residents. The over-all design of Watermark, appears to tie into the City Resource Management Plan

A Natural Resources Wetland Preservation Corridor and Natural Resources Corridor Enhancement Area go through this site. The corridor as shown in the Comprehensive Plan was based on thought at that time of how this corridor should look with the area planned enhancements by the development concept at that time. The Mattamy plan appears to incorporate greenway concept as identified in comp plan. The Resources Management Plan calls for a unified, and contiguous approach to open space, trails and resources, integrated into a green way corridor.

Greenway corridors are meant to capture high value resources and in areas of impacted resources, enhance and improve those areas with the establishment of new green way areas.

Floodplain Review

City Engineer Diane Hankee submitted the following review for Watermark Floodplain:

The proposed project has been reviewed against the currently effective FEMA Flood Insurance Rate Maps, dated December 16, 2015, and we offer the following comments:

1. The project proposes fill of, and changes to, the effective FEMA floodplain boundaries and will require a Letter of Map Revision (LOMR) from FEMA. All existing floodplain shown on the property is approximate Zone A, however because the project is proposing to develop more than 5 acres, the developer will

- need to provide a detailed study for the Conditional Letter of Map Revision (CLOMR) request with the final plat submittal, which would include establishing base flood elevations for the site.
2. A copy of the CLOMR application should be submitted with the final plat application.
 3. The City will not issue building permits for lots affected by floodplain without an approved LOMR.

Drinking Water Protection

The Drinking Water Service Management Area (DWSMA) map attachment shows the area of Watermark that is covered by a “Moderately-Susceptible” vulnerability area to drinking water pollution, and an area on the south side that is considered as a “high-vulnerability area”. “Drinking water supply management area” means the surface and subsurface area surrounding a public water supply well, including the wellhead protection area that must be managed by the entity identified in a wellhead protection plan. “Drinking water supply management area vulnerability” means an assessment of the likelihood for a potential contaminant source within the drinking water supply management area to contaminate a public water supply well, or the susceptibility of a water supply to contamination from activities at the land surface. There is also a high-vulnerability wellhead protection area DWSMA Map Attachment 2 extending up into the southern reaches of the Watermark site from Centerville.

Aquifers in moderately-susceptible areas are semi-confined and may have some influence from surface water recharge and impact from land surface activities. Non-confining layers that may exist when large and deep ponds are excavated should be addressed for ensuring no contamination to the aquifer, and for that matter damage to wetland protection areas. The site development must be evaluated for potential contamination issues such as this, and other issues identified in the City of Lino Lakes Well Head Protection Plan.

Excavated areas that may hit a non-confining layer or “gravel/sand vein” must be sealed. Soil borings from the site show some instances where gravel layers are present. With this, the plan should include an adaptive-management approach to grading the project. If a gravel “vein” is encountered, then sealing that vein must be accomplished so that ground water contamination does not occur, or confining wetlands are not drained.

Pollution Investigation

A Phase One and Phase Two study was completed for the Watermark site. The studies were done to determine any site contamination issues. Phase One of the studies looked at the soil between 1 and 5 feet into the ground. The Phase One study concluded there were no existing impacts detected on the site between 1 and 5 feet into the soil.

The Phase Two study looked at structures. Phase Two discover thirty loads of Agricultural lime buried on the site. They determined that the lime was a recognized

environmental condition. In addition, the study states there is reason to believe there may be environmental contamination around the demolished farmstead buildings that were in the area of the Quonset building standing today. It is possible demolition and /or hazardous waste may have been buried in this area. They recommend additional evaluation of this area if houses are built there.

Phase Two also mentions the two wells on the site and possible septic systems. There is one well-casing that shows up on the County Well Index (CWI) file. The well point is 74 feet deep. The well point is on the north and west side of the development proposal. Unless this well is needed by the developer during or after development, the well must be sealed.

The other well on the site is an abandoned irrigation well in the middle of the site. The well is approximately 10 inches in diameter and was used for agricultural irrigation. The well has not been used for at least 15 years. The well is not in the state database. There is some interest in using the well again. The City Utility Supervisor will be starting the process to inspect the well casing for integrity, and have the information for the well recorded with the Department of Health if it is determined to start using the well again. If not the well should be sealed.

One thing in particular to pay attention to is the Koch petroleum pipeline running through this project area. This pipeline/pipelines carry crude oil. Discussion with Koch and designing development around this pipeline has occurred. A plan for containment of petroleum product spill/leak and or public safety issue should be in place.

Recommendation: Seal well with CWI FID number 66451, unique number 00440015 under the name of Arnold Thies. Restore the irrigation well if possible and record the well with the Department of health with the State of Minnesota. If not used, seal the irrigation well. Remove any septic systems on the property. Follow the recommendations of Phase One and Phase Two studies; that is, properly dispose of contamination issues from septic, well hole abandonment, buried lime, and other buried hazardous waste and construction materials.

Tree Preservation

The entire site is considered a basic use area. The developer proposes the following tree save/removal list:

- 1755 Total Trees
- 1221 Tree Saves
- 534 Tree Removals

| Trees Removed | | Trees Saved | |
|-------------------|------------|----------------|-------------|
| Type | Number | Type | Number |
| American Elm | 29 | American Elm | 118 |
| Amur Maple | 1 | Amur Maple | 1 |
| Apple | 11 | Basswood | 232 |
| Basswood | 19 | Bigtooth Aspen | 18 |
| Black Cherry | 2 | Black Cherry | 4 |
| Black Locust | 8 | Black Willow | 12 |
| Black Walnut | 23 | Blue Spruce | 9 |
| Black Willow | 30 | Box Elder | 311 |
| Blue Spruce | 1 | Bur Oak | 23 |
| Box Elder | 259 | Cottonwood | 72 |
| Buck thorn | 3 | Green Ash | 338 |
| Cottonwood | 49 | Hawthorn | 1 |
| Eastern Red Cedar | 2 | Red Elm | 3 |
| Green Ash | 22 | Red Oak | 56 |
| Paper Birch | 2 | Scots Pine | 5 |
| Quaking Aspen | 19 | Silver Maple | 4 |
| Red Elm | 8 | White Oak | 9 |
| Red Pine | 22 | White Pine | 3 |
| Silver Maple | 14 | yellow Birch | 2 |
| Staghorn Sumac | 6 | | |
| White Mulberry | 3 | | |
| White Pine | 1 | | |
| | | | |
| Totals | 534 | | 1221 |

Most of the trees that will be saved are on the periphery of the project proposal. Some of the proposed save trees should be removed such as the Ash and American Elms. The Red Elms could be left. The Hawthorn, if the native or thorny type, should be removed. The Cottonwoods and Silver Maples should be looked at for defects that would make them hazardous trees and removed if hazardous.

Recommendation: Remove all Ash, American Elms, Silver Maples and Cottonwoods that would be classified as hazardous trees, and /or trees listed as declining, unhealthy, and any species growing in preserved wetland sites on the “Tree Save List”. All recommended tree removals from the “Save” list would not be considered a replacement tree.

Wetlands

A wetland delineation was approved on March 20, 2014. The wetland delineation report that was approved by the Rice Creek Watershed. Watermark Wetlands and Replacement attachment. The map shows the location of approved wetlands on the site approved location of wetlands on the site. The RCWD approved 28 wetlands that are present on the site.

The Wetland Summary is as follows:

Recommendation: All wetlands must be buffered according to standards, including a minimum of 10-foot requirement next to residential lots, and 50-foot average in the RCWD wetland management corridor. Signs marking buffer areas in these areas and pond areas should be placed in each back yard notifying of no encroachment.

Wetlands remaining on the site must be protected from drainage and construction by silt fence perimeter control and ensuring that area excavation does not hit a gravel or rock “vein” connected into the wetland and drain it. If discovered, these veins must be sealed to allow water to be maintained for wetland quality. Any water volumes coming from new surface water configurations going into any wetlands, must be pretreated. For that matter, all surface water flowing into new ponds should also be pretreated. A 10-foot buffer is required around wetland and pond areas Subdivision Ordinance 1001.098(9). If it’s a PUD, we can require more. In wetland management corridors a 50-foot buffer is required. There is an area that is in the middle section of the project on the east side that is contiguous with the RCWD Wetland Management Corridor. This would need a 50-foot buffer, and is shown on the map. A plan to ensure long-term hydrology for these wetlands must be provided. All excavations on the site that drain existing or proposed wetlands should be sealed.

Lighting

Energy efficient LED lighting with minimum standards for light intensity should be employed. Fixtures should be downward focused, with recessed with glare cut-off features. Smart lighting technology such as networking to allow for more control of lamp intensity and power usage should be looked into.

Landscape Plan Discussion and Recommendations

Attached is the Watermark proposed Landscape Plan. This is general plan illustrative general type and location. A specific detailed plan will be required for review and approval with each Final Plan stage.

Species selected for planting in this project must be tolerant of higher pH soils, or modifications made to the soils to achieve a nearly neutral pH to slightly acid pH if plants with lower pH needs are planted.

The following materials on the tree list should not be used:

- Any species of Ash
- Norway Maple
- Little Leaf Linden (Cordata Linden and Cordata crosses)
- Thorn bearing Hawthorns, and Plums
- Eastern Pin Oak (palustris)
- American Mountain Ash
- Silver Maple (or limited special uses)

The following plants would need soil modification to acid soil:

- Red Maple
- Northern Pin Oak

The following trees can be added:

- Bitternut Hickory
- Larch
- Thornless Cockspur Hawthorn

The following trees may be used in small amounts if a northern hardy stock (Zone 4B USDA Plant Hardiness Zone Map) is available. This would be at the approval of Lino Lakes Environmental.

- Sycamore
- Scarlet Oak
- Chinquapin Oak
- Cucumber Tree
- Shagbark Hickory
- Tulip Poplar

The following plants would need soil modification to acidify soil:

- Red Maple
- Northern Pin Oak

The developer must escrow enough dollars to plant on boulevard tree on each frontage of properties bordering a street.

City Planning will verify plant numbers in relationship to zoning code requirements for replacements. A species list submitted needs editing.

Areas of the greenway must be planted with a native seed mix, and vegetation mix. This mix should be compatible with heavier soils with a higher pH. A regimental plan with seed mixes that match wetness/dryness characteristics must be used. Seed mixes and vegetation restoration must be approved by the city. A 5-year maintenance plan must be developed by a company with a knowledge of native plant culture. The company must be approved by the city. The maintenance plan must be approved by the city. A standard maintenance agreement with the City of Lino Lakes and the Rice Creek Watershed must be signed for all ponds and restoration areas.

Signs must be surveyed in and placed at the back of each property line/buffer area informing new residents of the non-encroachment of the buffer with particular emphasis on placing yard waste in those areas

Seed mixtures in wetland and pond buffers must be approved by the City. Seed labels must be submitted to the city following establishment work is done.

The project should be designed and managed for landscape soils that do not exceed the critical bulk density limits for plant growth. The on-site soils are easily compacted and which creates excessive runoff and limits plant growth and health.

Soils management should contain a method to prevent or repair compacted soils in all landscape areas. Without soils management in these heavier soils, almost all irrigation and chemical applications will empty right back into the constructed ponds of the site. Ripping and or Spade tilling and organic material incorporation into subsoils will be important from a water quality standpoint and a vegetation reestablishment standpoint.

Recommendation: A soils management plan be sequenced in to the construction detail sheet to provide for uncompacted soils that will support plant root growth. Top soil should be incorporated into subsoils by ripping or spade tilling prior to placement of plant materials.

Noise

A noise study was completed on March 28, 2016 by David Braslau and Associates, Inc. Projected noise levels from I 35E and CSAH 54 were compared with the <PCA daytime and nighttime noise standards.

Landscape berms will be constructed along both I 35E and CSAH 54. The berms along I 35E are approximately 150 feet in width and 25 feet high. A mix of deciduous and coniferous trees and shrubs will be planted near the crown.

Summary of Noise Study Findings:

Homes along Interstate 35E

Predicted daytime sound levels at residential lots along Interstate 35E are generally within the 65 dB standard or within modeling error. However, “nighttime” levels between 6 and 7 am exceed the standards but exceptions to the state rules permit the higher NAC-2 standards to be applied and the nighttime standards can be met.

Homes along CSAH 54

Predicted daytime sound levels at residential lots along CSAH 54 are just below the daytime L10 standards. The “nighttime” levels between 6 and 7 am exceed the standards but as with homes along Interstate 35E exceptions to the state rules permit the higher NAC-2 standards to be applied and the nighttime standards can be met

Further sound reductions can be added to house construction elements if found to be necessary.

Recycling

Watermark should consider placing trash and mixed recycling receptacles with clear signage* (see attached) in each of the following areas:

1. Clubhouse:

- Fitness Room
- Bathrooms
- Office
- Foyer
- Lounge
- Kitchen
- Party Room

2. Public Park:

- Picnic Area
- Pickle ball/Basketball court
- Pre-K playground: *trash receptacle only – this location typically generates a small amount of recyclable items and large amounts of contamination*

3. Open Space (Next to Public Park):

- Two trash receptacles along paths on east and west ends - *this location typically generates a small amount of recyclable items and large amounts of contamination*

4. Private Park:

- At least one trash receptacle recommended

5. Trails:

- Place trash receptacles along trails, and especially located at rest areas or near benches

*The attached signs have been adapted throughout the seven county metro area in an effort to standardize waste disposal messaging and make sorting more understandable for Minnesota residents. Developers are encouraged to use these signs - or labels with similar colors, pictures and symbols - to assist in this effort. Signs are available **for free** at <http://www.rethinkrecycling.com/businesses/signs>.

RECOMMENDATION

Staff recommends approval of the preliminary plat and site plan review including any recommendations of the board.

ATTACHMENTS

1. City Engineer Memo, dated April 6, 2016
2. Existing Aerial and Site Location
3. Watermark Soils Hydric Group
4. Watermark Soils Hydric Rating
5. Drainage Map
6. Wetland Replacement Map
7. Entry Enlargement Rendering
8. Existing Conditions Map
9. Master Plan
10. DWSMA MAP
11. Parks and Open Space Plan
12. Berm Plan



Memorandum

To: *Katie Larsen, City Planner*

From: *Diane Hankee PE, City Engineer*

Date: *April 06, 2016*

Re: *Watermark
Plan Review
WSB Project No. 2029-820*

We have reviewed the Preliminary Plat for Watermark in Lino Lakes, MN prepared by Carlson McCain received on March 7, 2016.

For reference please see notes on the Preliminary Plat enclosed, along with the following comments that should be responded to in writing by the applicant:

GRADING, EROSION AND SEDIMENT CONTROL

The preliminary grading, erosion and sediment control plans, dated March 4, 2016 and prepared by Carlson McCain have been reviewed and we offer the following initial comments:

1. No erosion and sediment control comments at this time, a further review will be completed once the construction plans for the applicable phase is submitted.
2. The applicant needs to provide project phasing detail or narrative, to address the construction staging, berm and trail construction, and utility installation coordination.
3. Roadway grades are to be increased or storm water catch basins are to be less than 400 feet apart.
4. Cul du Sac grades are to be a minimum of 1 percent grade.
5. Roadways are to have high points at intersections when within 100 feet of the intersection.
6. Review low floor, low openings, high water levels per city's stormwater management policy
7. Storm sewer utilities located in rear yards should be designed/constructed along rear lot lines where practical. Lot configuration could be modified to accommodate.
8. Percent grade of rear lot drainage swales required (2% desired – 1% min.)
9. Consider adding rock filtration underdrains along rear lot lines with storm sewer to enhance water quality and reduce volume discharge.
10. Emergency overflow locations and elevations not shown for all ponds, wetlands and lake features.

STORMWATER MANAGEMENT

The stormwater management for the proposed Watermark Development was reviewed against the proposed Northeast Drainage Area InfoSWMM model high water elevations from March 30, 2016 and enclosed (see Attachment 1).

1. Include water re-use system layout and water fountains in plans. The re-use pump stations should not be located near storm sewer outlets.
2. Normal and critical duration high water levels are provided (attached) – please review maximum water elevations versus proposed grading. The high water elevation may not encroach onto private property.
3. Stormwater modeling needs to be submitted based on the proposed phasing plan for development.
4. Emergency overflow elevations need to be shown on the plans.
5. Low floor elevations have been reviewed against the maximum high water elevations and structures with deficiencies in freeboard requirements are noted on redlined plans.
6. Many of the proposed ponds have more than four feet of bounce; ensure proposed plant species in this zone are tolerant of extended inundation. Plantings in this area may also require a full growing season at a moderated bounce levels to ensure establishment.
7. Drain tile lines need to be re-routed and all drainage rights must be maintained per Minnesota Statutes Chapter 103E.
8. Soil amendments for filtration at pond 300 to the adjacent wetland and pond 20 to outlet J.
9. It is recommended that rear yard filtration systems be considered.
10. A stormwater management plan has not been provided and will be required for final approval.
11. Provide details for outlet control structures and pond interconnections

FLOODPLAIN

The proposed project has been reviewed against the currently effective FEMA Flood Insurance Rate Maps, dated December 16, 2015, and we offer the following comments:

1. The project proposes fill of, and changes to, the effective FEMA floodplain boundaries and will require a Letter of Map Revision (LOMR) from FEMA. All existing floodplain shown on the property is approximate Zone A, however because the project is proposing to develop more than 5 acres, the developer will need to provide a detailed study for the Conditional Letter of Map Revision (CLOMR) request with the final plat submittal, which would include establishing base flood elevations for the site.
2. A copy of the CLOMR application should be submitted with the final plat application.
3. The City will not issue building permits for lots affected by floodplain without an approved LOMR.

WETLANDS

1. The project proposes 4.432 acres of wetland fill and 5.022 acres of wetland excavation with on-site mitigation for wetland impacts. On-site mitigation is proposed to be completed by creating 13.012 acres of new wetland, 4.842 acres of restored wetland, and 13.115 acres of created upland buffer. (Impact/Mitigation calculations taken from the

Wetland Permit Application, Appendix A) Wetland impacts and mitigation appear to be in compliance with Wetland Conservation Act (WCA) standards and in compliance with Rice Creek Watershed District (RCWD) Wetland Alteration rules. MnRAMs were completed for each wetland for sequencing discussions on impacts of wetlands. Wetland impacts associated with building houses will need a thorough explanation and sequencing discussion to obtain TEP approval. Based on our review, we offer the following comments:

- a. Based on construction phasing and mitigation, a review of the proposed hydrology should occur by the LGU prior to full build out to ensure proper hydrology requirements for wetland mitigation will occur before the entire project is completed.
- b. A wetland monitoring and management plan will need to be submitted as part of the replacement plan for WCA and RCWD Approval. Their wetland permit application states that supporting information regarding vegetation management/maintenance and the annual monitoring will be submitted under a separate cover.

ENVIRONMENTAL

1. Based on this review the Watermark development is generally in conformance with the AUAR.
2. AUAR Mitigation Item 11.1. The Conservation Design Framework shows two greenways going North-South. The Watermark plan appears to show one corridor that is connected with a second less connected corridor. The City has reviewed the plan and has determined that it meets the intent of the Conservation Design Framework.
3. AUAR Mitigation Item 11.7. The AUAR requires surmountable curb for turtle and wildlife passage. The City Environmental Coordinator verified that this is not a Blandings Turtle site; however to accommodate wildlife passage approximately 90 percent of the roadways within the proposed development include surmountable curb.
4. AUAR Mitigation Item 11.8. The AUAR requires an eagle nest survey. There are not many trees on the site and thus it is not anticipated that there would be eagle nests. A site investigation by the City Environmental Staff was performed and found no eagle nest on the subject property.
5. AUAR Mitigation Item 11.10. The AUAR requires a rare plant survey to be completed in wetlands and other designated areas. City Environmental Staff performed the rare plant survey review and concluded that no rare plants were found on the subject property.
6. AUAR Mitigation Section 13 and 18 – Water Use and Wastewater. The plan is in conformance with the AUAR (per WSB memo dated March 16, 2016 regarding the watermain review).
7. AUAR Mitigation Item 19.1. The AUAR requires all underground tanks be removed. A Phase 1 and 2 Environmental Site Assessment has been completed for site. A storage tank in the basement of the residence on the northwestern corner of the site was noted. As part of development, tanks will need to be removed in conformance with State standards.
8. AUAR Mitigation Item 25.1. The AUAR requires a Phase 1 cultural resource study to be completed. This study has been completed and no sites were identified. The plan is in conformance with the AUAR.
9. AUAR Mitigation Item 27.2. The AUAR requires clustering, buffering, and/or screening. The plans show screening options between I-35 and the development. This is in conformance with the AUAR.

10. The updated Noise Study, dated March 3rd 2016 was reviewed. The following comments should be addressed by the applicant:
 - a. The site that was shown in the wrong location on Figures 1.1, 2.1 and 2.2 has been revised with the updated study memo.

WATER SYSTEM

1. Note the attached water system memo dated April 5, 2016 (Attachment 2) that outlines the system needs based on the proposed development and the City's comprehensive plan.
2. A 12 inch diameter watermain shall be looped on the northwest end of the plat.
3. The 16 inch diameter watermain shall be looped through the park.
4. Hydrants shall be installed next to the stormwater re-use system pumps.
5. Fire hydrant locations shall be reviewed by the City's Fire Division staff. 300 foot maximum hydrant spacing.
6. A hydrant shall be installed on Street F between Street G and Street C.
7. All hydrant leads shall be a minimum of 6 inches in diameter.
8. The dual 8 inch lines in Street U shall be separated as much as possible (opposite sides of the road).
9. The 16 inch trunk watermain loop to the east shall be installed under I35E when the adjacent phase of the development is constructed. This will be a City improvement project. Show on the plat documents as such.
10. A 12 inch watermain stub is to be extended under CSAH 54 at 77th Street for future looping.
11. An 8 inch water stub to the south shall be installed at the Townhomes (at the trail location). This will provide a future loop to the south parcel.

SANITARY SEWER SYSTEM

1. An 18-inch sanitary line shall be extended along Street A to CSAH 54 and along Street B to the roundabout, at maximum depth. An 8-inch sanitary line shall be stubbed under CSAH 54 to the west.
2. Please provide either sanitary system profiles or all pipe lengths and slopes so that invert elevations can be verified.
3. With the second phase of the development, assuming phase one has approximately 100 residential connections, the lift station No. 8 pump upgrade will need to be completed. This will be a City improvement project.

TRANSPORTATION

1. The traffic study, dated February 13, 2015 and latest technical memo dated March 25, 2016 prepared by Spack Consulting still needs to be refined as detailed below. However, we generally concur that the development can be accommodated with the roadway system proposed.
2. The Watermark development access spacing was reviewed in coordination with Anoka County staff during the concept plan review stage. The access spacing is also in conformance with those outlined in the AUAR completed for this area. The access was

laid out based on Anoka County access spacing guidelines and the following considerations:

- South access: Goal to connect 21st Avenue to the west using the existing access at 73rd Street to minimize CSAH 54 access points.
- Middle access: Within 100 to 200 feet of the access guidelines, located to avoid wetland impacts on the west side of CSAH 54.
- North access: Rehbein Street was used verses 77th Street due to wetland impacts. Goal was to connect to existing intersections and minimize CSAH 54 access points.

Anoka County requires that each access location meets County sight – distance requirements. The applicant will need to provide this analysis for approval by the County with the preliminary plat.

3. Anoka County requires left and right turn lanes on CSAH 54 at each new City street access. These include Rehbein Street, 73rd Street, and Street B. Cross sections for the turn lanes on CSAH 54 need to be included in the plans to verify they can be constructed within the existing/proposed right of way. Specifically the right turn lane at Street D. The applicant will need to have the preliminary design reviewed by Anoka County with the preliminary plat.
4. The applicant needs to provide clarification regarding the outbound lanes needed for City streets exiting onto CSAH 54. The Daily Traffic volumes shown in the update memo on the figure appear to be inconsistent with previous analysis. The traffic volume submittals summarized:
 - Original Study February 13, 2015 - 450 at Street D, 2970 at Street B and 1380 at Street A
 - March 9, 2015 revised site plan figure 4 - 1570 at Street D, 1850 at Street B and 1380 at Street A
 - March 27, 2015 update memo - 1870 at Street D, 1820 at Street B and 1430 at Street A
 - March 25, 2016 update memo - 1970 at Street D, 1930 at Street B and 1380 at Street A

The applicant should respond to the following:

- a. Why did Street D and Street B increase from the 2015 updated memo to the 2016 update memo?
 - b. Why did Street D increase by 100 vehicles when the internal approaches only went up 20 vehicles?
 - c. Why did Street A decrease from 2015 update memo to the 2016 update memo?
5. The City's maximum cul du sac length is 500 feet from the centerline of the roadway to end of the right of way. There are a number of cul du sacs exceeding this length and they should be addressed by the applicant (Streets F,K,P,Q,L, and future V).
 6. Street C exceeds the City's maximum block length of 1,500 feet. See comment below.
 7. Street V should be a through roadway, within the ghost plat, and connect to Street C.
 8. Direct driveway access on Street D should be removed between CSAH 54 and Street C, or a center median constructed. The roadway should be 36 feet based on the traffic

volumes proposed. The lots on the south side could access of Street V and lot 126 could access off of Street C.

9. The traffic study should be updated to include an analysis of the planned roundabout at the intersection of Street B and Street E.
10. For streets exiting onto CSAH 54 the County and City required clear zones shall be met. The Landscaping Plan shall reflect this.
11. Street B medians are to have vegetation that is less than 3 feet in height.
12. A typical section for Street B between CSAH 54 and the Roundabout should be provided.
13. The applicant should consider extending the median between CSAH 54 and the Roundabout. This would improve safety and eliminate the median ends with signing.
14. A trail along Street B from CSAH 54 to the park should be included in lieu of sidewalk on one side of the roadway.
15. Street U shall be 20 foot wide on each side approaching Street A.
16. Street O shall be 20 foot wide on each side at the entrance median approaching Street A to match Street U.
17. Street B at the entrance median to Street A shall be 20 foot wide.
18. A detail for a 6 foot sidewalk is provided, however each typical section shows a 5 foot sidewalk. These should be changed accordingly.
19. Between development phases, temporary cul du sacs need to be installed to service the adjacent homes.

PARK GRADING & UTILITIES

1. General proposed grades in the park appear to be suitable for development of the modified master plan with the following considerations:
 - a. Grades in the general location of the proposed courts and playground shall be level as courts and playgrounds are built at a 1.0% slope.
 - b. Trail grades are not to exceed 5% slope with a maximum 2% slope at all trail intersections and it appears this will be feasible according to the plans.
 - c. The open lawn in the center of the park should have a 2% minimum and 2.5% maximum slope.
2. There are utility conflicts in the proposed location for the courts to include two storm lines and related structures. The applicant shall coordinate the location of these with the City's parks department.

DEVELOPMENT AGREEMENT

1. Required with final plat.

PERMITS

1. Koch Pipeline permit to cross with roadway and utilities
2. FEMA Letter of Map Revision
3. NPDES Construction General Permit
4. Rice Creek Watershed Permit
 - a. Rule C: Stormwater Management

- b. Rule D: Erosion and Sediment Control
 - c. Rule E: Floodplain Alteration
 - d. Rule F: Wetland Alteration
 - e. Rule I: Drainage Systems
- 5. US Corps of Engineers Section 404 – Individual Permit
 - 6. MDH for Water System
 - 7. MCES and MPCA for Sanitary Sewer

RECOMMENDATIONS

- 1. Consider modifying CL grades of Street A at 21st Avenue match to reduce high/low point undulation.
- 2. Add catch basin at intersection of Drive B and Street A (no valley gutters along Street A)
- 3. Add catch basins/storm sewer on Street M at station 2+70
- 4. Add catch basin at intersection of Street E and Street N
- 5. A more detailed review of grades in townhome area to follow
- 6. Adjust HP on Street S to 2+00 to reduce catch basin spacing
- 7. Move catch basins on Street Q to 2+50 to reduce catch basin spacing
- 8. Adjust HP on Street B to 36+00 to reduce catch basin spacing
- 9. Label % grades on all drainage swales (1% min. – 2% preferred)
- 10. Add catch basin on Street A at 9+50
- 11. Detailed grades needed for roundabout review
- 12. Add catch basins on Street E at 6+50 to reduce catch basin spacing
- 13. Add catch basin at intersection of Street E and Street N
- 14. Add catch basins on Street E at 14+00 to reduce catch basin spacing
- 15. Adjust low point on Street B to 11+75 to reduce catch basin spacing
- 16. Shift low point to 2+00 on Street K
- 17. Add catch basins to Street B at 21+30
- 18. Check drainage at the intersection of Street P and Street B
- 19. Add catch basins to Street C at 29+50 (no doubles needed at 28+00)
- 20. Average out grades on Street C 43+50 to 56+00 (or add CB's)
- 21. Add catch basins at the intersection of Street C and Street D
- 22. Shift high point to intersection of Street D and Street V
- 23. Review drainage at the intersection of Street D and Street W (CB needed?)
- 24. Review drainage at the intersection of Street C and Street H (CB needed?)
- 25. Shift high point to intersection of Street F and Street C
- 26. Add catch basins at intersection of Street G and Street H (4+50)
- 27. Shift catch basin at the intersection of Street F (6+25) and Street G
- 28. Shift high point to intersection of Street G and Street H (19+50)
- 29. Shift high point to intersection of Street F (13+60) and Street G
- 30. Air relief valves shall be located at all high points in the system. Please provide elevations for all watermains to evaluate air relief valve positioning.
- 31. There shall be a ten-foot horizontal and 18-inch vertical separation distance from all sanitary and storm sewer lines.
- 32. In addition to those valves already included in the plans, valves shall be added in the following locations:
 - a. Along Street M;

b. Along Street E between Street M and Street B; and

c. Along Street C between Street I and Street F.

The City's Utilities Supervisor shall review the valve locations.

33. Gate-type valves shall be used.

34. Class 52 Ductile Iron pipe shall be used.

35. All watermain shall maintain a minimum cover of 7.5 feet.

36. All joints shall be made of conductive materials.

37. The applicant is to provide the fire flow in gallons per minute required to serve the townhome area.

If you or the applicant has any questions regarding these comments, please contact Diane Hankee at (651) 982-2430 or diane.hankee@ci.lino-lakes.mn.us.

Attachment 1

MODELED HIGH WATER ELEVATIONS FOR THE PROPOSED WATERMARK DEVELOPMENT, 3/30/2016

| POND ID | BOTTOM ELEV | NWL | EOF ELEV | 100-YR 24-HR HWL | SNOWMELT HWL | CRITICAL DURATION HWL | MAX BOUNCE [ft] |
|--------------|-------------|-------|-------------------------|------------------|--------------|-----------------------|-----------------|
| NW | 896 | 898 | Not Shown | 899.5 | 898.9 | 899.5 | 1.5 |
| P100 | 894 | 901 | Not Shown - Assumed 906 | 903.4 | 904.3 | 904.3 | 3.3 |
| P1000 | 896 | 904.5 | 907.5 | 907.6 | 905.8 | 907.6 | 3.1 |
| P10N | 890 | 898.7 | 906.5 | 902.8 | 903.9 | 903.9 | 5.2 |
| P1100 | 896 | 904.5 | Not Shown - Assumed 909 | 906.5 | 905.4 | 906.5 | 2 |
| P200 | 892 | 900.5 | 906.5 | 903.9 | 905.2 | 905.2 | 4.7 |
| P20S | 885 | 900 | Not Shown - assumed 905 | 903.4 | 904.3 | 904.3 | 4.3 |
| P300 | 896 | 901 | Not Shown - Assumed 907 | 904 | 904.3 | 904.3 | 3.3 |
| P400 | 894 | 901 | Not Shown - Assumed 906 | 905 | 904.3 | 905 | 4 |
| P500 | 892 | 899 | 906.5 | 902.8 | 903.9 | 903.9 | 4.9 |
| P700 | 894 | 901 | Not Shown - Assumed 906 | 903.8 | 903.9 | 903.9 | 2.9 |
| P800 | 894 | 901 | Not Shown - Assumed 906 | 904.9 | 903.9 | 904.9 | 3.9 |
| W600 | 899 | 900.5 | Not Shown - Assumed 906 | 903.2 | 903.9 | 903.9 | 3.4 |
| W900 | 903 | 904 | Not Shown - Assumed 906 | 905.4 | 905 | 905.4 | 1.4 |



Attachment 2

Memorandum

To: *Michael Grochala, AICP*
Community Development Director
City of Lino Lakes, MN

From: *Diane Hankee, PE*
WSB & Associates, Inc.

Erin Heydinger
WSB & Associates, Inc.

Date: *April 5, 2016*

Re: *Mattamy Homes Watermain Review*
WSB Project No. 2029-82

The proposed municipal water system expansion to serve the Mattamy Homes development is sufficient and should be installed as recommended below. The Mattamy development is located west of I-35E between Main Street and the extension of 77th Street E.

The Mattamy Homes development was modeled based on the addition of 871 new users. The model determined watermain sizes and available fire flow. The Mattamy water system should include:

- 16" main routed through the development. Extended from south to north, and east to west
- 12" main to loop through the townhome area
- 8" lateral mains throughout
- Interconnect with the City of Centerville

The model shows that fire flow is sufficient for the single-family residential area of the development, with calculated available fire-flow ranging from 1,450 to 3,100 gpm. The available fire flow for the townhome area was 2,000 to 2,700 gpm. The developer has yet to determine the required fire flow based on the size of the units and the materials to be used for construction. It should be verified that this range of fire flows is sufficient to serve the townhome area.

The Model results conclude that the existing water system can adequately support the Mattamy homes development. However, as there will be additional development elsewhere within the City, additional supply and storage will be required. Options for increasing the City's water supply capacity include constructing a new ground storage reservoir (GSR) and drilling an additional well. This is also outlined in the City's 2030 Comprehensive Plan. Detailed modeling results can be found in **Appendix A** of this memorandum; system-wide development capacity can be found in **Appendix B**.



APPENDIX A – WATER MODELING RESULTS: MINIMUM PRESSURES (psi)

| | Average Day | | | Maximum Day | | |
|--|-------------|----------------|-----------------|-------------|----------------|-----------------------|
| | Existing | Well 7 and GSR | Well 7 and Loop | Existing | Well 7 and GSR | Well 7, GSR, and Loop |
| Existing system plus Mattamy development | 56 | 58 | 58 | 42 | 47 | 53 |
| Existing system plus Mattamy development and additional future development | 56 | 57 | 58 | 26 | 35 | 49 |
| 10-State Standards recommend that the normal working pressure (average day) be approximately 60 psi with minimum working pressures 35 psi. | | | | | | |

Explanation

Two demand scenarios were evaluated:

1. The existing system with the Mattamy development; and
2. The existing system with the Mattamy development and additional development in the northeast area of the City.

Demands were estimated using land-use data from the City’s 2030 Comprehensive Plan.

For each scenario, system additions were made. The system layouts evaluated were as follows:

1. No additions;
2. Adding Well 7 and a ground storage reservoir; and
3. Adding Well 7, a ground storage reservoir, and looping the system across I-35E.

Each scenario was modeled with the largest well out of service (firm capacity) as recommended by 10-State Standards. The model results show that the existing distribution system can support the Mattamy Homes area, but that additional infrastructure will be required as development occurs within the City.



APPENDIX B – CITY OF LINO LAKES PRODUCTION AND STORAGE EVALUATION

Design Requirements

The City is served by five production wells, with a sixth well currently in production. It is recommended that the capacity of the production wells with the largest well out of service be equal to or greater than the maximum day demand. The City also has two elevated storage tanks. Storage tank capacity should be equal to the average day demand plus an additional volume for firefighting.

Existing System

Production

The City currently utilizes wells to withdraw ground water for water supply purposes. Ten States Standards recommends that maximum day water demand is accommodated with the largest well pump out of service (designated as firm capacity). The City currently has five production wells, with Well No. 6 in construction. It is recommended that wells be able to supply the peak day demand at firm capacity. The City’s peak day demand from 2013 to 2015 was, on average, 2,750 gallons per minute (3.9 MGD). A summary of the production capacity is shown in **Table 1**.

Table 1: Lino Lakes Production Capacity

| Well | Flow (gpm) | Flow (gpd) |
|---|------------|------------|
| 1 | 675 | 972,000 |
| 2 | 625 | 900,000 |
| 3 | 1,200 | 1,728,000 |
| 4 | 750 | 1,080,000 |
| 5 | 1,100 | 1,584,000 |
| 6* | 1,200 | 1,728,000 |
| Total Flow* | 5,550 | 7,992,000 |
| Firm Capacity* | 4,350 | 6,264,000 |
| Peak Day Demand | 2,750 | 3,960,000 |
| Remaining Capacity (Firm Capacity minus Peak Day Demand) | 1,600 | 2,304,000 |
| *Well 6 is under construction – flow rates are estimates based on preliminary pumping tests | | |

Storage

The City of Lino Lakes currently utilizes elevated water towers for water storage. There are a number of published design recommendations for water storage. The American Water Works Association recommends that system storage equal the average day demand with a “reasonable” fire-fighting reserve. The fire-fighting reserve varies from city to city. For this report, it was assumed that the City should be able to supply 1,750 gpm for 3 hours. This is consistent with ISO’s recommendation for a system serving primarily built-up residential to light commercial. From 2011 to 2015, the City’s average day demand was 1.39 MG. **Table 2** outlines the City’s storage capacity.

Table 2: Lino Lakes Storage Capacity

| Tower | Capacity (gal) |
|-----------------------|----------------|
| 1 | 1,000,000 |
| 2 | 1,000,000 |
| Total | 2,000,000 |
| Average Day Demand | 1,390,000 |
| Fire Fighting Reserve | 315,000 |
| Remaining Capacity | 295,000 |

Water Demand

To determine the system’s ability to support development, average day water demand, maximum day water demand, and water-use patterns were considered. The total annual pumping was divided by the number of residential connections to estimate the per unit demand on an average day. A similar calculation evaluated the per unit demand on the maximum day. The City’s average day demand from 2013 to 2015 was 303 gallons per unit, and the maximum day demand was 911 gallons per unit. These values are used to estimate the capacity for development.

Development Capacity

To determine how many additional units can be supported on the existing system, both water storage and supply were considered. Results show that with the addition of Well No. 6, the water supply will be sufficient for approximately 1,650 average-use homes after Mattamy is connected, while water storage should be upgraded upon the addition of 104 average-use homes. Therefore, water storage will be the limiting factor in terms of development. **Table 3** summarizes the predicted capacity after the Mattamy development is fully connected.

Table 3: Development Capacity

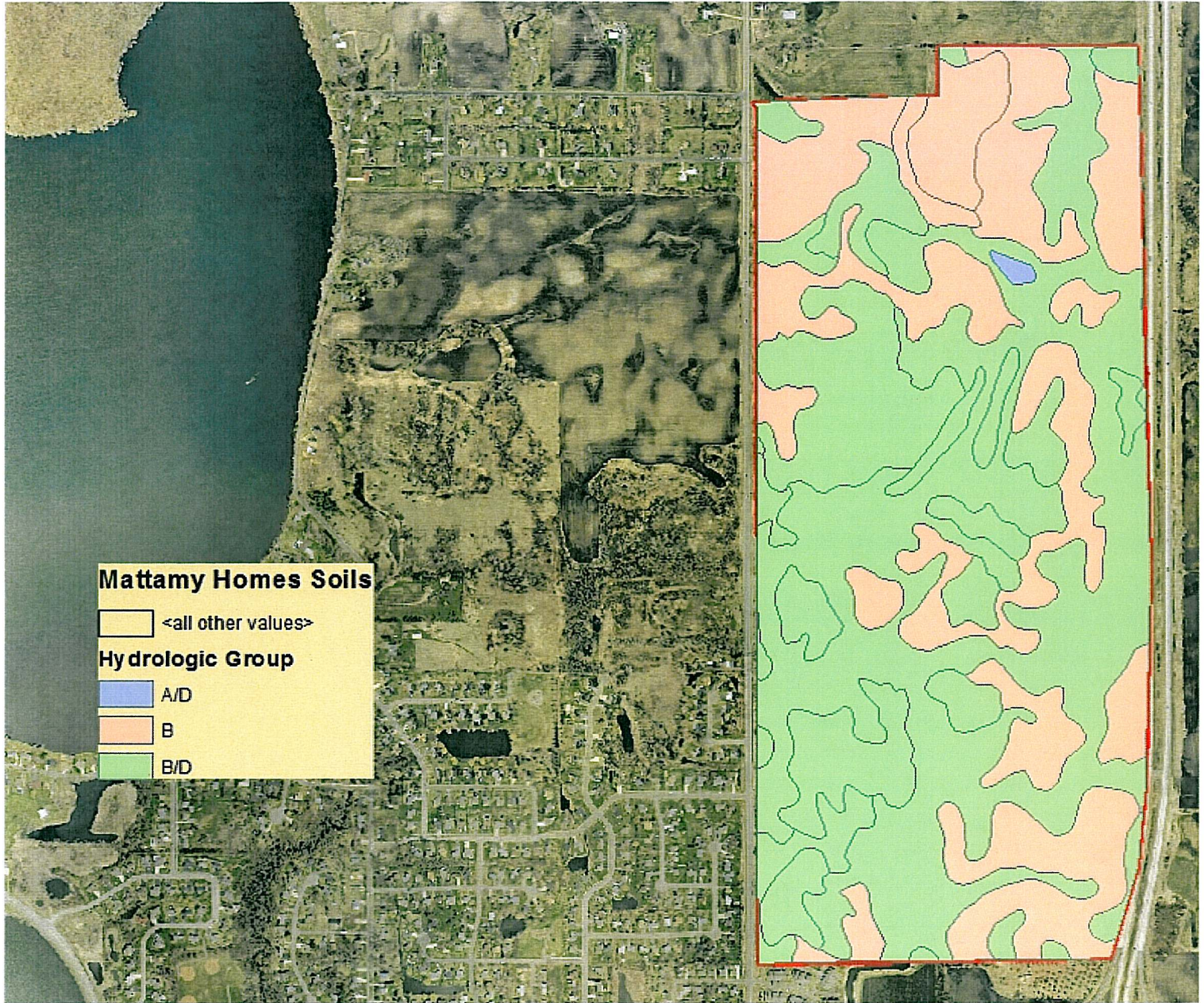
| Water Availability | Water Towers | Production Wells |
|--|---------------|------------------|
| Total Capacity | 2,000,000 gal | 6,264,000 gpd |
| Remaining Capacity | 295,000 gal | 2,304,000 gpd |
| Mattamy Demand* | 264,000 gal | 793,000 gpd |
| Capacity Available | 31,000 gal | 1,511,000 gpd |
| Number of Additional Residential Units | 104 units | 1,650 units |

Existing Aerial and Site Location Map



City of Lino Lakes

Mattamy Homes Soils-Hydrologic Group



Mattamy Homes Soils

<all other values>

Hydrologic Group

A/D

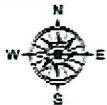
B

B/D



LINO LAKES
500 Town Center Parkway
Lino Lakes, Minnesota 55014
Phone (651) 952-2440

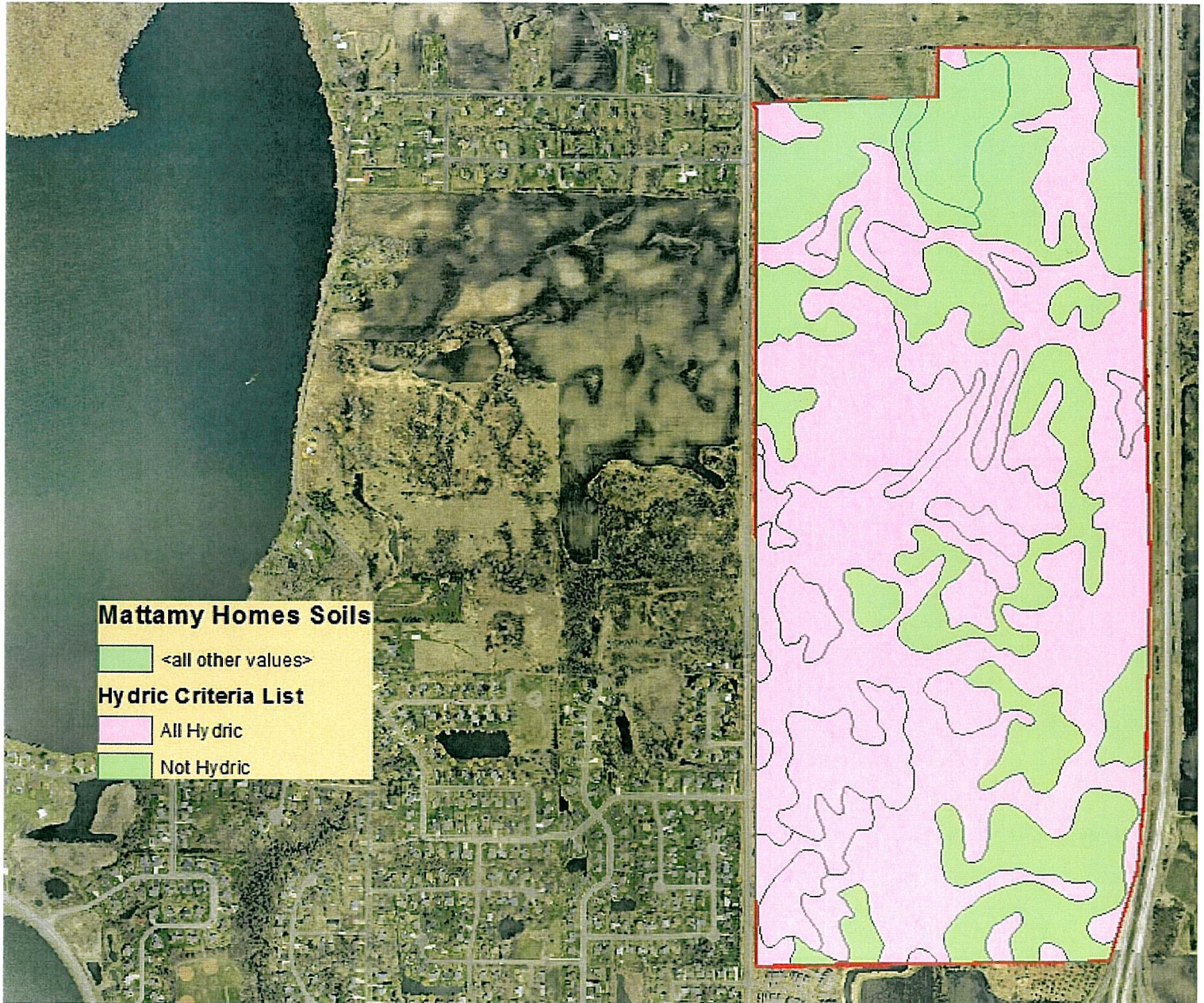
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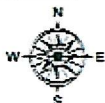
City of Lino Lakes

Mattamy Homes Soils-Hydrlic Rating



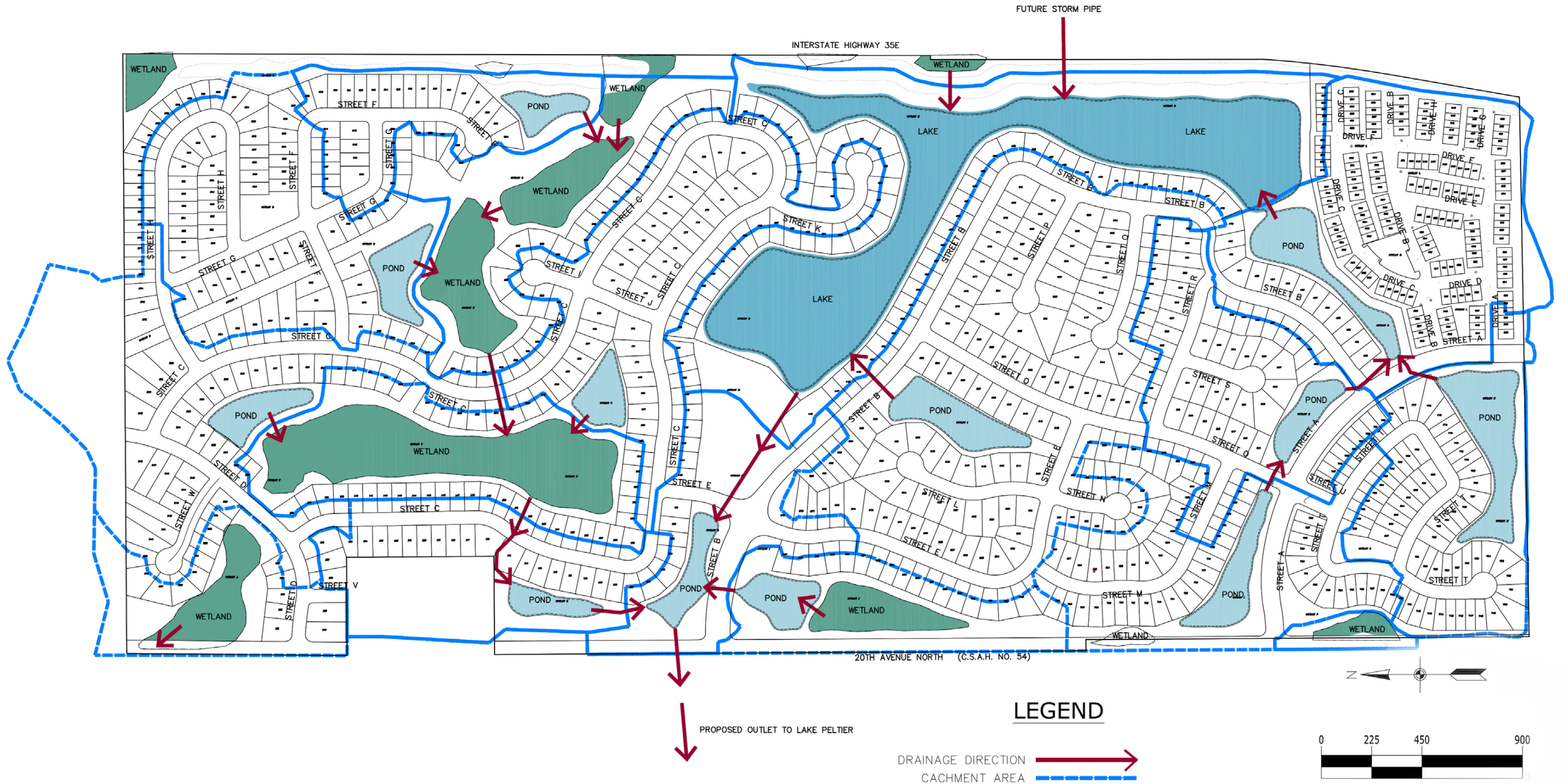
Lino Lakes
600 Town Center Parkway
Lino Lakes, Minnesota 55014
Phone (651) 952-2440

City of Lino Lakes
Lino Lakes Department
10000 Ave
Lino Lakes, MN 55014
Phone: (651) 952-2440



Legend

Drainage Exhibit



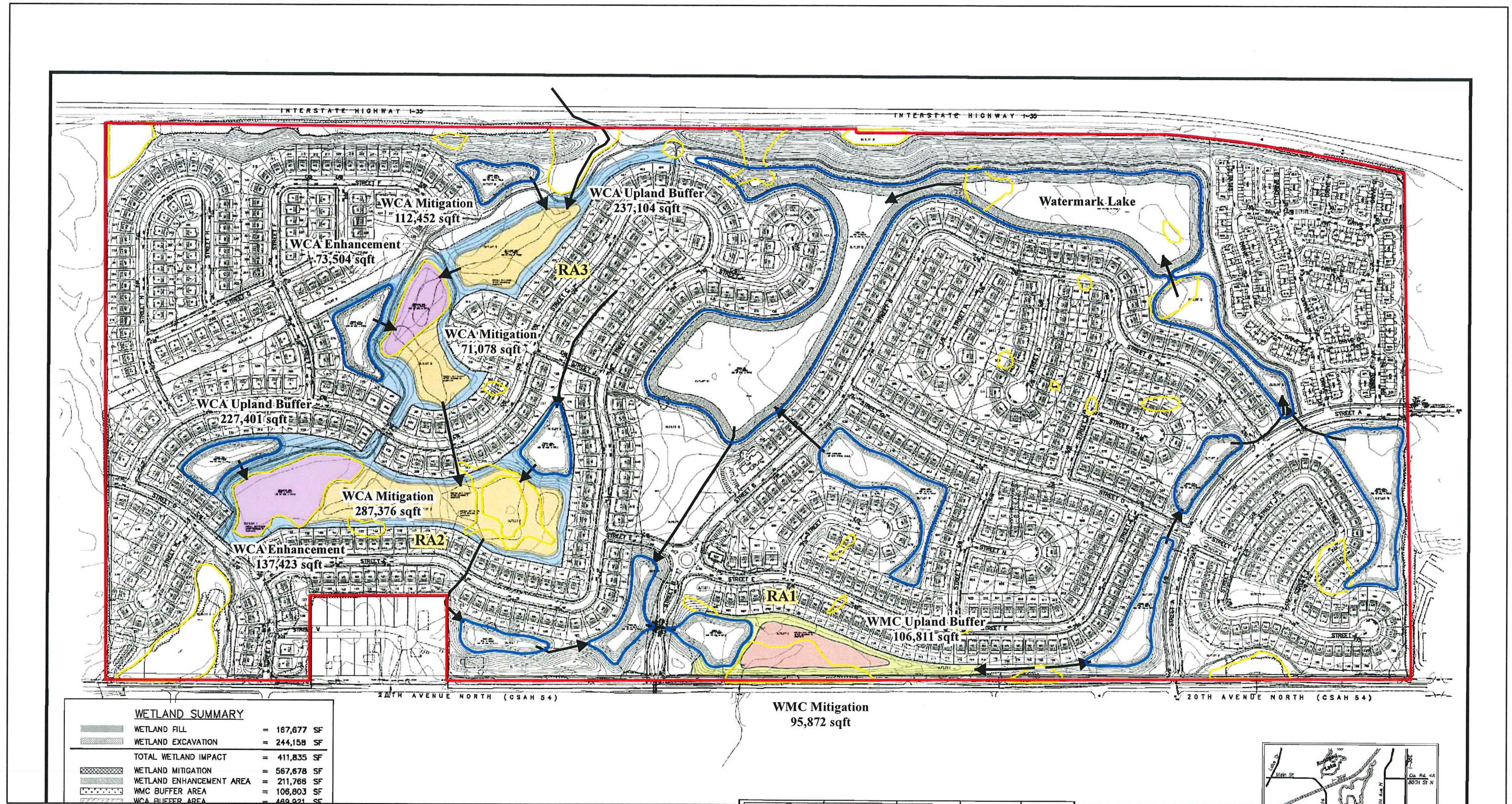


Figure 15 - Replacement Overview with Final WMC Limit

Entry Enlargement



Existing Conditions Exhibit

- - Denotes Found Above County Section Monument
- - Denotes Found Iron Pipe, as noted
- - Denotes Set Iron Pipe, Marked with RLS 45361
- - Denotes Miscellaneous Sign

- - Denotes Telephone Pole
- - Denotes Utility Pole
- - Denotes Road Hole
- - Denotes Guy Wire
- - Denotes Millbox

- - Denotes Soil Spring/Well Hole, by others
- - Denotes Flowed End Section
- - Denotes Storm Manhole
- - Denotes Gas Valve
- - Denotes Existing Well

LEGEND

- - Denotes Existing Guard Post
- - Denotes Existing Gas Meter

- - Denotes Overhead Utility Line
- - Denotes Underground Telephone
- - Denotes Underground Gas
- - Denotes Overhead Utility Line

- - Denotes Main Track Draintile
- - Denotes Private Draintile
- - Denotes Existing Fence, as noted
- - Denotes Overhead Utility Line
- - Denotes Blanketed Surface

- - Denotes Landscaping
- - Denotes Gravel Surface
- - Denotes Concrete Surface

- - Denotes Controlled Right of Access per Doc. No. 389502 & 332643
- - Denotes Wetlands delineated by K/jnhugh Environmental Services, Inc.

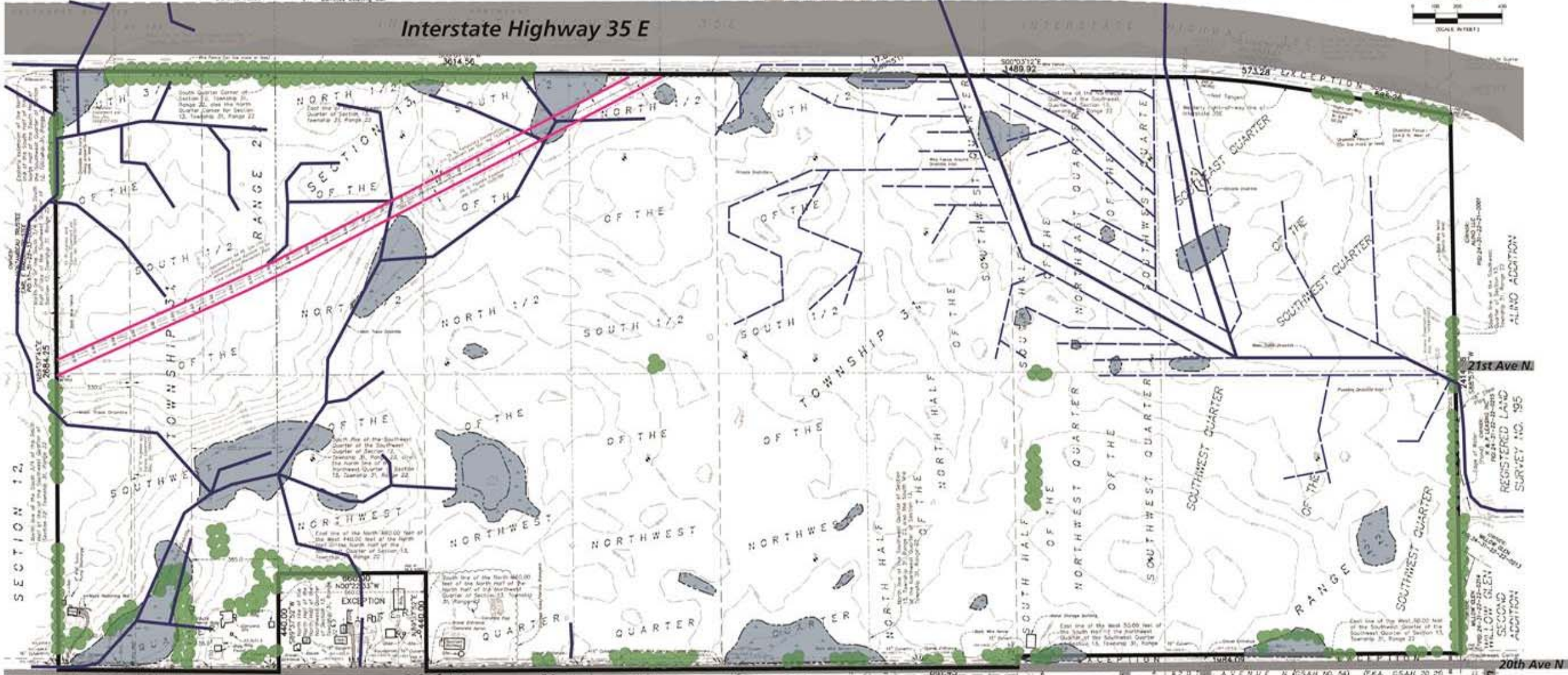
NOTES:

- 1.) Check for MUDOT Right-of-Way fence at the southeast corner of the striped parcel at #4.2 ft. West of boundary line, as shown.
- 2.) Existing Building on subject property to be removed.

Bearings shown herein are based on the South line of the Southwest Quarter of Section 13, Township 31, Range 22, which is assumed to bear S88°57'21" W.



Interstate Highway 35 E



VICINITY MAP
 77th St
 REBEHN'S PELTIER
 GEORGE & BARBARA J. BOY
 02/11-31-22-84-0018



1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 12, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 13, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 14, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 15, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 16, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 17, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 18, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 19, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 20, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 21, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 22, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 23, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 24, Township 31, Range 22 West, Anoka County, Minnesota.

1986.55
 110°22'53"W
 West line of the Northeast Quarter of Section 25, Township 31, Range 22 West, Anoka County, Minnesota.

LEGEND

- Main Track Draintile
- Private Draintile
- Gas Pipeline
- Existing Trees
- Existing Wetlands
- Property Line



BENCHMARKS

1. MN/DOT 030 Station #92399 (1042.51) - Located at Southwest Corner of intersection of Interstate 35E and County Rd. 14 (Elevation = 931.47 (NAVD 88))
2. MN/DOT 030 Station #92391 (1039.11) - Located along West side of Interstate 35E, 1.4 miles North of County Rd. 14. (Elevation = 939.46 (NAVD 88))

Master Plan



Legend

| | | |
|--------------------|---|-----|
| 75' Lots |  | 177 |
| 65' Lots (premium) |  | 54 |
| 65' Lots |  | 247 |
| 55' Lots |  | 144 |
| 44' Lots |  | 84 |
| 30' Townhome |  | 165 |

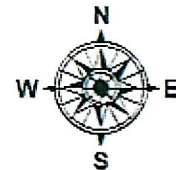
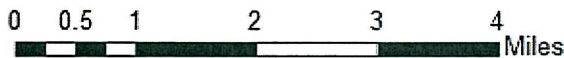
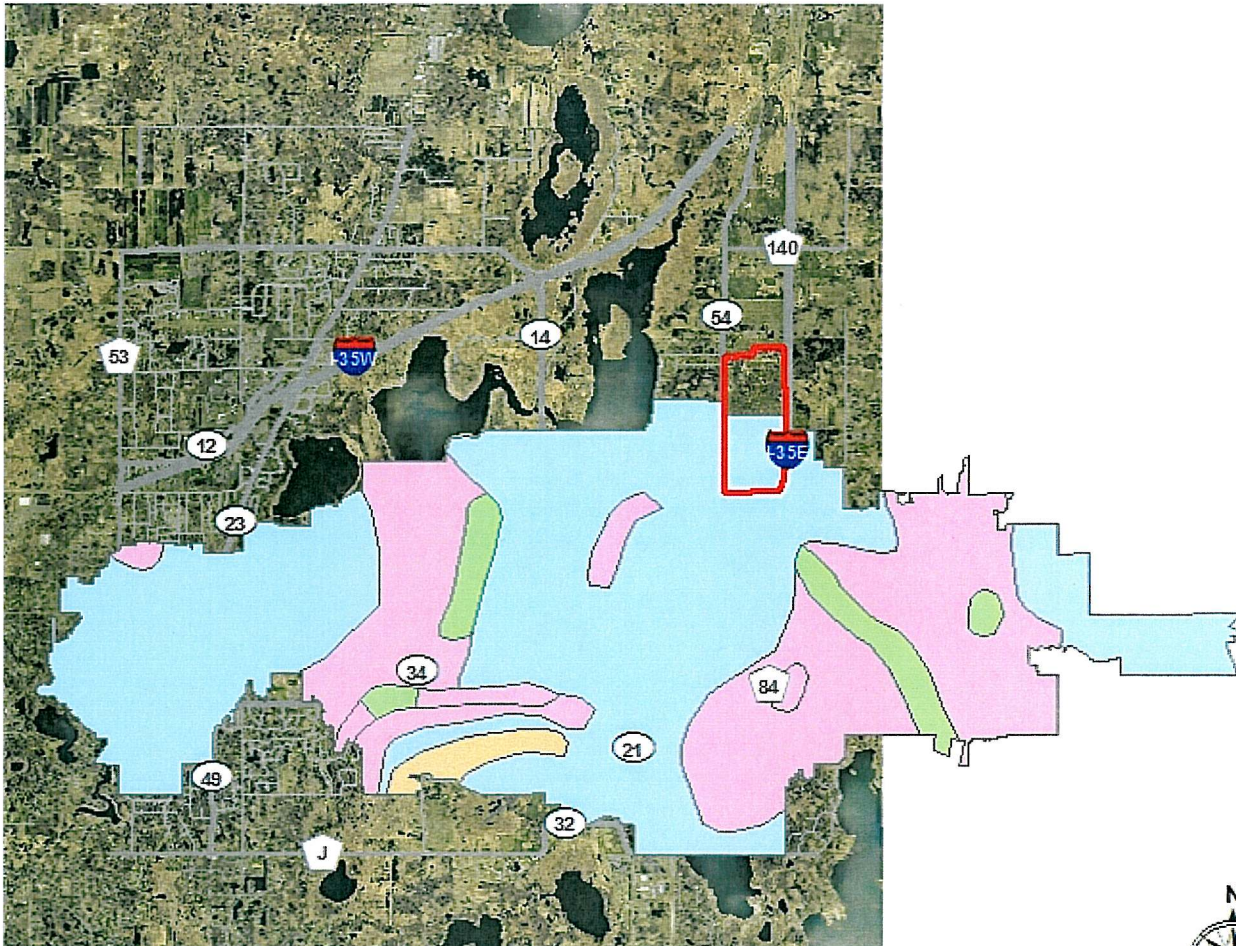


City of Lino Lakes

Mattamy Homes

Drinking Water Service Management Area

DWSMA



Lino Lakes
 600 Town Center
 Parkway
 Lino Lakes, Minnesota
 55014
 Phone (651) 982-2440

Coordinate System:
 Anoka County Coordinates
 NAD83, Feet

Source:
 Anoka County, WSB, MnDOT, SEH

DWSMA Vulnerability In Mattamy Homes Site

Mattamy Homes Site

<all other values>

Vuln

High

Low

Moderate

Very High

Legend

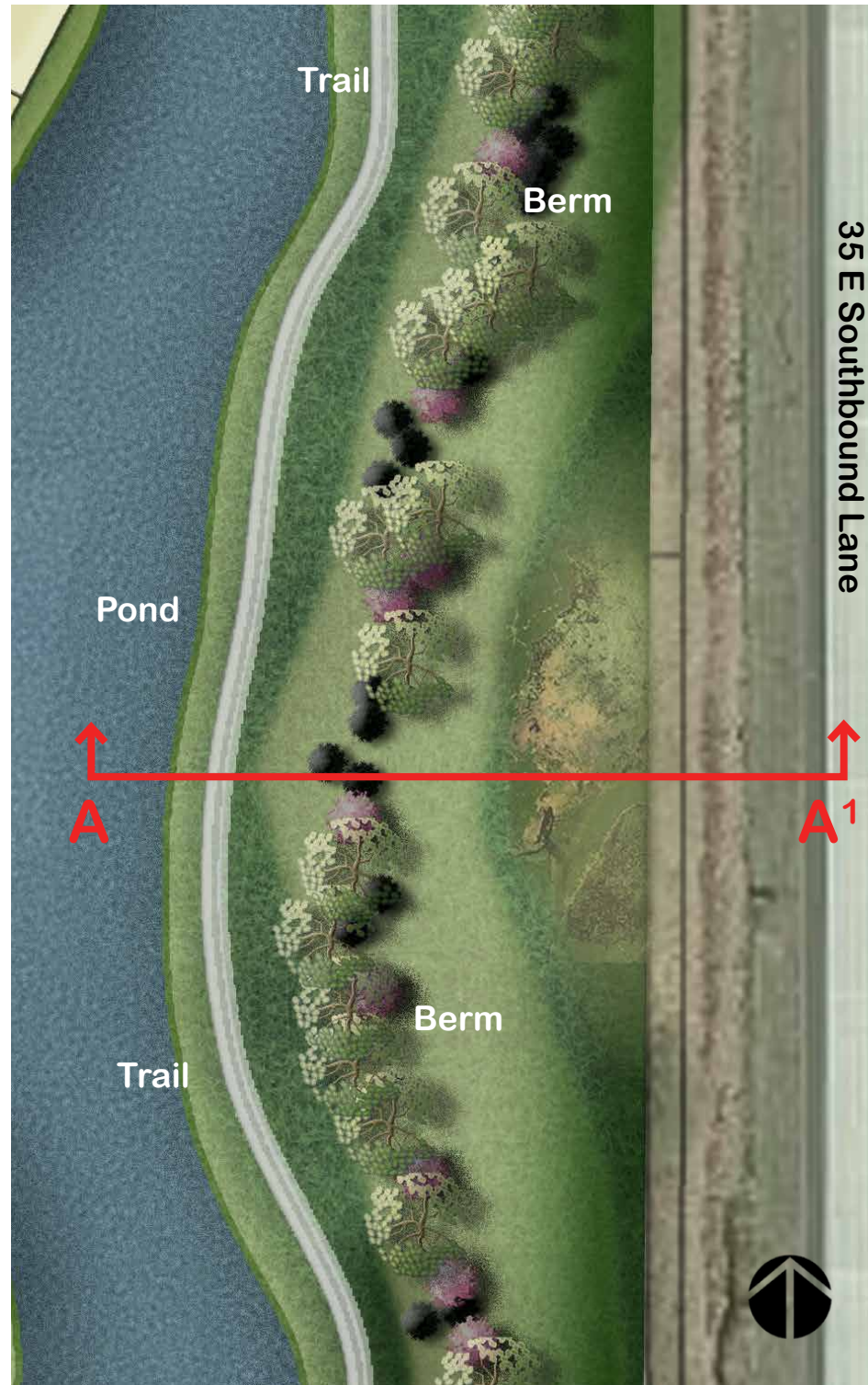
Parks and Open Space Plan



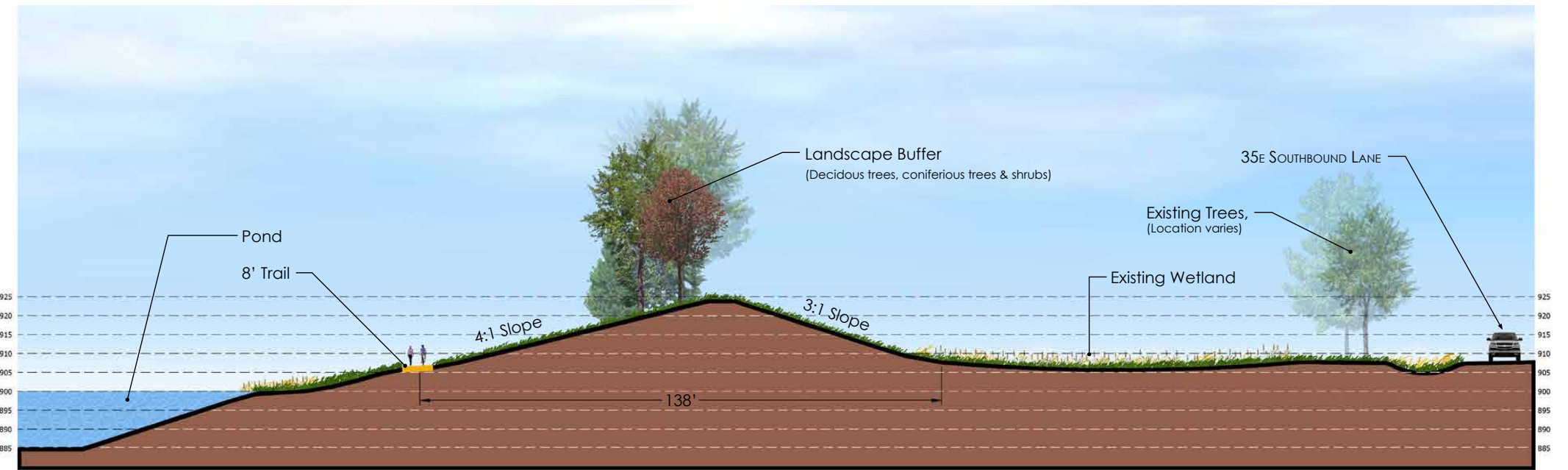
| | |
|--------------------------------|-------------------|
| TOTAL SITE AREA | ±372.24 AC. |
| TOTAL ROW AREA | ±54.34 AC. |
| 20TH AVENUE NORTH | ±5.46 AC. |
| INTERNAL ROW | ±48.88 AC. |
| WATER AREA | ±66.79 AC. |
| WETLANDS(REMAINING/MITIGATION) | ±23.07 AC. |
| LAKE | ±24.19 AC. |
| STORM PONDS | ±19.53 AC. |
| PARK AREA | ±77.00 AC. |
| PUBLIC PARK | ±5.38 AC. |
| PUBLIC OPEN SPACE | ±57.23 AC. |
| PRIVATE PARKS | ±1.59 AC. |
| PRIVATE OPEN SPACE | ±9.43 AC. |
| PRIVATE OPEN SPACE RDWY | ±3.37 AC. |



Typical Berm Plan and Section



Plan - Eastern Edge of Site



SECTION A - A'

Berm Section

**ENVIRONMENTAL BOARD
AGENDA ITEM 6D**

STAFF ORIGINATOR: Aubrey Fonfara, Recycling Assistant

MEETING DATE: April 27, 2016

TOPIC: Organics Recycling Update

BACKGROUND

Information about the Organics Recycling Drop-off Program was included in the annual recycling flyer and mailed to all residents the week of April 11th. As of April 22nd, 47 households have registered. Attached is a map showing location of households that have signed-up.

The Quad Community Press will be publishing an article about the Lino Lakes and Anoka County organics recycling programs. Both programs were promoted at the Wargo Nature Center Earth Day Celebration, and residents will be able to sign-up for the Lino Lakes program at the Spring Recycling day.

Staff are still seeking volunteers to help monitor the organics collection sites for the first month of the program. Sites are open during the month of May on Wednesday from 4-7:00 PM and Saturdays from 11:00 AM-2:00 PM. Staff requests Environmental Board members review the monitoring schedule and volunteer if they are able.

ENVIRONMENTAL DIRECTION

None required. Information only.

ATTACHMENTS

1. Map of organics recycling sign-ups

Organics Recycling Sign-Ups

