September 2, 2025

Staff Analysis of Proposed Amendment to the *Dane County Water Quality Plan* **Revising the Sewer Service Area Boundary and Environmental Corridors in the Northern Urban Service Area** ***"Northern Interstate Corridor Area: Pomp's Tire"***

History of the Northern Urban Service Area

The Northern Urban Service Area (USA) was formed in 2001 through merging the Windsor Urban Service Area and DeForest Urban Service Area. The first amendment to the Northern USA occurred at the time of its creation when 203 developable acres were added. There has been a total of 20 amendments to this urban service area since its creation, 14 were initiated by the Village of DeForest on its own or in cooperation with other adjacent municipalities. In total, amendments to the Northern USA have resulted in a net addition of 2,123 developable acres and 539 acres of Environmental Corridor. The most recent amendment of the service area by the Village of DeForest occurred in 2024, adding approximately 158 developable acres.

Planning in DeForest

The Village of DeForest updated their comprehensive plan in 2023. The Comprehensive Plan is substantially consistent with the adopted 2050 Regional Development Framework (Framework). The Village of DeForest is requesting an amendment to the Northern USA northwest of the Village. The requested amendment area is identified as "Mixed or Flex Commercial/Industrial" on DeForest's official Future Land Use Map. The impetus for the proposed amendment is Pomp's Tire Service, which is a commercial site development planned for the southern third of the amendment area—referred to as the "Pomp's Tire subarea" in the application.

The amendment area is located within a planned "Northern Interstate Corridor Area." The Northern Interstate Corridor Plan was adopted in April 2023 and incorporated into the Village's updated Comprehensive Plan. The proposed amendment area was also identified in the North Yahara Future Urban Development Area (FUDA) study as a conceptual future development area for industrial uses. FUDA studies were multi-party growth area plans conducted by CARPC and local municipalities in the early 2010s.

Existing Conditions

Land Use

The Village of DeForest is requesting an amendment to the Northern USA northwest of the Village. The amendment area is located northwest of the intersection of I-39/90/94 and CTH-V, and west of CTH-I. The requested amendment area totals approximately 25 acres. The surrounding land use is either existing or planned commercial and industrial development. Other current land uses in the vicinity include row crops and non-metallic extraction, i.e. sand and gravel. Land in the Town of Vienna beyond

the Village's planned commercial/industrial corridor is predominantly envisioned as agricultural and is designated as an Agricultural Enterprise Area. Refer to Table 1 for existing and planned land uses.

Surrounding Planned Land Uses:

- **North**: Mixed or Flex Commercial/Industrial
- **West**: Industrial or Business Park
- **South**: Mixed or Flex Commercial/Industrial
- **East**: Mixed Commercial

Table 1
Existing and Planned Land Use[1]

Land Use Category	Existing Land Use Acres (see Map 3)	Proposed Land Use Acres (see Map 4)
Agriculture	12.6	
Commercial/Industrial		20.3
Mineral Extraction	2.4	
Open Land	5.7	
Residential	1.0	
Transportation (Rights-of-Way)	3.2	4.6
	24.9	24.9

Cultural and Historic Sites

The Wisconsin Historical Society (WHS) has been contacted regarding the presence of any known archaeological sites or cemeteries within the amendment areas. No cultural heritage sites are reported within the proposed amendment area. The WHS is not recommending a survey for this area currently.

Natural Resources

The proposed amendment area is in the Cherokee Lake-Yahara River (HUC 12: 070900020504) subwatershed (see Map 5A), which is approximately 28.5 square miles. Significant resources present within the area include the Yahara River and associated tributary streams and wetlands.

[1] Acreages listed in application materials may vary from acreages calculated through mapping in GIS by staff depending upon applicant data sources and mapping methods.

Wastewater from the amendment area will be treated at the Madison Metropolitan Sewerage District (MMSD) Wastewater Treatment Facility. The treated effluent is discharged to Badfish Creek, bypassing the Yahara chain of lakes.

Wetlands

WDNR's Wisconsin Wetland Inventory (WWI) does not show any wetlands within or immediately adjacent to the amendment area. Wetlands exist further downstream of the amendment area but are not in proximity.

Yahara River

This subwatershed is approximately 28.5 square miles. The Yahara River (WBIC 798300 / WATERS ID 355202) is 63 miles long and originates in Columbia County, connecting Lakes Mendota, Monona, Kegonsa, and Waubesa. Pollutants of concern in the Yahara River are sediment/total suspended solids and total phosphorus, which have resulted in a degraded habitat and low dissolved oxygen. Total Maximum Daily Loads (TMDL) for total phosphorus and sediment were approved by the US EPA in 2011. Runoff from the amendment area drains to the Yahara River via an unnamed tributary (WBIC 807700). The Token Creek to the headwaters segment (from mile 47.02 to 63.02) is downstream of the amendment area and supports a Warmwater Sport Fishery (see Map 5). This 16-mile segment was listed as an impaired water per Section 303(d) of the Clean Water Act in 2014 for phosphorus. An assessment for chloride in 2016 found levels to be too high and the segment was listed as impaired. This segment was assessed during the 2022 listing cycle and based on the sample data chloride its listing status was removed.

There has been a DNR monitoring station (Station 10033683) at River Road on the unnamed tributary (WBIC 5033600) downstream of the amendment area since 2011. Field measurements from 2024 indicated dissolved oxygen levels of 4.34 to 9.37 mg/L and transparency of 17 to 120 cm. Chloride data is not collected at this monitoring station. USGS baseflow monitoring on the Yahara River at Lake Windsor Country Club (Station ID 05427718) measures discharge, water level, and water quality data. Chloride data from 2022 (most recent available) indicated levels of 47.1 to 95.8 mg/L.

Springs

Springs represent groundwater discharge visible to the casual observer. The Wisconsin Geological and Natural History Survey (WGNHS) maintains an inventory of springs in Dane County and throughout the state. From 2014 to 2017, the WGNHS surveyed springs statewide that were expected to have flow rates of at least 0.25 cubic feet per second (cfs). There are no known springs in the Cherokee Lake-Yahara River subwatershed.

Groundwater

Groundwater modeling using the 2016 Groundwater Flow Model for Dane County, developed by the WGNHS (link to website), shows that 2010 modeled baseflow in the Yahara River at South Street (see location on Map 5) decreased compared to predevelopment flow conditions (8.6 to 7.8 cfs; see Table 4). These reductions are primarily due to the cumulative effects of well water withdrawals from multiple municipalities in the groundwatershed. Pre-development conditions represent no well pumping within the model.

In 2012, the WGNHS published a report, *Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model* (link to report), estimating the existing groundwater recharge rates in Dane County based on the soil water balance method. The study estimates that the existing groundwater recharge rate in the proposed amendment area ranges from approximately 9 to 10 inches per year, although quarry areas are not given a value (see Map 5B).

Endangered Resources

The WDNR Bureau of Endangered Resources maintains a database representing the known occurrences of rare plants, animals, and natural communities that have been recorded in the Wisconsin Natural Heritage Inventory (link to website). A screening review of this database conducted by CARPC staff for species designated as endangered, threatened, or of special concern did not identify any within a 1 to 2-mile radius of the amendment area. Additional review by the WDNR Bureau of Endangered Resources is not required.

The amendment area was reviewed for the High Potential Zone (species likely present) for the federally endangered Rusty Patched Bumble Bee (link to web map). None of the proposed developable area falls within the High Potential Zone.

Soils and Geology

The amendment area is located within the Bristol Till Plain Land Type Association of Wisconsin. The Association classifies the surficial geology of this area as undulating till plain with low drumlins and scattered wetlands and bedrock knolls.

Surface elevations within the amendment area range from around 955 feet to 1006 feet. There are two areas of steep (>12%) and very steep (>20%) slopes in the center of the amendment area (see Map 6). These areas of steep slopes are not riparian and do not require inclusion in Environmental Corridors.

According to the Natural Resource Conservation Service (NRCS) Soil Survey of Dane County, the soils in the north half of the amendment area are in the Batavia-Houghton-Dresden association. These soils range from well to poorly drained, deep to moderately deep silt loams and mucks that are underlain by silt, sand, and gravel. The southern half of the amendment area is in the Plano-Ringwood-Griswold association. These soils are moderately well drained and well drained, deep silt loams and loams. Table 2 shows detailed classifications for soils in the amendment area (see Map 7) while Table 3 shows important soil characteristics for the amendment area.

There are no hydric soils within the amendment area (see Map 7). Hydric soils are good indicators of existing and former (drained) wetlands.

According to the Soil Survey Geographic data for Dane County developed by the NRCS (link to web soil survey), the Troxel soils (the TrB map unit) are not hydric, but they do have a seasonal (April to June) zone of water saturation within 5 feet of the ground surface. The Troxel soils are classified as moderately well drained and therefore do not pose a limitation for buildings with basements.

Table 2
Soils Classification

Soil	% of Area	General Characteristics
Gravel pit; GP	45.1	Poorly graded gravels and sandy gravel mixtures with little or no fines. Soils are stable and pervious. Not rated for limitations for development.
Cut and fill land; Cu	26.5	Variable – too variable to be estimated
Troxel Silt Loam; TrB	15.5	Deep, well drained and moderately well drained, gently sloping soils in draws, on fans, and in drainageways. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses severe limitations for development due to low bearing capacity.
Plano Silt Loam; PnB	12.8	Deep, well drained and moderately well drained, nearly level to sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses slight limitations for development due to shrink/swell potential and low bearing capacity.

Source: Soil Survey Geographic data for Dane County developed by the USDA Natural Resources Conservation Service

Table 3
Soils Characteristics

Characteristic	Soil Map Symbols (see Map 7)	% of Area
Prime Agricultural Soils	PnB, TrB	28.3
Hydric Soils (Indicates Potential / Restorable Wetlands)	None	0
Poorly Drained Soils with Seasonal High Water Table (< 5’)	None	0
Soils Associated with Steep Slopes (> 12%)	None	0
Soils Associated with Shallow Bedrock (< 5’)	None	0
Best Potential for Infiltration in Subsoils	PnB, GP	57.9

Source: Soil Survey Geographic data for Dane County developed by the USDA Natural Resources Conservation Service

According to WGNHS data, bedrock within the northwestern portion of the amendment area is in the Trempealeau Formation. Bedrock in the Trempealeau Formation is quartz sandstone, dolomitic siltstone, silty dolomite, and sandy dolomite, consists of two formations including the Jordan and underlying St. Lawrence Formations, which were combined as one mapping unit. Thickness is up to 75 feet, where not eroded. The remainder of the amendment area is in the Tunnel City Group. Bedrock in the Tunnel City Group is medium to very fine-grained quartz sandstone, locally very glauconitic, and consists of two formations including the Lone Rock and Mazomanie Formations. Thickness is up to 150 feet. According to WGNHS data, the depth to bedrock in the amendment area ranges from 0-50 feet, with the shallowest depths generally being in the northwestern portion of the amendment area, and the deepest depths being in the southeastern portion of the amendment area (see Map 8).

As is common throughout much of the upper Midwest, karst features such as enlarged bedrock fractures are prevalent in the local dolomite uplands. Karst features including vertical fractures and conduits provide primary pathways for groundwater movement and can dramatically increase groundwater susceptibility when present. The location of karst features is difficult to predict, and the thickness and type of the overlying soil greatly affects how much water drains into them. Where clay soils are thick, infiltration rates are likely to be very low. However, where bedrock fractures are near the surface infiltration rates can be very high. Karst may be encountered in the amendment area at depths ranging from 0 to 7 feet, with the shallowest depths coinciding with the shallow bedrock in the northwestern portion of the amendment area (see Map 8). This can pose a concern for potential groundwater contamination if improperly managed.

WDNR Conservation Practice Standard 1001 – Wet Detention Pond (2007) and *WDNR Conservation Practice Standard 1002 – Site Evaluation for Stormwater Infiltration* (2017) require field verification for areas of the development site considered suitable for stormwater management. This includes a site assessment for karst features in this area. If shallow karst features are found, adequate protection measures are required to address any potential for groundwater contamination.

Per Dane County ordinance, infiltration practices receiving runoff from source areas that contain impervious surfaces must be located to allow a separation distance of at least 5 feet between the infiltration system and the elevation of seasonal high groundwater, or the top of bedrock, along with certain soil filtering characteristics. However, there is no minimum separation distance for roofs draining to surface infiltration practices. Soil test pits are required as part of the stormwater management plan to ensure that infiltration practices are sited in locations that will not adversely affect groundwater quality.

Proposed Urban Services

Parks and Open Space

There are no parks, open space, or designated stormwater management areas (excluding conceptual site-level stormwater areas) proposed within the amendment area (see Map 2).

Wastewater

<u>Overview</u>

Sanitary sewer service will be provided to the proposed development within the amendment area by connection to the Village of DeForest sanitary sewer collection system, which then flows to the Madison

Metropolitan Sewerage District (MMSD) wastewater collection and treatment system. The amendment area will connect to the existing 15-inch diameter northerly extension of the Village-owned Hickory Lane Interceptor. The interceptor conveys flows south along Hickory Lane and connects to an 18-inch diameter section of the Hickory Lane Interceptor between Linde Street and Cake Parkway. Flow in this interceptor connects to an existing interceptor at River Road, between Hilltop Road and West Lexington Parkway, and flows south within the Village-owned sewer within River Road and through greenspace, connecting to the MMSD-owned Northeast Interceptor – DeForest Extension interceptor at the north end of Mayapple Circle (see Map 9). From there, wastewater flows via the Northeast Interceptor – DeForest Extension to Pump Station 14 within the MMSD system, and eventually to the Nine Springs Treatment Facility. There is an existing pumping station and force main system near and along River Road that is owned by the Town of Vienna Sanitary District 1 and pumps into the MMSD system. There are no plans for this system to pump into Village-owned sewer.

Collection System

The proposed development within the amendment area consists of approximately 11.6 acres of industrial and 8.7 acres of commercial land uses contributing to wastewater flows. The Village estimates that the amendment area will generate an annual average of approximately 6,090 gallons per day (gpd) of wastewater, or 4 gallons per minute (gpm). For industrial and commercial land uses, the Village assumes 300 gallons per acre (gal/ac) based on flow data from MMSD for the existing USA. The Village estimates that the amendment area will generate a peak daily flow rate of approximately 24,360 gpd (0.024 mgd), or 18 gpm, utilizing a peaking factor of 4 for all land uses.

The proposed sewer main extension from the existing 15-inch interceptor in Hickory Lane intended to serve the amendment area has not received final design yet but will be sized based on final projected loadings. The critical section of the 15-inch interceptor has a design capacity of 1,194 gpm and will receive a cumulative peak daily loading of 1,073 gpm, including existing flow and projected flows from the amendment area. The critical section of the east-west 18-inch sewer from Hickory Lane to River Road has a design capacity of 1,827 gpm and will receive a cumulative peak daily loading of 1,791 gpm, including existing flow and projected flows. This Village-owned interceptor was designed to account for the projected flows from the amendment area, as well as additional future growth areas and existing lands within the urban service area. The existing 18-inch sewer along River Road, which connects to the MMSD-owned sewer at Mayapple Circle, has a design capacity of 2,042 gpm and will receive a cumulative peak daily loading of 1,935 gpm, including existing and projected flows. The *2018 MMSD Collection System Evaluation* conducted on the receiving MMSD interceptor sewers shows that the MMSD interceptor sewers have sufficient capacity to serve the amendment area. In 2020, Pump Station 14 underwent system upgrades to increase the peak and firm pumping capacity, among other improvements. Altogether, the existing and planned collection system appears to have sufficient capacity to serve the proposed amendment area.

Wastewater Treatment Facility

Madison Metropolitan Sewerage District (MMSD) will provide wastewater treatment for the amendment area. The amendment area will need to be annexed into the MMSD service boundary. The Nine Springs Wastewater Treatment Facility (WWTF) is located on Moorland Road, Madison. Treated effluent had been discharged to Badfish Creek within the Badfish Creek Watershed (Lower Rock River

Basin) and Badger Mill Creek within the Upper Sugar River Watershed (Sugar-Pecatonica Basin) since 1998; however, the discharge to Badger Mill Creek was conditionally approved to be discontinued in September of 2024 (see DNR Letter DC-0238) and has since ceased.

The rated monthly design flow capacity of the facility is 56.0 million gallons per day (MGD) and the maximum daily design flow capacity is 68.6 MGD. In the year 2024, the facility received an average monthly influent hydraulic loading of 40.0 MGD (72% of the 56.0 MGD design capacity), including infiltration and inflow, according to the 2024 Compliance Maintenance Annual Report (CMAR) (link to 2024 CMAR). It is expected to reach 90% of current hydraulic design capacity around 2026 based on current projected growth rate assumptions. This already occurs on occasion, although average flows did not exceed 89% design capacity for any month in 2024. MMSD completed a facility plan in 2017, titled Liquid Processing Facilities Plan, that recommended improvements to the liquid treatment processes at the plant, including the addition of hydraulic capacity. These improvements are being implemented in multiple phases between 2018 and 2030. For the 20-year planning period, treatment for this area is expected to remain at the existing wastewater treatment facility location with expanded capacity of the system as the need is foreseen. MMSD staff were contacted regarding the proposed development. Staff responded with questions necessitating clarification in the reporting provided by the applicant, but otherwise did not express concerns about serving this additional area.

The facility's WPDES permit for wastewater discharge expired on March 31, 2025, however a new permit has not yet been issued. Limits within the existing permit will remain in effect until a new permit is issued. MMSD did not have issues meeting its WPDES permit limits for the quality of effluent discharged to Badfish Creek and Badger Mill Creek, according to their 2024 CMAR. Permit limits are specific to each outfall; however, effluent sampling is performed upstream of the flow split to each outfall. Effluent quality reporting below refers to Badfish Creek, where approximately 95% of discharge is released (prior to change in effluent discharges, as described above). Below is a summary of the major effluents reported in the 2024 CMAR for the Badfish Creek outfall:

- The biochemical oxygen demand (BOD) effluent quality for 2024 was well below the monthly average limit, with a monthly average of 2.6 mg/L (14% of the limit) and a maximum concentration of 4 mg/L (21% of the limit) for the months of January and February.

- The total suspended solids (TSS) effluent quality for 2024 was below the monthly average limit, with a monthly average of 4.9 mg/L (25% of the limit) and a maximum concentration of 8 mg/L (40% of the limit) for the month of September.

- The ammonia (NH3) effluent quality for 2024 was well below the monthly average limits (limits vary by month), with a monthly average of 0.340 mg/L (5-19% of the limit) and a maximum concentration of 0.778 mg/L (19% of the limit) for the month of March.

- The phosphorus (P) effluent quality for 2024 was below the monthly average limit, with a monthly average of 0.31 mg/L (20-57% of the limit) and a maximum concentration of 0.57 mg/L (57% of the limit) for the month of September.

Badfish Creek is a tributary to the Rock River, and thus the currently applicable WPDES permit for MMSD includes phosphorus and TSS limits for effluent to Badfish Creek to comply with the Total Maximum Daily Load (TMDL) developed for the Rock River Basin to protect and improve water quality. In addition to the TMDL limits, future water quality-based effluent limits (WQBEL) have been considered in the WPDES permit. The interim limit for phosphorus discharged to Badfish Creek is a 1.0 mg/L monthly average required beginning May 2020 (previous limit was 1.5 mg/L), with a final WQBEL of 0.225 mg/L. Additionally, an interim limit of 0.6 mg/L, expressed as a six-month average (May through October and November through April) is required beginning May 2020, with a final WQBEL of 0.075 mg/L. To meet the WQBEL for phosphorous, MMSD has implemented a Watershed Adaptive Management (WAM) approach, leading a diverse group of partners called Yahara Watershed Improvement Network (Yahara WINs) in implementing phosphorus reducing practices in the Yahara Watershed (link to Yahara WINs website).

The Nine Springs WWTF does not remove chloride from influent. A 2015 study completed by AECOM determined that while possible, treatment would be cost-prohibitive, energy intensive, and involve other environmental impacts (link to report). MMSD has been granted a variance from the chronic water quality standard for chloride of 395 mg/L required by NR 105. With this variance, the WPDES permit sets interim (variance) monthly limits above the chronic water quality standard and requires MMSD to implement chloride source reduction measures. One such source reduction initiative which MMSD participates in is the Wisconsin Salt Wise Partnership (link to Salt Wise website).

Water System

Overview

DeForest Municipal Water Utility provides municipal water through a public water distribution system comprised of the original DeForest system ("DeForest North") and the former Token Creek Sanitary District system ("DeForest South"). In 2021, the Village completed a project to connect the systems, providing a booster station with a pressure control valve to allow water to be pumped from DeForest South to the DeForest North or for water to flow from North to South. Together, the system includes approximately 433,000 linear feet of water main and four active high-capacity groundwater wells within the Village that pump into the distribution system. The active wells are at depths ranging from approximately 412 to 695 feet with an average capacity of 300 to 1,600 gallons per minute (gpm). In total, the gross capacity of the municipal wells is approximately 3,560 gpm, or 5.13 million gallons per day (MGD). The firm capacity (with the largest well assumed to be out of service) is approximately 1,960 gpm, or 2.82 MGD. The Village has three elevated storage tanks, with a combined capacity of 1.10 million gallons.

System Capacity

According to the 2024 Annual Report to the Public Service Commission of Wisconsin (link to 2024 Annual Report), the Village pumped an average of 603 gpm, or 0.87 MGD, in 2024, which is approximately 31% of its firm pumping capacity. In 2024, the maximum amount pumped in any one day was 1,682 gpm, or 2.42 MGD. Applying the Village's peak hour to maximum day factor of 2.0, the current estimated peak hourly demand is 3,364 gpm, or 4.84 MGD.

Water losses in the Village's distribution system were an average of 19,644 gpd, or 0.02 MGD, in 2024, which accounted for 2% of the net water supplied. Approximately 18% of this was due to unreported and background leakage, with the remaining due to reported leaks and other apparent losses. In 2024, there were 4 main breaks and 1 service break which were repaired. Water losses in the Village's distribution system were 3% in 2023 and 4% in 2022. The Wisconsin Administrative Code PSC 185.85(4)(b) requires a utility with more than 1,000 customers to submit a water loss control plan to the Public Service Commission (PSC) if the utility reports its percentage of water losses exceeds 15%.

Water supply within the amendment area will be provided by connecting to existing 12-inch water main in CTH I. Water main is anticipated to be extended north along CTH I and west along existing Zoi Lane, then internally looped within the development area (see Map 9).

The proposed development within the amendment area consists of approximately 11.6 acres of industrial and 8.7 acres of commercial land uses contributing to water demand. The Village anticipates the annual average daily water demand for the amendment area to be approximately 6,090 gallons per day (gpd), or 4 gpm. This assumes 300 gallons per acre per day (gpd/ac) for the industrial and commercial land uses. The Village estimates a maximum daily demand of 11,936 gpd, or 9 gpm, based on a maximum daily demand factor (maximum day to average day) of 1.96 based on the Village's 2021 water sales. The peak hourly demand as calculated by the Village is approximately 995 gallons/hour, or approximately 18 gpm, based on a peak hourly demand factor (peak hour to maximum day) of 2 for all land uses. Including the projected demand from the amendment area as well as the additional demand from the recently added " Northern Interstate Area" (link to 2310 Staff Analysis Report) urban service area amendment (contributing a peak daily demand of approximately 79 gpm), the total peak daily demand on the water system is anticipated to be 1,770 gpm. The peak hourly demand is anticipated to be 3,539 gpm. This is approaching the gross capacity (3,560 gpm) of the system with all four wells running but does exceed the firm capacity. If one well is down, water from storage will be required to meet the peak hourly demands on the system (note: this is already the case without adding the projected demand from the amendment area). Nonetheless, it is anticipated that the existing water supply system will support the additional demand from the proposed amendment area. The estimated average daily water demand represents an increase of approximately 1% of the current demands on the system.

The Village estimates that static pressures within the amendment area will range between 37 psi (at the highest elevations) to 57 psi (at the lowest elevations), providing acceptable pressure. However, there may be insufficient effective storage volume during fire flow conditions. The 2024 WEGS Annual Report for the DeForest Municipal Water Utility reports a peak daily demand of 1,682 gpm. Using a peaking factor of 2, the existing peak hourly demand is 3,364 gpm. Based on the assumptions described above, the peak hourly demand following development of the amendment area will be 3,539 gpm. The Village states that the recommended fire flow for industrial land uses is 3,500 gpm for 3 hours. At firm capacity, there is insufficient effective storage to support the recommended fire flow per ISO standards; if the largest well is down, there may be insufficient water in storage to meet the peak hourly demands on the system.

Stormwater Management System

The amendment area, totaling approximately 25 acres, currently consists of mostly agricultural lands, one home site and former mineral extraction. It is in the Cherokee Lake-Yahara River subwatershed (HUC 12: 070900020504). This area has variable topography due to the former mineral extraction activity, but otherwise generally drains east/southeast. There is also a closed basin depression in the northern third of the site, to which the northern half of the site drains. Runoff that leaves the site generally drains south/southeast along CTH I, then east through a series of wetlands and crossing Interstate 39/90/94 via culverts. From there, runoff drains to the east through additional wetlands, unnamed intermittent and perennial streams, and constructed drainageways, eventually reaching the Yahara River approximately 2 miles to the east of the amendment area.

According to the Village's application, new development within the amendment area will meet or exceed current stormwater regulations for peak rate control and attenuation, water quality (TSS reduction), volume control (infiltration), thermal control for areas within thermally sensitive watersheds, and oil/grease control. For the portion of the amendment area which is in a closed basin watershed, it will be necessary to model the volume of storage within the closed basin in predevelopment conditions, meet the 90% stay-on requirement without exemption, and meet additional requirements for sites subject to inundation.

Conceptual stormwater management areas are shown in the Village's application for the Pomp's Tire development located in the southern third of the amendment area, though precise configurations and location are subject to change with specific development plans. It will be important to consider location of outdoor storage of tires and other materials which may produce contaminants so that runoff is directed toward onsite stormwater management facilities or other site-specific best management practices. The Tire Industry Association (TIA) Environmental Advisory Council has issued best management practices intended to provide clarification and guidance for stormwater management at tire and battery automotive service facilities. The owner of the Pomp's Tire subarea is encouraged to adhere to all best management practices to reduce the likelihood of contaminant transport offsite via stormwater runoff.

Plat-wide or regional stormwater facilities will be placed in outlots dedicated to the public and will be owned and managed by the Village, while any stormwater facilities privately owned and managed will be subject to a stormwater maintenance agreement to be recorded with the Dane County Register of Deeds.

A detailed stormwater management plan review and approval is required prior to beginning any development construction. The plan will be required to meet all stormwater management and performance standards of the Village of DeForest, Dane County, and WDNR current at the time of development. Temporary stormwater management and erosion control using appropriate best management practices during construction will also be required.

Performance Standards

The Village of DeForest stormwater management and performance standards are contained within Chapter 24 of the Village of DeForest Code of Ordinances. Dane County stormwater standards are detailed within Dane County Code of Ordinances, Chapter 14. WDNR stormwater standards are within

Administrative Code Chapters NR 151 and NR 216. Development within the amendment area will be required to follow the more protective requirements contained within the respective standards.

The Village proposes post-construction stormwater management performance measures for the amendment area to meet, or exceed, applicable stormwater standards currently required by the State of Wisconsin, Dane County, and Village of DeForest, and include:

1. Post-development peak runoff rate control for the 1-, 2-, 10-, 100-, and 200-year, 24-hour design storms (using NRCS MSE4 storm distributions) to match predevelopment peak runoff rates, in accordance with Dane County and Village of DeForest ordinances. Additionally, peak runoff rate control is required for the 5- and 25-year, 24-hour design storms to match predevelopment peak runoff rates in accordance with Village of DeForest ordinances.

2. Sediment control for the average annual rainfall period to reduce total suspended solids leaving the post-development site by at least 80%, as compared to no runoff management controls, with sediment control pretreatment occurring prior to infiltration for runoff from parking lots and new road construction within commercial, industrial, and institutional land uses, in accordance with Dane County and Village of DeForest ordinances

3. Post-development infiltration (stay-on) volume of at least 90% of the predevelopment infiltration (stay-on) volume for the average annual rainfall period, without exception for sites determined to be within a closed basin watershed, in accordance with Dane County and Village of DeForest ordinances.

4. Maintain predevelopment groundwater annual recharge rates of approximately 9 to 10 inches per year, as estimated by the Wisconsin Geological and Natural History Survey in *Groundwater Recharge in Dane County, Wisconsin Estimated by a GIS-Based Water Balance Model* (2012), or by a site-specific analysis, if allowed by ordinance as an elective alternative to meeting the 90% stay-on requirement if more than two percent (2%) of the site is required to be used as effective infiltration area, in accordance with Dane County and Village of DeForest ordinances.

5. Thermal control to reduce the temperature of stormwater runoff from development sites within thermally sensitive watersheds, in accordance with the Village of DeForest and Dane County Stormwater Ordinance.

6. Oil and grease control to treat the first one-half inch of runoff using the best available technology for commercial, institutional, and any other land uses where the potential for pollution by oil or grease, or both, exists, in accordance with Dane County and Village of DeForest ordinances.

Impacts and Effects of Proposal

Environmental Corridors

There are no environmentally sensitive areas within or adjacent to the proposed amendment area. As previously stated, there are no parks, open space, or designated stormwater management areas

currently proposed in the amendment area that warrant placement in environmental corridors at this time.

Estimated Environmental Corridors are required to be included in Environmental Corridors when those areas are added to the urban service area. Estimated Environmental Corridors include natural resource features such as the 1% annual chance floodplain, waterbodies, streams and wetlands, plus their required vegetative buffers, riparian steep slopes, existing public lands, parks, and conservancy areas, and existing stormwater management facilities. These areas are mapped based on regionally available information, such as the Wisconsin Wetland Inventory data. There are no Estimated Environmental Corridors within the proposed amendment area.

The proposed amendment area includes 4.4 acres mapped as Voluntary Environmental Corridor, including potentially restorable wetlands and internally drained areas, of which 0 acres are proposed to be designated as Environmental Corridor with this amendment (see Map 11). Voluntary Environmental Corridors are natural resources that are not legally protected from development, but still provide important benefits to the region, and are advised to be considered for inclusion in Environmental Corridors, above the minimum requirements. This concept is described more in the 2050 Regional Development Framework (Framework) under its previous name, Stewardship Areas, and is aimed at achieving the goal of conserving water resources and natural areas. The Voluntary Environmental Corridor recommendations include natural resource features such as the 0.2% annual chance floodplain, potentially restorable wetlands, internally drained areas, hydric soils, old growth woodlands, current/potential Ice Age Trail Corridor, and Natural Resource Area boundaries identified in the Dane County Parks and Open Space Plan.

Meeting Projected Demand

Based on projections in the Framework, employment in DeForest will grow by at least 20% (1,350 jobs) in the next 30 years. The Framework identifies locations that should be planned for business growth to occur. The requested amendment areas are located adjacent to areas designated for this type of development.

Phasing

The requested amendment area is less than 100 acres. No phasing plan is required.

Surface Water Impacts

Development creates impervious surfaces (e.g., streets, parking areas, and roofs) and typically alters the natural drainage system (e.g., natural swales are replaced by storm sewers). Without structural best management practices (e.g., detention basins and infiltration basins) this would result in significantly increased stormwater runoff rates and volumes, as well as reduced infiltration (i.e., groundwater recharge). Even when designing to current state and county requirements, development results in increased runoff volume and reduced infiltration volume. Without structural best management practices for erosion control, development would also cause substantial short-term soil erosion and off-site siltation from construction activities. Scientific research has well documented that without effective mitigation measures, the potential impacts of development on receiving water bodies can include the following:

- Flashier stream flows (i.e., sudden higher peaks)
- Increased frequency and duration of bank-full flows
- Reduced groundwater recharge and stream base flow
- Greater fluctuations in water levels in wetlands
- Increased frequency, level (i.e., elevation), and duration of flooding
- Additional nutrients and urban contaminants entering the receiving water bodies
- Geomorphic changes in receiving streams and wetlands

Natural drainage systems attempt to adapt to the dominant flow conditions. In the absence of mitigation measures, the frequency of bank-full events often increases with urbanization, and the stream attempts to enlarge its cross section to reach a new equilibrium with the increased channel forming flows. Higher flow velocities and volumes increase the erosive force in a channel, which alters streambed and bank stability. This can result in channel incision, bank undercutting, increased bank erosion, and increased sediment transport. The results are often wider, straighter, sediment laden streams, greater water level fluctuations, loss of riparian cover, and degradation of shoreland and aquatic habitat.

Since 2002, there have been stormwater management standards in effect at the state, county, and local level to require stormwater management and erosion control plans and structural best management practices designed to address the impacts of development on water quality, runoff volumes, peak flows, water temperature, and groundwater recharge. In 2011, county and local standards for runoff volume control were increased beyond state standards to further address the potential stormwater impacts of development. Since 2010 many communities adopted even higher standards for volume control through their own ordinances or as part of USA amendment agreements. In 2017, State statute 281.33(6)(a)(1) was changed to limit the ability of local governments to provide more protective standards for runoff volume control through local ordinances making it more difficult to fully mitigate the effects of development on receiving waters. In 2021, Dane County adopted peak rate control requirements for the 200-year storm event in their ordinance as well as requirements for closed basins, which made these requirements universal to all communities in Dane County.

The Village of DeForest proposes to mitigate the urban nonpoint source impacts of the proposed development by requiring the implementation of various stormwater best management practices that will be designed and constructed to meet current Dane County standards for pollutant reduction, runoff volumes, peak flows, water temperature, and groundwater recharge. Such practices will help to address the potential water quality impacts of stormwater runoff from the proposed development on the receiving waters.

Regional partners are actively working to address chlorides through the Wisconsin Salt Wise Partnership. WI Salt Wise's chloride reduction trainings are open to all municipal and private winter maintenance professionals in the region. Village of DeForest staff have in the past attended winter salt certification classes and training for winter road maintenance and are encouraged to stay current on the latest trainings and development.

The Village of DeForest is also a participant in the Madison Area Municipal Storm Water Partnership

(MAMSWaP), which is a coalition of Dane County municipalities and organizations working together to promote practices that reduce and improve stormwater runoff into Dane County lakes, rivers, and streams. The MAMSWaP Information and Education (I&E) Committee works to develop and implement projects and plans through regional outreach and messaging throughout the communities, including maintaining the www.ripple-effects.com website, distributing tools and articles to municipalities, community groups, and neighborhood associations, and providing presentations to focused audiences. Specific goals include promoting proper leaf management, proper lawncare practices, reduction in chlorides pollution from over-use of salt, and rainwater harvesting for beneficial reuse.

Groundwater Impacts

Without effective mitigation practices which exceed state, county and local ordinance, converting natural areas to urban development shifts the ground/surface water balance in streams and wetlands from a groundwater-dominated system to one dominated more and more by surface water runoff. This can result in a reduction in baseflow to streams, which is crucial for maintaining stream flow between precipitation events. This can also result in subsequent reductions in stream quality and transitions to less desirable biological communities more tolerant to these impaired conditions.

Groundwater modeling indicates that the cumulative effects of well withdrawals have resulted in a 0.8 cubic feet per second (cfs) decrease in baseflow of the Yahara River at South Street (see location on Map 5) from predevelopment (no pumping) to 2010 (see Table 4). An additional 0.3 cfs decline compared to 2010 conditions is anticipated for the year 2040, according to modeling.

Table 4
Modeled Baseflow Results Due to Current and Anticipated Future Municipal Well Water Withdrawals
(All Municipal Wells)

Stream	No Pumping	2010	2040
Yahara River (at South Street)	8.6 cfs	7.8 cfs	7.5 cfs

Generally, groundwater discharge occurs along the entire length of perennial streams and is the source of stream baseflow. The loss of baseflow from the cumulative effects of well water pumping and urbanization is a regional issue, beyond the boundaries of a single USA Amendment or even a single municipality. This issue is discussed along with potential management options in the updated *Dane County Groundwater Protection Planning Framework* (link to report). Maintaining pre-development groundwater recharge by infiltrating stormwater runoff helps to replenish groundwater, maintain baseflow, and mitigate this impact. The regional groundwater model is a useful tool for evaluating different configurations and scenarios of municipal groundwater well withdrawals on these stream systems.

Comments at the Public Hearing

A public hearing was held on the proposed amendment at the August 14, 2025, meeting of the Capital Area Regional Planning Commission. Representatives from the Village of DeForest spoke in favor of the amendment. There were no registrants opposed to the amendment. Several Commissioners sought clarification on various details of the application and of operations of the proposed Pomp's Tire development. Commissioner McKeever inquired about stormwater management on the proposed Pomp's Tire site, including how the system will handle any outside operations dealing with tires, specific performance targets, and long-term maintenance. Craig Mathews, Village Engineer, and CARPC staff responded to these comments during the meeting, describing how the site will need to be designed to provide stormwater management and generally what maintenance requirements entail.

Conclusions and Staff Water Quality Recommendations

There is sufficient existing treatment plant system capacity at MMSD's Nine Springs Wastewater Treatment Facility and sufficient existing wastewater collection system capacity to serve the proposed amendment area.

The Village of DeForest proposes to mitigate the potential urban nonpoint source impacts of the proposed development on the receiving waters by requiring the implementation of stormwater best management practices that are designed and constructed to meet current standards for pollutant reduction, runoff volumes, peak flow rates, water temperature, and groundwater recharge.

It is CARPC staff's opinion that the proposed amendment is consistent with water quality standards under Wis. Stat. § 281.15, and the adopted Policies and Criteria for the Review of Sewer Service Area Amendments to the *Dane County Water Quality Plan*, with the existing state and local requirements identified below. Additional actions have also been recommended below to further improve water quality and environmental resource management.

State and Local Requirements

CARPC staff recommend approval of this amendment in recognition of the state and local requirements for the following:

1. Environmental corridors are required to be delineated to meet the Environmental Corridor Policies and Criteria adopted in the *Dane County Water Quality Plan*.

2. Sediment and erosion control practices are required to be installed prior to other land disturbing activities. Infiltration practices are required to be protected from compaction and sedimentation during land disturbing activities.

3. Easements and perpetual legal maintenance agreements with the Village of DeForest, to allow the Village to maintain stormwater management facilities if owners fail to do so, are required for any facilities located on private property.

4. State and local review and approval of stormwater management plan(s) meeting the following standards is required, including Regional Planning Commission staff review and approval as part of the sewer extension review process:

a. Post-development peak runoff rate control for the 1-, 2-, 10-, 100-, and 200-year, 24-hour design storms (using NRCS MSE4 storm distributions) to match predevelopment peak runoff rates, in accordance with Dane County and Village of DeForest ordinances. Additionally, peak runoff rate control is required for the 5- and 25-year, 24-hour design storms to match predevelopment peak runoff rates in accordance with Village of DeForest ordinances.

b. Sediment control for the average annual rainfall period to reduce total suspended solids leaving the post-development site by at least 80%, as compared to no runoff management controls, with sediment control pretreatment occurring prior to infiltration for runoff from parking lots and new road construction within commercial, industrial, and institutional land uses, in accordance with Dane County and Village of DeForest ordinances

c. Post-development infiltration (stay-on) volume of at least 90% of the predevelopment infiltration (stay-on) volume for the average annual rainfall period, without exception for sites determined to be within a closed basin watershed, in accordance with Dane County and Village of DeForest ordinances.

d. Maintain predevelopment groundwater annual recharge rates of approximately 9 to 10 inches per year, as estimated by the Wisconsin Geological and Natural History Survey in *Groundwater Recharge in Dane County, Wisconsin Estimated by a GIS-Based Water Balance Model* (2012), or by a site-specific analysis, if allowed by ordinance as an elective alternative to meeting the 90% stay-on requirement if more than two percent (2%) of the site is required to be used as effective infiltration area, in accordance with Dane County and Village of DeForest ordinances.

e. Thermal control to reduce the temperature of stormwater runoff from development sites within thermally sensitive watersheds, in accordance with the Village of DeForest and Dane County Stormwater Ordinance.

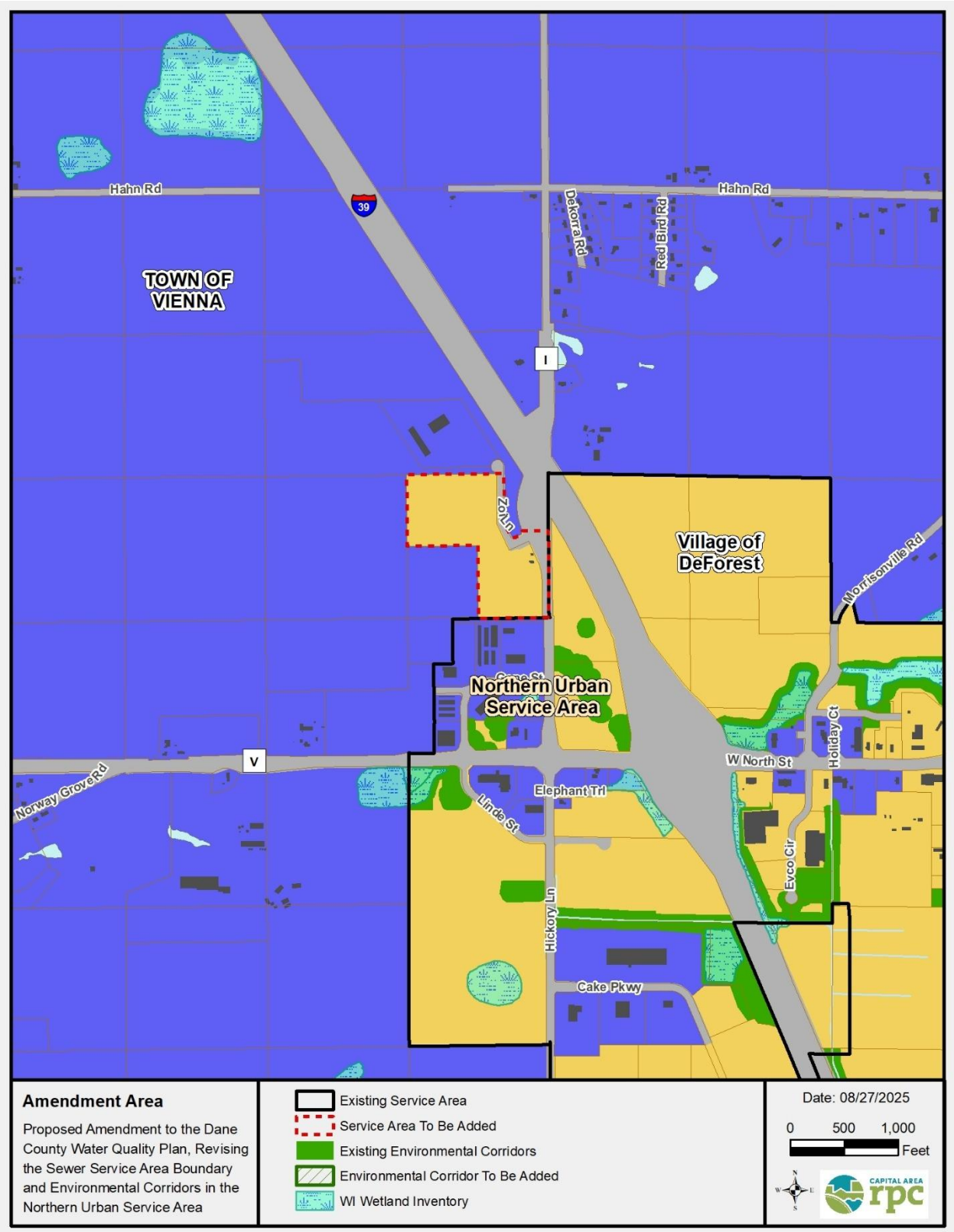
f. Oil and grease control to treat the first one-half inch of runoff using the best available technology for commercial, institutional, and any other land uses where the potential for pollution by oil or grease, or both, exists, in accordance with Dane County and Village of DeForest ordinances.

Recommendations

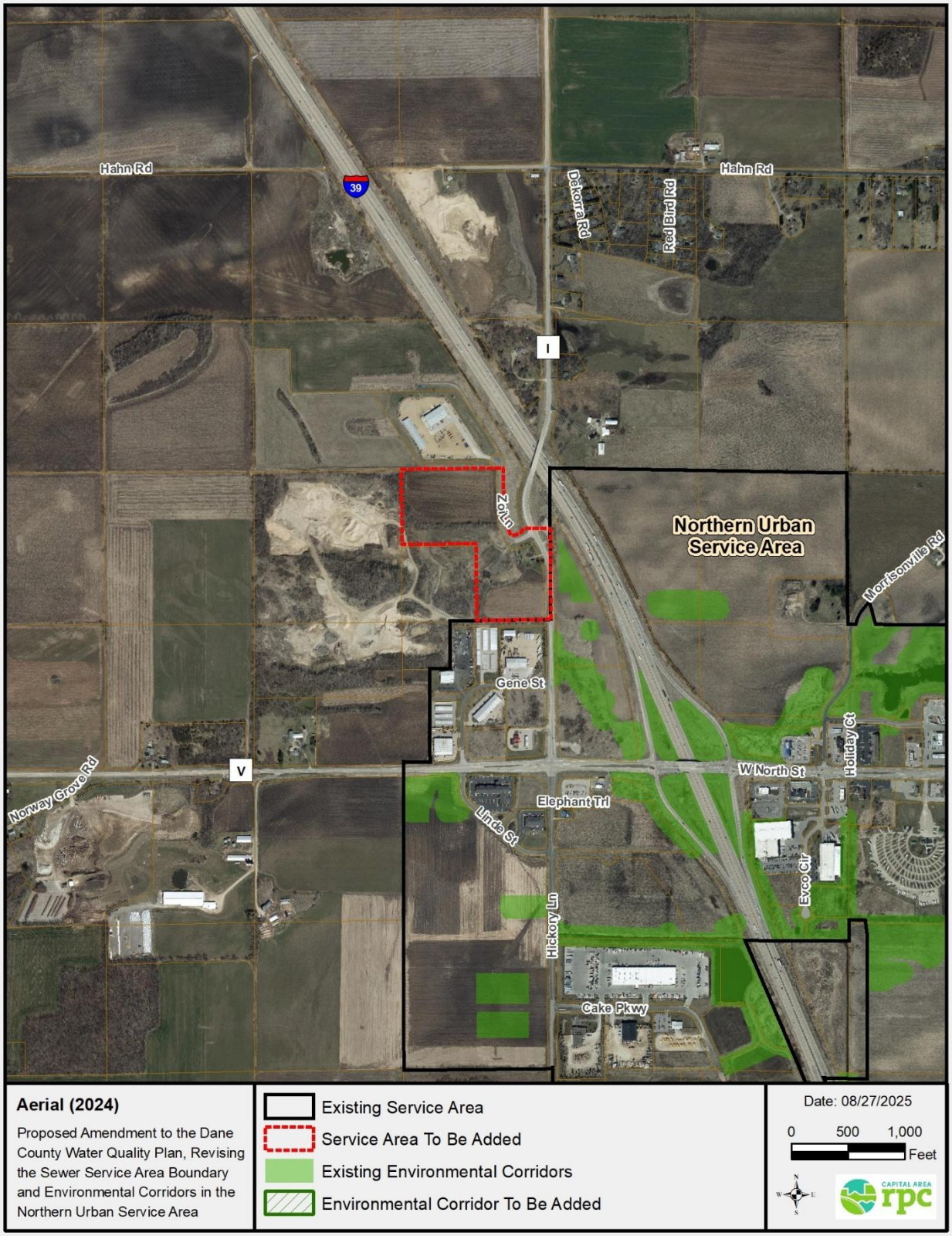
It is recommended that the Village of DeForest pursue the following to further improve water quality and environmental resource management:

1. Continue to participate in regional water quality initiatives including Wisconsin Salt Wise, the Madison Area Municipal Storm Water Partnership (MAMSWaP), and Yahara WINs.

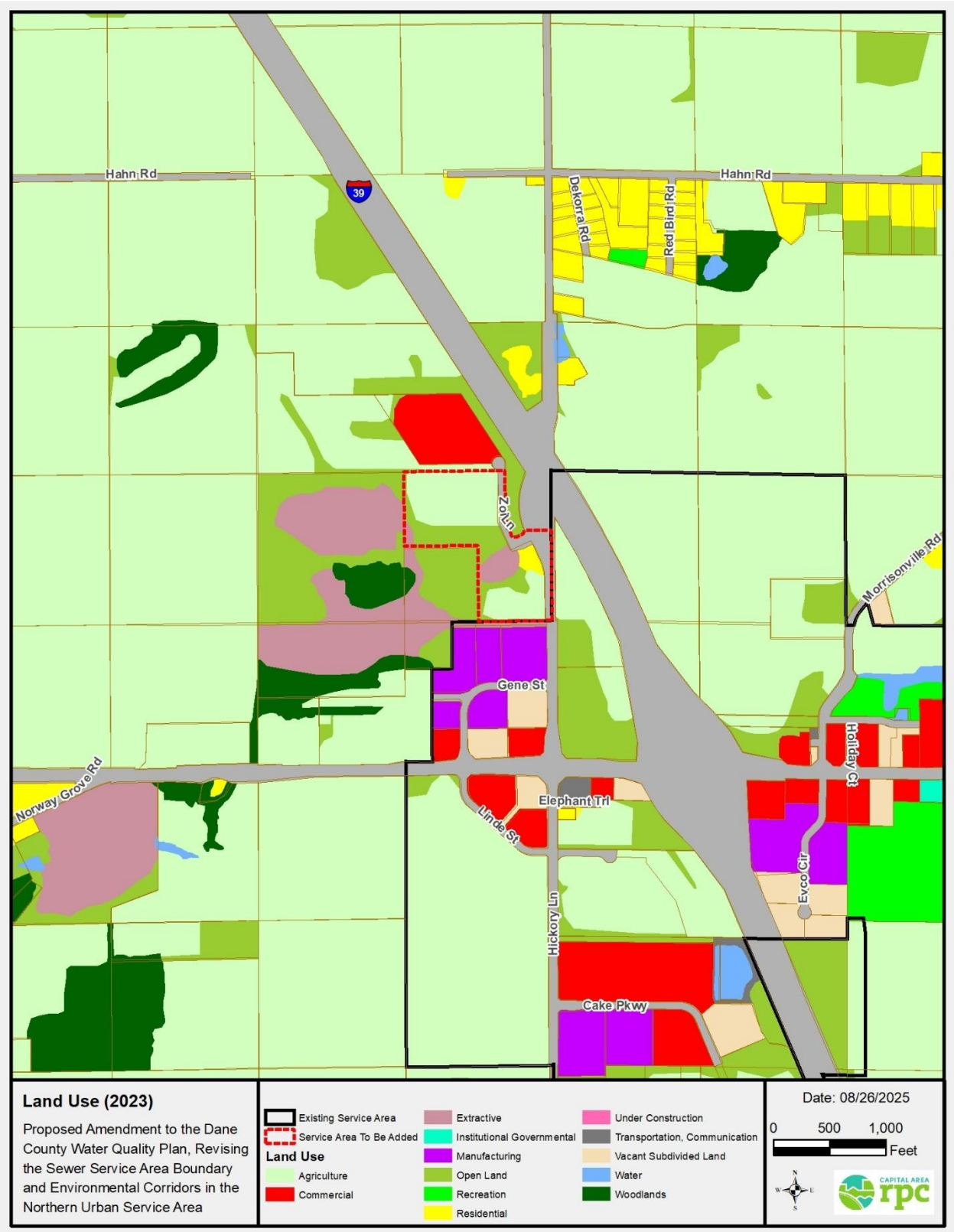
Map 1 - Amendment Area



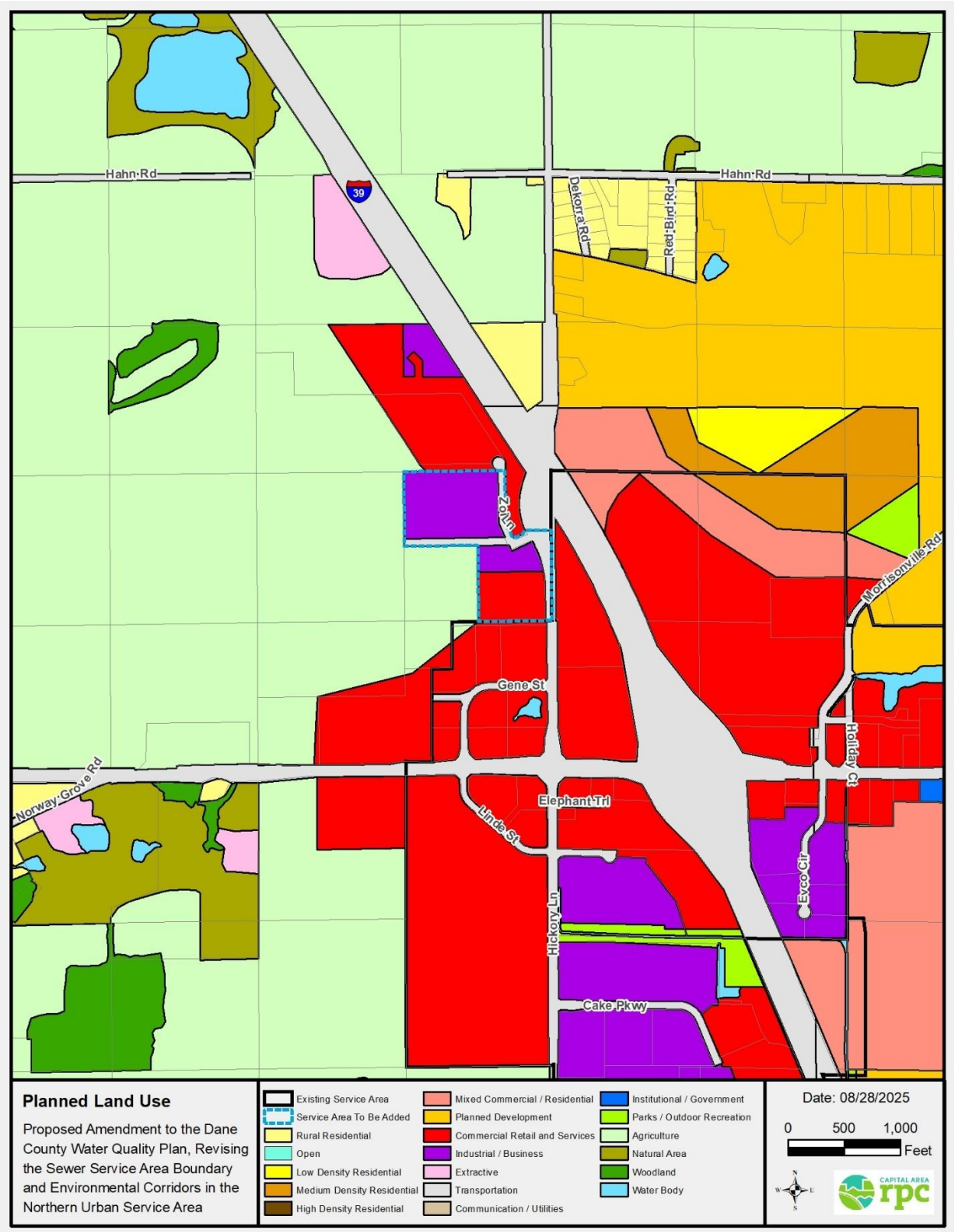
Map 2 – Aerial


Hahn Rd
39
Dakota Rd
Red Bird Rd
Hahn Rd
I
Zoltan
Northern Urban Service Area
Morrisonville Rd
Gene St
Holiday Ct
W North St
V
Norway Grove Rd
Elephant Trl
Linda St
Exco Ctr
Hickory Ln
Cake Pkwy
Aerial (2024)
Proposed Amendment to the Dane County Water Quality Plan, Revising the Sewer Service Area Boundary and Environmental Corridors in the Northern Urban Service Area
Existing Service Area
Service Area To Be Added
Existing Environmental Corridors
Environmental Corridor To Be Added
Date: 08/27/2025
0 500 1,000
Feet
CAPITAL AREA rpc

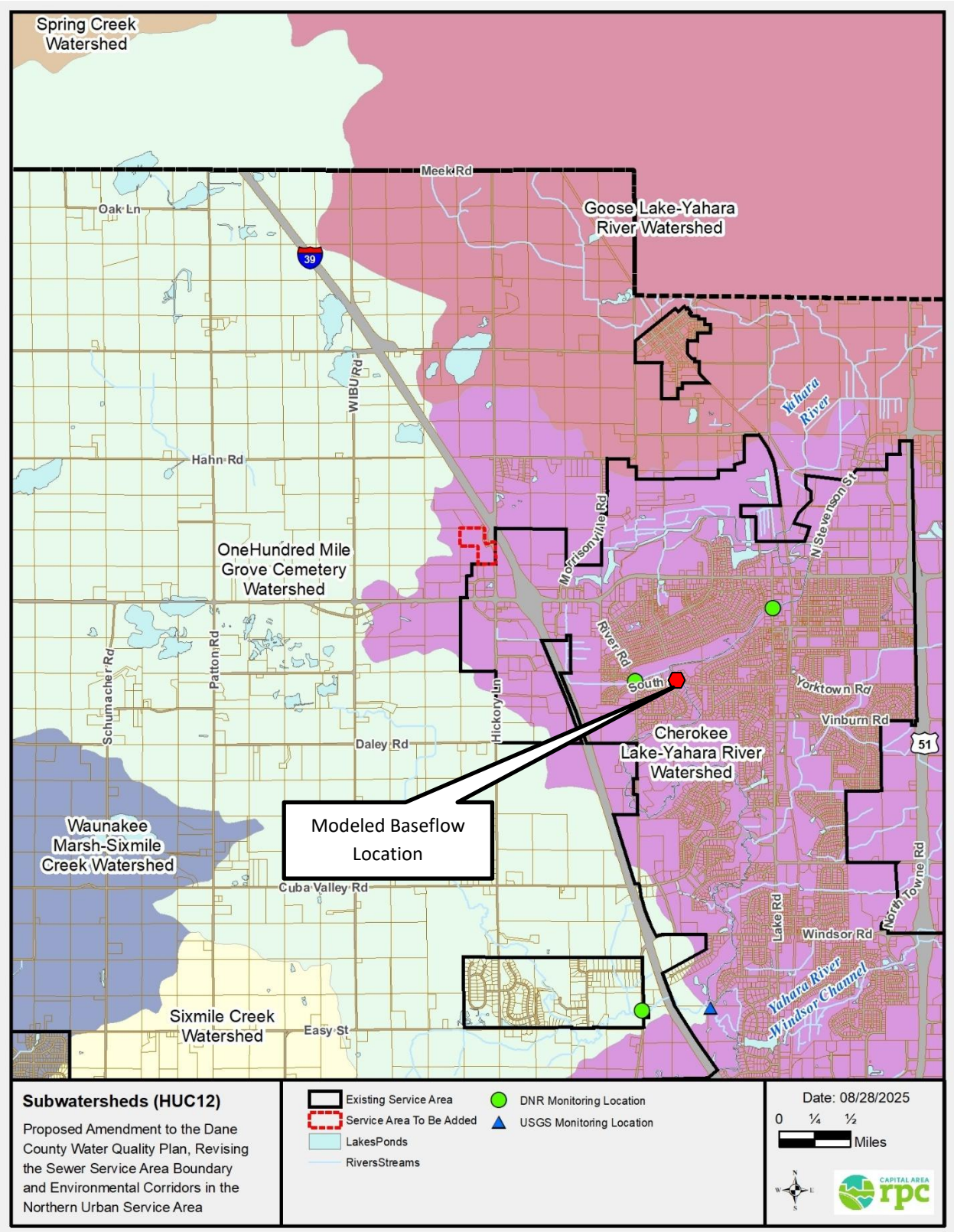
Map 3 – Existing Land Use



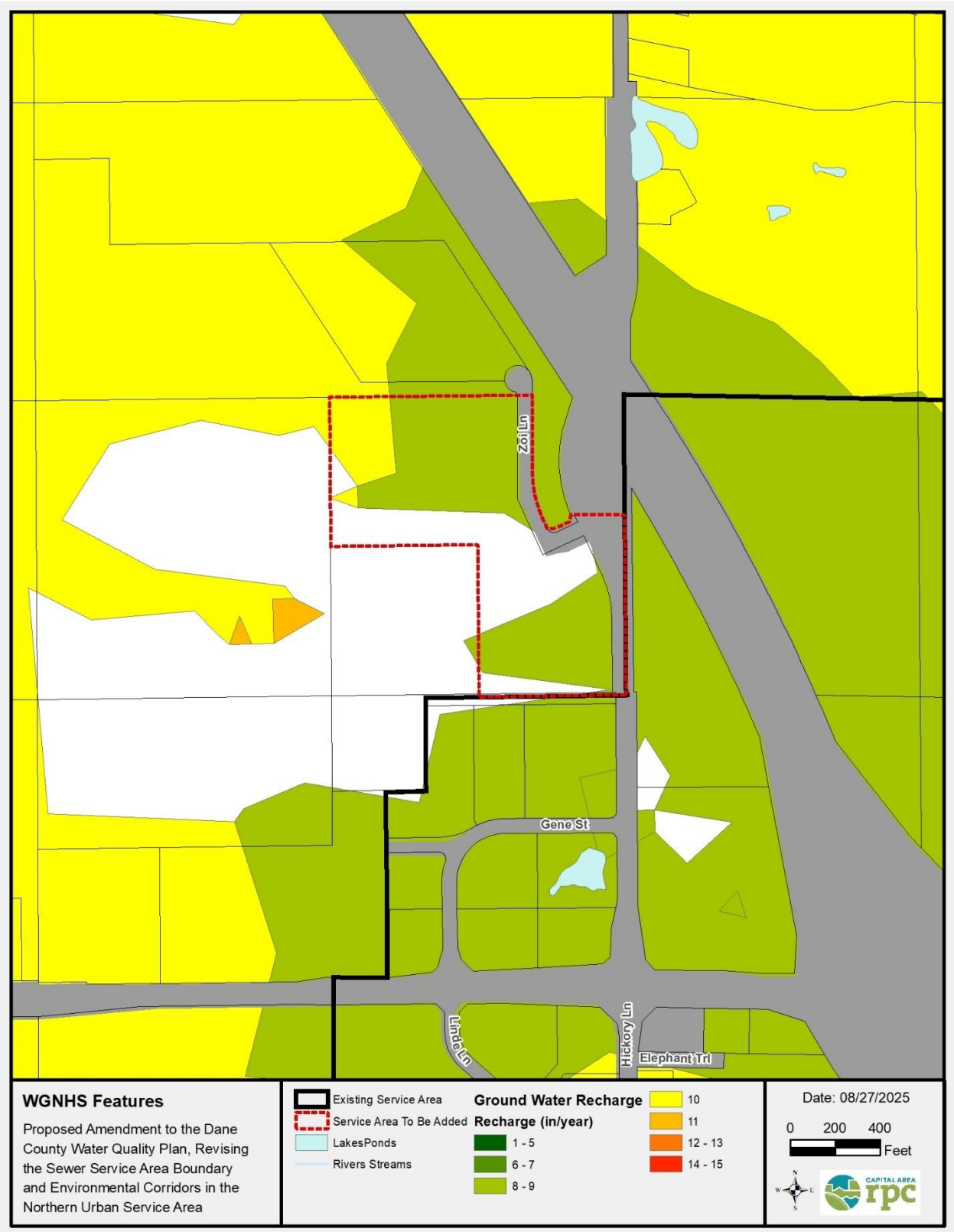
Map 4 – Planned Land Use



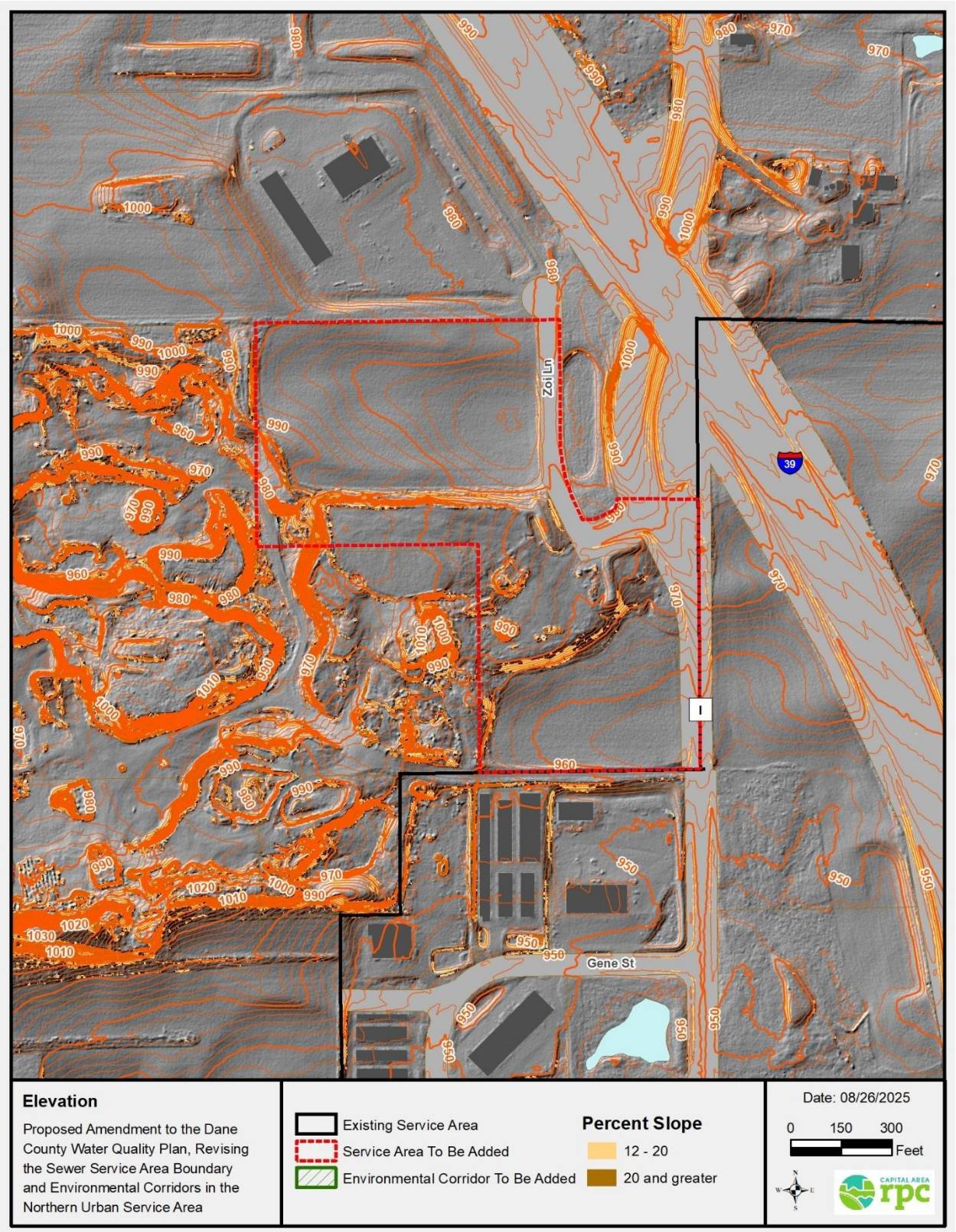
Map 5A – Subwatersheds



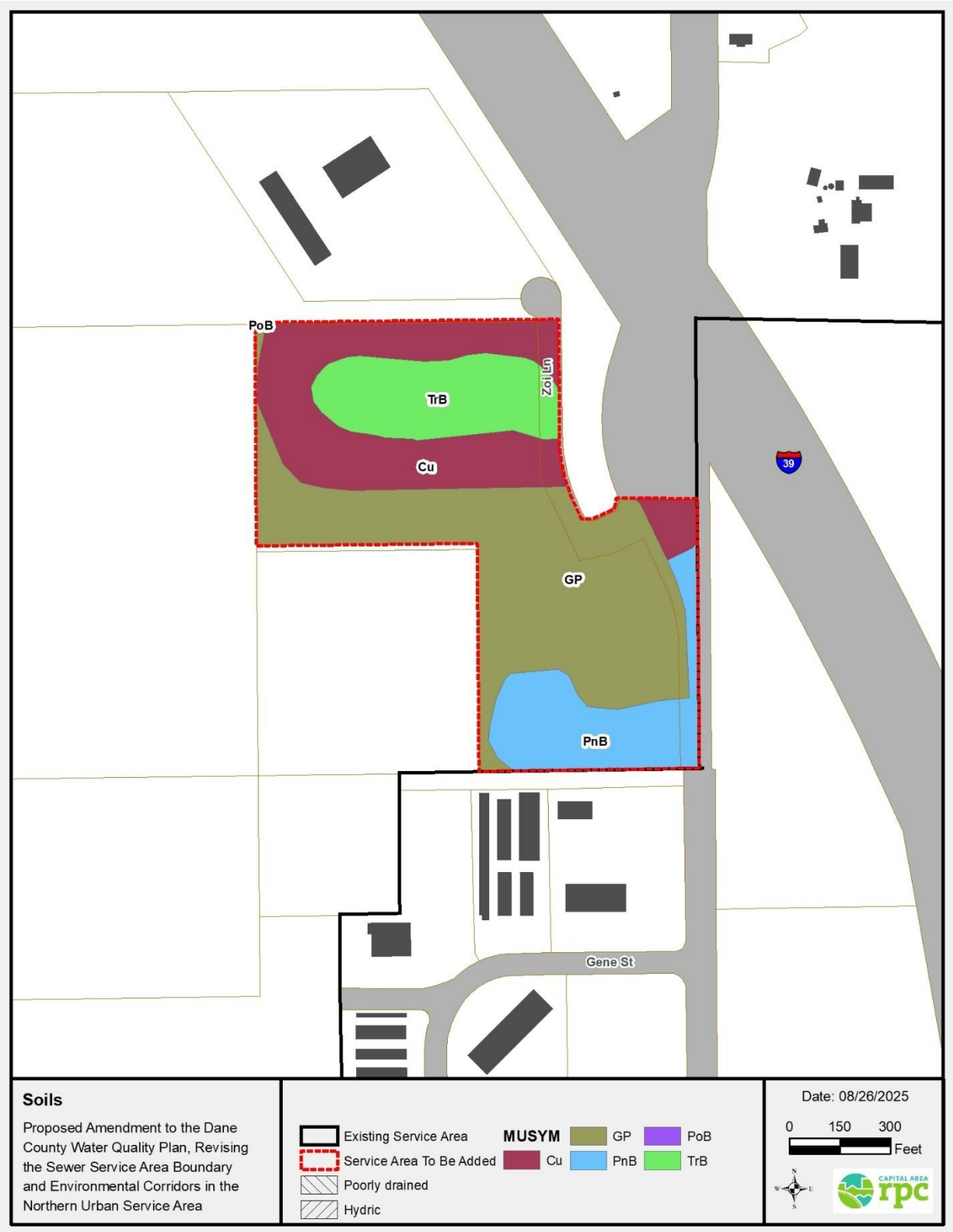
Map 5B – WGNHS Recharge Rates



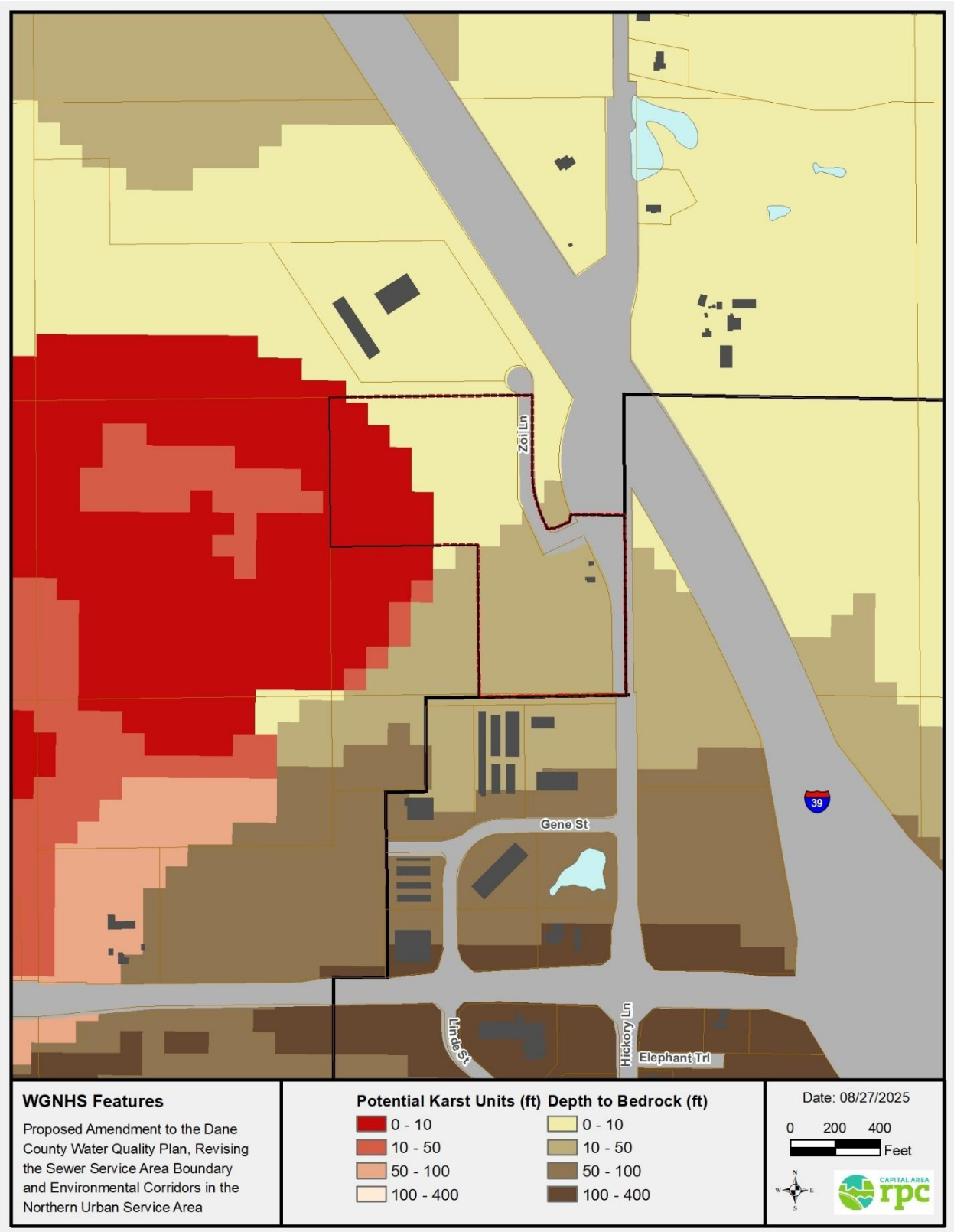
Map 6 – Elevations



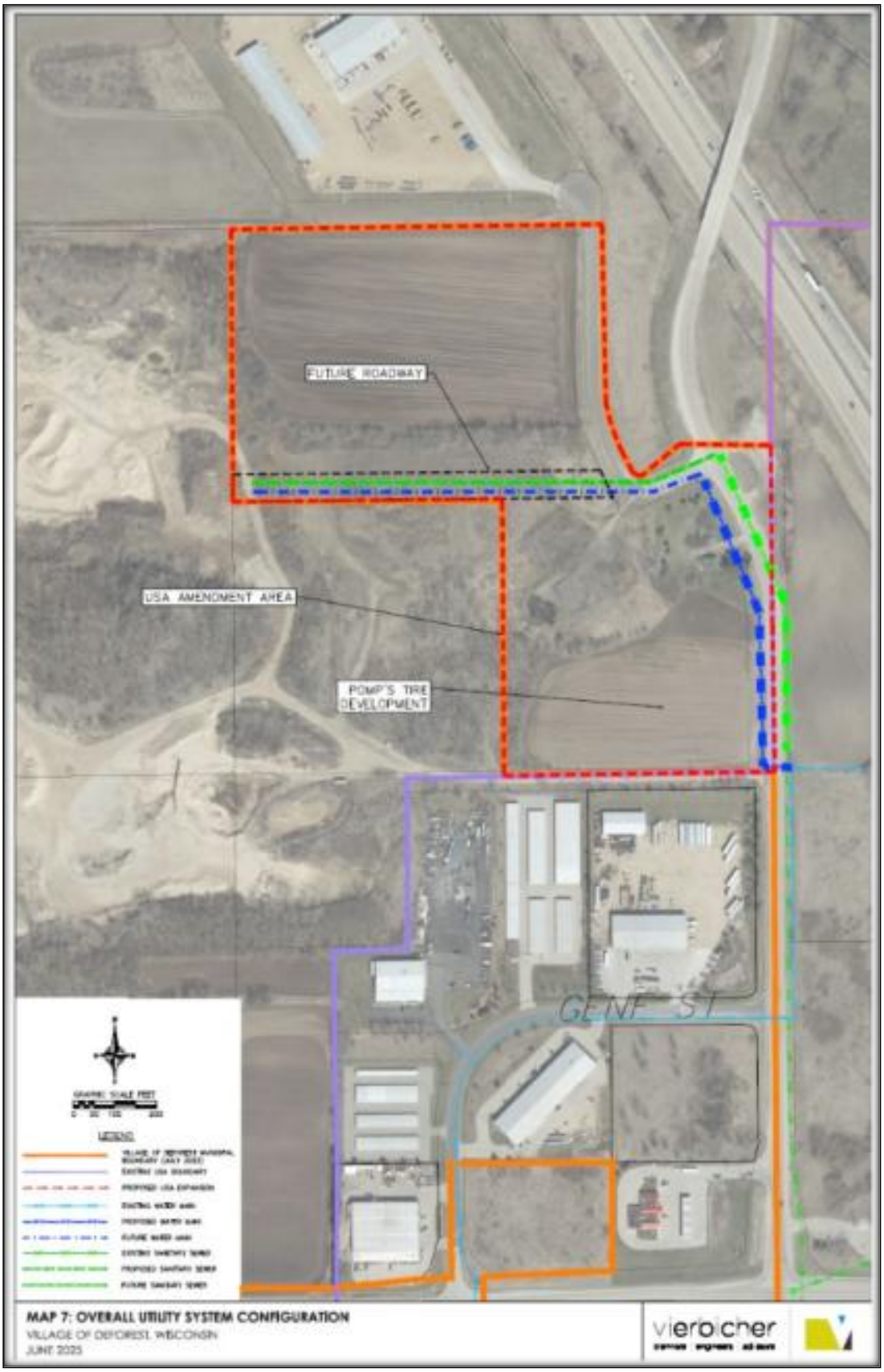
Map 7 - Soil Type



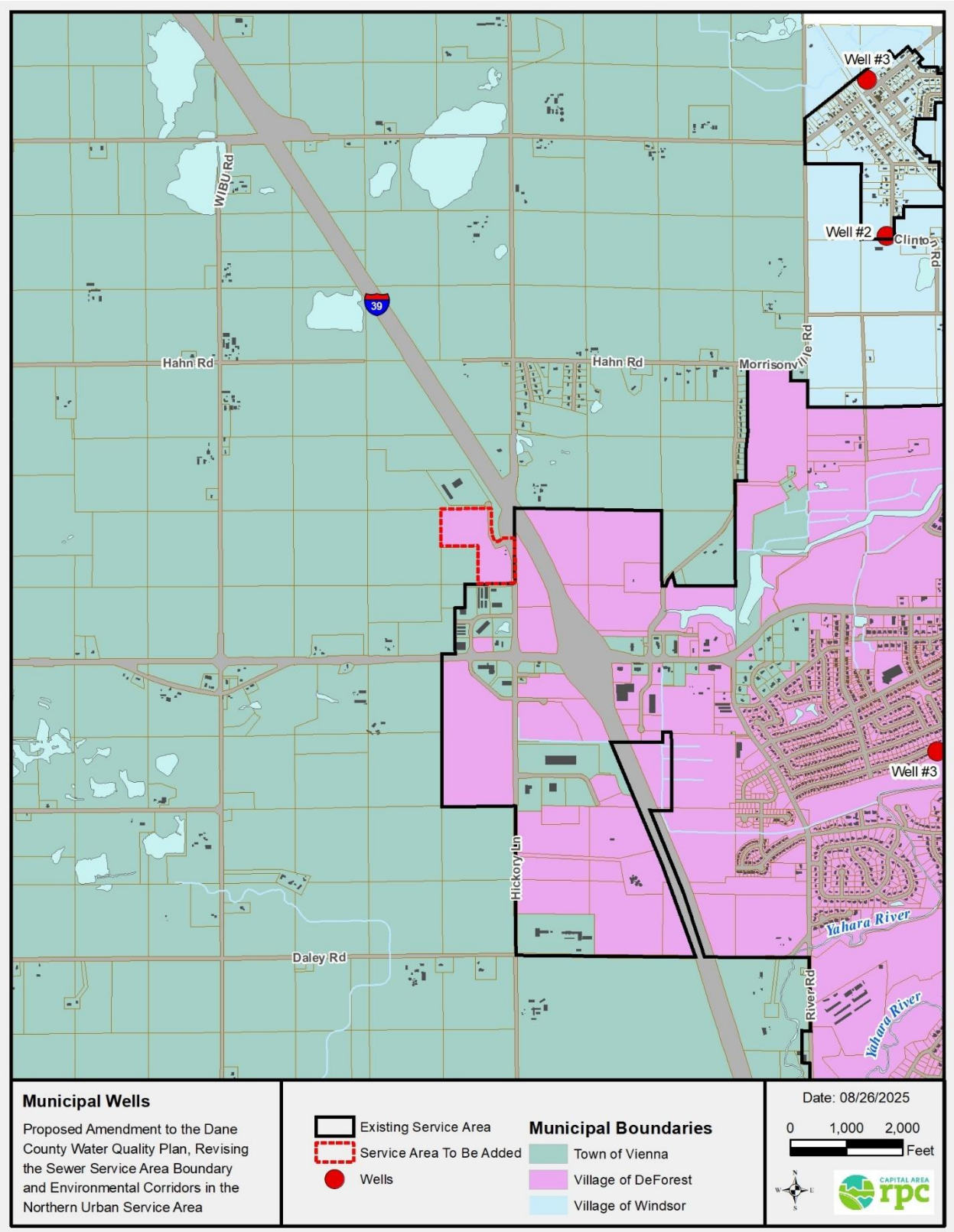
Map 8 – WGNHS Bedrock Depth and Potential Karst Features



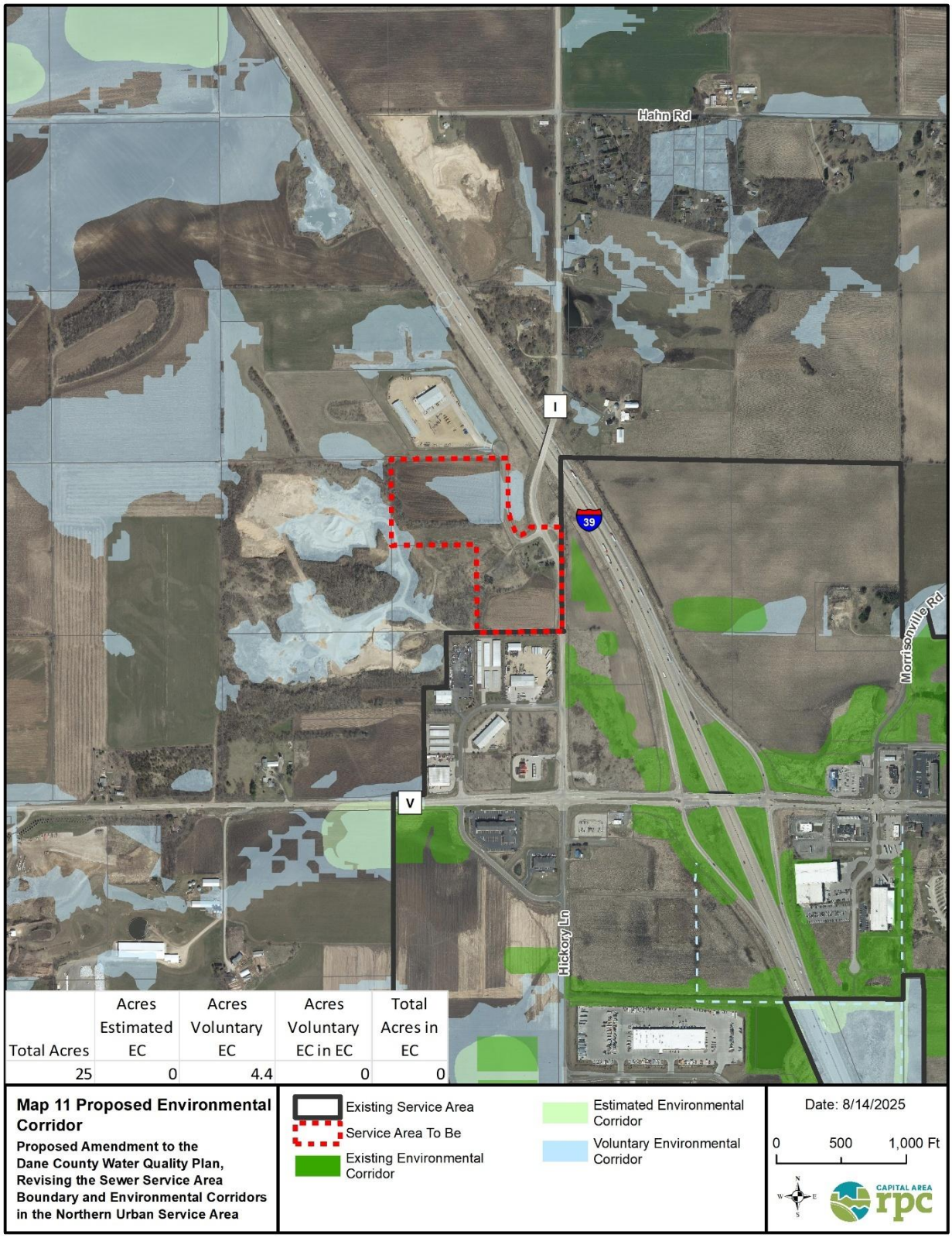
Map 9 – Proposed Sanitary Sewer and Water Main



Map 10 – Municipal Wells



Map 11 – Proposed Environmental Corridor



Total Acres	Acres Estimated EC	Acres Voluntary EC	Acres Voluntary EC in EC	Total Acres in EC
25	0	4.4	0	0

Map 11 Proposed Environmental Corridor

Proposed Amendment to the Dane County Water Quality Plan, Revising the Sewer Service Area Boundary and Environmental Corridors in the Northern Urban Service Area

Attachment A – WHS Letter

WISCONSIN HISTORICAL SOCIETY

July 16, 2025

Mr. Sean Higgins
Capital Area Regional Planning Commission
100 State St, Ste 400
Madison WI 53703-2573

RE: Proposed Amendments to Village of DeForest Northern Urban Service Area

Dear Mr. Higgins:

No previously recorded archaeological sites have been recorded in the parcels delineated in the proposed amendment. LiDAR imagery and aerial photographs suggest that the parcel has been impacted by development, agriculture, and other disturbances. We do not recommend archaeological survey for this property.

Under Wisconsin law, Native American burial mounds, unmarked burials, and all marked and unmarked cemeteries are protected from intentional disturbance. If anyone suspects that a Native American burial mound or an unmarked or marked burial is present in an area, the Wisconsin Historical Society should be notified.

If human bone is unearthed during any phase of a project, **all work must cease**, and the **local authorities must be contacted**. The police or sheriff will determine if the burial is a criminal matter or if it should be referred to the Wisconsin Historical Society at 1-800-342-7834 to be in compliance with Wis. Stat. § 157.70 which provides for the protection of all human burial sites. **Work cannot resume until the Wisconsin Historical Society gives permission**.

This letter does not constitute a Wisconsin Historical Society review for any project that may be governed by Federal or State Compliance laws, e.g. Section 106, Wis Stat. §44.40, Wis Stat. §66.1111, or Wis Stat. §157.70

If you have any questions, or if you need additional information, please feel free to contact me.

Sincerely;

Walker Good
Staff Archaeologist
State Archaeology and Maritime Preservation
608-264-6496
walker.good@wisconsinhistory.org