
**Staff Analysis of Proposed Amendment to the
Dane County Water Quality Plan,
Revising the Sewer Service Area Boundary and Environmental Corridors
in the Central Urban Service Area (City of Fitchburg)**

History of the Amendments to the Central Urban Service Area

The Central Urban Service Area was established in 1971 with the adoption of the first sewer service plan and originally included about 29,000 acres. The first Fitchburg amendment to the Central Urban Service Area occurred in 1985. There has been a total of 9 Fitchburg amendments to this urban service area since its creation totaling 1,117 acres of developable land and 478 acres of Environmental Corridor. One hundred-fourteen modifications have been made to the Central Urban Service Area dating back to the mid-1980s, most recently in December of 2020 by the City of Middleton. The most recent amendment of the service area by the City of Fitchburg was recommended by the Commission and approved by the WDNR in September of 2020.

Existing Conditions

Land Use

The City of Fitchburg (in collaboration with Edgewood College) is requesting amendment to the Central USA south of Lacy Road, west of the Badger State Trail. The requested amendment area's northern boundary is contiguous to the Central USA and is a part of the North Stoner Prairie Neighborhood. The land use identified for the site in the Comprehensive Plan is institutional. The amendment area is included in the Urban Footprint mapping of the Regional Development Framework's 2035 and 2050 growth scenarios. The area is roughly 40 acres in size. The predominant surrounding planned land use is agriculture, which includes solar "farms" (shown on the map as "Communication/Utilities") as an allowable use.

Business/industrial park is planned to the north. Low density residential use is planned and currently under construction to the northeast.

Surrounding Planned Land Uses Include:

- North: Business/Industrial
- West: Agriculture
- South: Agriculture (solar farm)
- East: Agriculture (solar farm)

Table 1 Existing and Planned Land Use		
Land Use Category	Existing Land Use Acres (see Map 3)	Proposed Land Use Acres (see Map 4)
Agriculture	41.2	0.0
Institutional	0.0	24.2
Transportation, Utilities, Communication	1.1	1.1
Stormwater Management, Natural Areas	0.0	17.0
Total	42.3	42.3

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 area. This Central Urban Service Area amendment is not in proximity to landscape features that are typical indicators of American Indian settlement, and the site has been subject to significant ground disturbance. WHS is not recommending a survey at this time. (Attachment 1).

Natural Resources

The proposed amendment area is in the Story Creek watershed (HUC 12: 070900040501; Map 5). There is a 12.48 acre wetland in the amendment area. There are no floodplains within the amendment area.

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 and Badger Mill Creek, bypassing the Yahara chain of lakes.

Wetlands

DNR's Wisconsin Wetland Inventory (WWI) does not show any wetlands within the amendment area. The wetland inventory includes an emergent / wet meadow, open water wetland south of the amendment area (Map 5).

A wetland delineation ([link to report](#)) was conducted within the amendment area by NES Ecological Services, a DNR-qualified assured delineator in May 2019. The site investigation and field delineation determined there is one emergent / wet meadow wetland within the amendment area (Map 11). Wetland 1 covers approximately 12.48 acres in the eastern portion of the amendment area, west of the Badger State Trail. No vegetation was present within the sample plots due to disturbance of previous agricultural activities and deep water preventing vegetation growth. The delineator classified the wetland as "less susceptible" to stormwater runoff under NR 151. This wetland with a minimum 75' vegetated buffer is required to be designated as environmental corridor per the adopted policies and criteria for environmental corridors ([link to document](#)).

Story Creek

The proposed amendment area is within the Story Creek watershed, a subwatershed of the Allen Creek and Middle Sugar River watershed. Story Creek ([WBIC 885400](#) / WATERSID 13631) is a 12.08-mile long spring-fed tributary originating in south central Dane County, joining the Sugar River in Green County. The 27 square mile watershed encompasses predominately agricultural lands, with some low-intensity urban development in the upper reaches of the watershed. Little is known about the existing water quality of streams in this

part of the watershed. An intermittent stream (WBIC 5036985) begins in section 20, just south of Whalen Road near the former Illinois Central Rail line (now Badger State Trail). This unnamed stream flows to Lake Harriett in the Town of Oregon. Lake Harriett lacks an outfall and water level would need to rise about ten feet before overflowing and draining to Story Creek to the south. Water quality in the lake is fair and agricultural runoff poses the most significant problem. Winterkill occurs and the fishery is not actively managed. Story Creek is a Class II coldwater fishery that begins perennial flow in Section 17 in the Town of Oregon and flows approximately 11 miles to join the middle portion of the Sugar River in Green County. The creek is listed as an Exceptional Resource Water by the DNR. Story Creek is not listed as impaired. There is a DNR monitoring station on Story Creek at County A ([Station ID 10010089](#)). Summer/fall 2014 to 2016 monitoring indicated field measurements of dissolved oxygen of 2.5 to 11.7 mg/L and an average transparency of 120 cm. Recent chloride monitoring has not been conducted for this watershed. There are no USGS baseflow monitoring stations within this watershed.

Sugar River

A 22-mile section of Sugar River ([WBIC 875300](#) / WATERSID 8105801) runs through the Allen Creek and Middle Sugar River watershed, from the dam at Belleville down to the dam at Albany. Sugar River is a diverse warm water sport fishery and an Exceptional Resource Water. Sugar River is impaired for Total Phosphorus. It has cool-cold and cool-warm mainstem natural communities.

Springs

The Wisconsin Geological and Natural History Survey (WGNHS) maintains an inventory of springs in Dane County, and throughout the state. From 2014 and 2017, the WGNS surveyed springs statewide that were expected to have flow rates at least 0.25 cubic feet per second (cfs). There are no known springs in or near the proposed amendment area. The nearest spring in the Story Creek Watershed is Spring #15, approximately 6.5 miles south of the amendment area (Map 5). Spring #15 was surveyed in 2014 with a discharge rate of 0.91 cfs, specific conductance of 772 µS/cm, temperature of 50° F, and a pH of 7.15. Springs represent groundwater discharge visible to the casual observer.

Groundwater

Groundwater modeling, using the 2016 Groundwater Flow Model for Dane County developed by the WGNHS ([link to website](#)), shows that baseflow in Story Creek at County Road A has decreased from 5.5 cfs during pre-development conditions (no well pumping) to 4.7 cfs in 2010 (Table 4). This decrease is due to the combined impacts of high capacity well groundwater withdrawals contributing to reduced stream baseflow.

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 10 to 11 inches per year.

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 Regional Planning Commission staff for species designated as endangered, threatened, or of special concern identified two threatened (one plant, one mammal) and one plant species of concern within a one-mile radius of the amendment area. A 1-mile buffer was considered for terrestrial and wetland species and a 2-mile buffer for aquatic species.

The amendment area is within the High Potential Zone (species likely present) for the federally endangered Rusty Patched Bumble Bee. Section 7 of the Endangered Species Act requires consultation with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service when any action that is carried out, funded, or permitted by a federal agency may affect

a federally listed endangered or threatened species. However, much of the proposed amendment area currently consists of disturbed ground and row crops and is not considered to be suitable habitat for the Rusty Patched Bumble Bee. The WDNR typically recommends that projects within the High Potential Zone include native trees, shrubs, and flowering plants; plants that bloom spring through fall; and the removal and control of invasive species in any habitat used for foraging, nesting, and overwintering. The USFWS developed a list of plants favored by Rusty Patched Bumble Bee ([link to list](#)). Implementing these conservation measures should be coordinated with the WDNR Endangered Resources Review Program, as needed.

Soils and Geology

The amendment area is located within the Waunakee Moraines Land Type Associations of Wisconsin. The Association classifies the surficial geology of this area as rolling till plain and irregular drumlins with scattered bedrock knolls, lake plains, and outwash plains.

Surface elevations within the amendment area range from around 1015 feet to 1026 feet. There are some small, isolated areas of steep (> 12%) and very steep (>20%) slopes in the southern portion of the amendment area and along Lacy Road, primarily associated with the road embankment (Map 6). These small 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 amendment area are in Batavia – Houghton - Dresden association. These soils are well drained and poorly drained, deep and moderately deep silt loams and mucks that are underlain by silt, sand, and gravel. Table 2 shows detailed classification for soils in the amendment area (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 USDA Natural Resources Conservation Service ([link to web soil survey](#)), the Elburn and Radford soils (the EgA and RaA map units) are not hydric, but they do have a seasonal (April to June) zone of water saturation within 5 feet of the ground surface. These soils are classified as somewhat poorly drained.

Table 2
Soils Classification

Soil	% of Area	General Characteristics
<i>Kegonsa Silt Loam; KeB</i>	42.3	Well drained, nearly level and gently sloping, moderately deep soils on benches on outwash plains. Soils have medium fertility, moderate to rapid permeability, and moderate hazard of erosion. Poses no limitations for development.
<i>Elburn Silt Loam; EgA</i>	27.8	Deep, somewhat poorly drained, nearly level and gently sloping soils in glaciated stream valleys. Soils have high fertility, moderately slow permeability, and a moderate hazard of erosion in areas where the slopes are 2 to 3 percent. Poses severe limitations for development due to depth to saturated zone.
<i>Plano Silt Loam; PoB</i>	13.1	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 to moderate limitations for development due to low bearing capacity.
<i>Radford Silt Loam; RaA</i>	12.0	Deep, somewhat poorly drained, nearly level and gently undulating alluvial soils in low drainageways and stream channels. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses very severe limitations for development due to very low bearing capacity and depth to saturated zone.
<i>Plano Silt Loam; PoA</i>	4.8	Deep, well drained and moderately well drained, nearly level to sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a low hazard of erosion. Poses slight to moderate limitations for development due to 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	KeB, PoB, PoA	60.2
Hydric Soils (Indicates Potential / Restorable Wetlands)	None	0
Poorly Drained Soils with Seasonal High Water Table (< 5')	EgA, RaA	39.8
Soils Associated with Steep Slopes (> 12%)	None	0
Soils Associated with Shallow Bedrock (< 5')	None	0
Best Potential for Infiltration in Subsoils	KeB, EgA, PoB, PoA	88.0

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

According to WGNHS data, bedrock within the northwestern two-thirds of the amendment area is in the Trempealeau Group. Bedrock in the Trempealeau Group 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 about 75 feet, where not eroded. The southeastern one-third 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 50-150 feet, with the shallowest depths being in the northwest corner and deepest depths being in the northeast corner 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 such as 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. Based on the WGNHS karst potential data, no karst features are present within the amendment area. The Wisconsin Department of Natural Resources Conservation Practice Standard 1002 - Site Evaluation for Stormwater Infiltration requires field verification for areas of the development site considered suitable for infiltration. 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.

There is no minimum separation distance for roofs draining to surface infiltration practices. However, the Dane County ordinance requires infiltration practices to be located so that the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock is at least 5 feet for residential arterial roads and 3 feet for other impervious surfaces. Soil test pits are required as part of the stormwater management plan to assure that infiltration practices are sited in locations that will not adversely affect groundwater quality.

Proposed Urban Services

Parks and Open Space

There are no proposed parks, per se, as part of the amendment area, but the amendment area is to be used as an athletic and wellness campus for Edgewood College. Edgewood College also proposes to restore the low quality farmed wetland with native wetland species. The wetland will be used as “outdoor laboratory” for Edgewood College students and also made accessible to the public for interpretive/ passive recreational opportunities. The restored wetland area, associated buffer, and stormwater management areas in the northeastern corner of the amendment area (see Map 9B) will total 16.8 acres.

Water System

The Fitchburg Water Utility provides municipal water through a public water distribution system which includes approximately 578,473 lineal feet of water main and six active high-capacity wells. The active wells are at depths ranging from approximately 434 to 1,033 feet, with a capacity of 250 to 1,500 gallons per minute (gpm). In total, the gross capacity of the municipal wells is approximately 5,800 gpm (8.35 million gallons per day, MGD). The firm capacity (with the largest well assumed to be out of service) is approximately 4,300 gpm (6.19 MGD). The City has three elevated storage tanks and one ground-level reservoir, with a combined capacity of 2.25 million gallons. According to the 2020 Annual Report to the Public Service Commission of Wisconsin ([link to 2020 Annual Report](#)), the City pumped an average of 1,518 gpm (2.19 MGD), approximately 35% of its firm pumping capacity. In 2020, the maximum amount pumped in any one day was 3.59 MGD, which is reported to be due to normal summer usage.

The City’s water distribution system has three pressures zones, including the West, East, and Northeast zones. The amendment area is located within the West zone. The West zone has a gross capacity of 2,500 gpm (3.6 MGD) and a storage capacity of 1.75 million gallons. According to the City’s application, current average daily demand on the West zone system is 750 gpm, or 1,080,000 gpd (1.08 MGD), and the maximum demand in any one day on recent record is 2.31 MGD, occurring in 2012. The estimated peak hourly demand on the West zone system is 1,388 gpm, based on the City’s peak hourly demand factor of 1.85. This peak hourly demand factor (ratio of maximum hour to average hour) is derived from the hourly water usage data from the maximum daily demand on record in 2012.

Water losses in the City’s distribution system was an average of 131,466 gpd (0.13 MGD) in 2020, which accounted for 6% of the net water supplied in 2020. Approximately 98% of this was due to unreported and background leakage, with the remaining due to reported leaks. In 2020, there were 7 main breaks which were repaired and 0 service breaks. Water losses in the City’s distribution system was 6% in 2019 and 0% in 2018. 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 to the proposed amendment area will be provided by connection to the City’s existing water distribution system. An 8-inch water service is proposed to be connected to the proposed water main improvements within Lacy Road and will serve the proposed building and other onsite water needs (see Map 9A).

The City estimates the annual average daily water demand for the amendment area will be 144,000 gallons per day (gpd) or 100 gpm. The estimated peak hourly demand is 185 gpm (11,100 gal/hour), based on the City’s peak hourly demand factor of 1.85. These estimates are reasonable based on land use and historical water demand in the City. The estimated average daily water demand and peak hourly demand represent an increase of approximately 13% of the current demands on the system; however, it is anticipated that the existing water supply

system and West zone will support the additional demand from the proposed amendment area.

Wastewater

Sanitary sewer service to the proposed amendment area will be provided by connection to the City's existing sanitary sewer collection system. The amendment area will gravity drain to a proposed 8-inch sanitary sewer lateral connecting to the proposed sanitary sewer main on Lacy Road (see Map 9A). The Lacy Road sewer main will drain to the Seminole Highway Interceptor, an existing 18-inch sanitary sewer interceptor located along South Seminole Highway. From the City's system, wastewater will flow via the Madison Metropolitan Sewerage District's (MMSD's) Nine Springs Valley Interceptor sewer to Pumping Station 11, then eventually to the MMSD Nine Springs Treatment Facility.

The proposed campus within the amendment area consists of athletic fields and a large building containing indoor training facilities, office space, and other associated uses contributing to wastewater flows. The City estimates that the amendment area will generate an annual average of 1,300 gallons per day (gpd) of wastewater, or approximately 1 gallon per minute (gpm). It is estimated that the amendment area will generate a daily peak flow of 100 gpm.

The proposed 8-inch sanitary sewer lateral within the amendment area is anticipated to have a capacity of 539 gpm, based on a design slope of 1.04%, which will provide sufficient capacity for the anticipated peak flows from the amendment area. The existing sanitary sewer collection system downstream of the amendment area is not reported to have any capacity issues, based on the information provided in the application. The Seminole Highway Interceptor currently receives an average daily flow of 55 gpm, or 79,000 gpd. With a reported capacity of 1,634 gpm, the receiving interceptor sewer will have sufficient capacity to handle the additional peak flow from the amendment area.

Wastewater Treatment Facility

Madison Metropolitan Sanitary District (MMSD) will provide wastewater treatment for the amendment area. The Nine Springs wastewater treatment facility (WWTF) is located on Moorland Road, Madison, WI, and discharges treated effluent 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). The rated monthly design flow capacity of the facility is 56.0 MGD and the maximum daily design flow capacity is 68.6 MGD. In the year 2020, the facility received an average monthly influent hydraulic loading of 41.9 MGD (75% of the 56.0 MGD design capacity), including infiltration and inflow, according to the 2020 Compliance Maintenance Annual Report (CMAR) ([link to 2020 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 90% design capacity for any month in 2020. MMSD has completed a long-range plan that evaluated various options for expanded treatment capacity to serve its current and future service area. 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 has not had issues meeting its WPDES permit limits for the quality of effluent discharged to Badfish Creek and Badger Mill Creek, according to their 2020 CMAR. Effluent quality summarized here refers to Badfish Creek, where approximately 95% of discharge is released. Below is a summary of the major effluents reported on in the 2020 CMAR:

- The biological oxygen demand (BOD) effluent quality for 2020 was below the monthly average limit, with a monthly average of 4.3 mg/L (22% of the limit) and a maximum of 10 mg/L (53% of the limit) for the months of January and February.
- The total suspended solids (TSS) effluent quality for 2020 was well below the monthly average limit, with a monthly average of 4.5 mg/L (23% of the limit) and a maximum of 6 mg/L (30% of the limit) for the month of January.

- The ammonia (NH₃) effluent quality for 2020 was below the monthly average limits (limits vary by month), with a monthly average of 0.50 mg/L (3-74% of the limit) and a maximum of 1.34 mg/L (74% of the limit) for the month of August.
- The phosphorus (P) effluent quality for 2020 was well below the monthly average limits (limits vary by month), with a monthly average of 0.36 mg/L (23-51% of the limit) and a maximum of 0.53 mg/L (35% of the limit).

The WWTF discharge to Badfish Creek is a tributary to the Rock River, and thus the WPDES permit includes phosphorus and TSS limits 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 monthly limits to comply with the TMDL for TSS are easily met by MMSD, and in some cases, the current WPDES permit limits are more stringent than the TMDL limits. The interim limit for phosphorus 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 required by NR 105. With this variance, the WPDES permit sets interim limits for winter and summer months 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](#)).

Stormwater Management System

The City of Fitchburg stormwater management and performance standards are contained within Chapter 30 of the City of Fitchburg Code of Ordinances. Dane County Code of Ordinances, Chapter 14, contains stormwater management and performance standards which apply to all areas of Dane County, and which were recently updated at the end of 2021. The amendment area will be required to follow the more stringent standards contained within the respective ordinances, as well as Wisconsin DNR requirements contained in NR 151 and 216.

Much of the amendment area is within the internally drained watershed of a glacial kettle (closed topographic depression), also referred to as a closed basin, located on the eastern half of the amendment area. Wetlands have been delineated within this area, as previously described. Internally drained watersheds, also referred to as closed basins, require developing stormwater management systems that avoid unintended impacts on surrounding properties, as they often lack a defined drainageway or stream outlet and the only mechanisms for water to leave the basin under average annual rainfall conditions are by infiltration and evapotranspiration. Changes to the watershed resulting in increased volumes of runoff (e.g., from an increase in impervious surfaces) can potentially impact surrounding and downstream properties and water resources if the volume increase exceeds the holding capacity of the kettle and the increase is not mitigated.

The inundation depth of water within the existing onsite kettle is approximately 2 feet, based on contours provided by Dane County GIS and information provided with the City's application. An existing 18-inch culvert hydraulically connects the onsite kettle to the area east of Badger State Trail. The area east of Seminole Hwy is also hydraulically connected to this area via culverts beneath Seminole Hwy. The entire area acts together as a large kettle and once an elevation of approximately 1020' is reached, water flows overland to the south and into two additional kettles. Once stormwater overflows the series of connected kettles along the

western side of South Seminole Hwy, water crosses South Seminole Hwy and Badger State Trail and flows through agricultural fields and wetland areas until reaching a mapped intermittent stream south of Whalen Road. The intermittent stream is poorly defined in several locations and generally flows south and southeast through additional agricultural areas until reaching Lake Harriet approximately 5 miles to the south of the amendment area, within the Town of Oregon. Lake Harriet discharges to the south and water is then collected in Story Creek, which is ultimately a tributary to Sugar River.

In the proposed conditions, the amendment area will generally continue to drain to the onsite kettle, matching existing conditions. The existing storage and infiltration potential of the onsite kettle will need to be accounted for when determining existing hydrologic conditions. The conceptual stormwater management plan for the amendment area consists of a wet detention basin in the northeastern corner of the amendment area and underground stormwater facilities below the synthetic turf athletic fields, as well as surface detention and infiltration BMPs as needed to meet all applicable stormwater regulations (see Map 9B). After pretreatment onsite in accordance with regulations, additional stormwater control will occur within the onsite wetland. Since the site is located within an internally drained watershed, in accordance with City ordinances, the site will be required to infiltrate as close to 100 percent as practicable of the average annual predevelopment infiltration volume. At a minimum, in accordance with current Dane County ordinances, the portion of the site within a closed basin will be required to infiltrate 90 percent of the average annual predevelopment infiltration volume, without exemptions. This volume control requirement will help to mitigate the impacts of development within the internally drained watershed on downstream properties and water resources.

The preliminary geotechnical report provided with the application and additional information provided by the applicant at the January 13, 2022, public hearing indicates moderate infiltration potential across the site. Furthermore, the proposed wetland restoration measures should improve the infiltration and evapotranspiration potential within the wetland. However, it may be necessary to incorporate volume control practices beyond conventional infiltration basins, such as green roofs, stormwater tree trenches, or stormwater harvesting measures. These contribute to runoff volume reduction through evapotranspiration and consumption/reuse. The proposed stormwater management facilities are planned to be owned and maintained by Edgewood College and a stormwater management maintenance agreement will 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 City of Fitchburg, as well as those of Dane County and Wisconsin DNR.

Performance Standards

The City of Fitchburg proposes stormwater management performance measures to meet or exceed standards required by the State of Wisconsin (NR 151), Dane County (Chapter 14), and City of Fitchburg (Chapter 30) stormwater regulations, as follows:

1. Require post-construction sediment control (reduce total suspended solids leaving the site by at least 80%, as compared to no runoff management controls; with a minimum of 60% of that control occurring in a retention pond prior to infiltration for residential land uses and a minimum of 80% occurring prior to infiltration for commercial, industrial, and institutional land uses) for the average annual rainfall. This is consistent with the standards currently required by Dane County and City of Fitchburg ordinances.
2. Require post-construction 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. This is consistent with the standards currently required by Dane County.

3. Require post-development infiltration (stay-on) volume of at least 90% of the pre-development infiltration (stay-on) volume for the average annual rainfall, without exemption for the amendment area within a closed basin watershed. This is consistent with the standards currently required by Dane County ordinances. Furthermore, City of Fitchburg ordinance requires post-development infiltration (stay-on) volume as close to 100% as practicable of the average annual pre-development infiltration (stay-on) volume, for the amendment area within a closed basin watershed.
4. Require adequate storage within the closed basin watershed area for the runoff volume from back-to-back, 100-year 24-hour design storms. This is consistent with the standards currently required by Dane County.
5. Require development of an emergency drawdown or pumping plan. This is consistent with the standards currently required by Dane County.
6. Maintain predevelopment groundwater annual recharge rate of 10 to 11 inches per year as estimated by the Wisconsin Geological and Natural History Survey in a 2012 report titled "Groundwater Recharge in Dane County, Wisconsin Estimated by a GIS-Based Water Balance Model." This is consistent with the standards currently required by Dane County and City of Fitchburg ordinances.
7. Treat the first one-half inch of runoff to provide oil and grease control using the best available technology for commercial or industrial land uses and any other uses where the potential for pollution by oil or grease, or both, exists. This is consistent with the standards currently required by Dane County and City of Fitchburg ordinances.

Impacts and Effects of Proposal

Environmental Corridors

The proposed amendment area includes approximately 16.8 acres of environmental corridor (See Map 2). This will include the restored wetland with associated buffer and planned stormwater management area in accordance with the Environmental Corridor Policies and Criteria ([link to document](#)) adopted in the *Dane County Water Quality Plan*.

Meeting Projected Demand

Demand for future institutional uses is not explicitly projected in the Regional Development Framework. The RDF deals with macro-scale trends; institutional facilities planning occurs at the micro-scale and is more accurate and specific than the RDF. However, the RDF incorporates demand for institutional facility expansion by depicting land uses shown in the plans of the various area institutions and the host municipalities' Comprehensive Plans. Land use in this area was modelled as open space/parks to reflect the mostly transient nature of activity at the sports fields.

Phasing

The requested amendment is less than 100 acres. A phasing plan is not required.

Surface Water Impacts

Development creates impervious surfaces (i.e., 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 (i.e., detention basins and infiltration basins) this would result in increased stormwater runoff rates and volumes, as well as reduced infiltration. 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 bankfull 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 adopted higher standards for runoff volume through local ordinances. In response to climate change, the City of Madison adopted peak rate control for the 200-year storm event in their ordinance in June 2020. Dane County adopted this same peak rate control requirement as well as requirements for closed basins in November 2021, which made these requirements universal to all of the communities in Dane County.

The City of Fitchburg proposes to mitigate the urban nonpoint source impacts of the proposed development by requiring the implementation of various stormwater best management practices that are designed and constructed to meet current Dane County standards for pollutant reduction, runoff volumes, peak flows, water temperature, and groundwater recharge 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. Participation in the chloride reduction trainings provided by WI Salt Wise is open to any municipality and private winter maintenance professional in the region. The City of Fitchburg has been an active participant in WI Salt Wise and city staff attended winter salt certification class for winter road maintenance in 2018.

Groundwater Impacts

Without effective mitigation practices, as natural areas are converted to urban development, the ground/surface water balance in streams and wetlands shifts from a groundwater-dominated system to one dominated more and more by surface water runoff. This can result in subsequent reductions in stream quality and transitions to more tolerant biological communities.

Groundwater modeling indicates that the cumulative effects of well withdrawals have resulted in a 0.8 cfs decrease in baseflow in Story Creek at County Road A from predevelopment (no

pumping) to 2010 (Table 4). An additional 0.2 cfs decline compared to 2010 conditions is anticipated for the year 2040, according to modeling, reducing the baseflow to 4.5 cfs.

Table 4 Modeled Baseflow Results Due to Current and Anticipated Future Municipal Well Water Withdrawals (All Municipal Wells)			
Stream	No Pumping	2010	2040
<i>Story Creek</i>	<i>5.5 cfs</i>	<i>4.7 cfs</i>	<i>4.5 cfs</i>

The loss of baseflow from the cumulative effects of well water pumping 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.

Comments at the Public Hearing

A public hearing was held on the proposed amendment at the January 13, 2022, meeting of the Capital Area Regional Planning Commission. Representatives of the City of Fitchburg, Edgewood College, and the consultants for the proposed development registered in favor of the amendment. There were no registrants opposed to the amendment. Two Fitchburg residents submitted public comments via email prior to the public hearing (Attachment 2). Their concerns are related to traffic, and the provision of city services like police, fire, and refuse collection, and not water quality. Commissioners inquired about the history of flooding on the property, the wetland restoration plan, and the distance downstream to the Sugar River. Other Commissioner questions were related to the redevelopment of Lacy Road, bus service, and the previous community farming on the site.

Conclusions and Staff Water Quality Recommendations

There is sufficient existing treatment plant system capacity at MMSD to serve the proposed amendment area. There is also sufficient existing or planned wastewater collection system capacity to serve the proposed amendment area.

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 urban service area amendment agreements. In 2017, State statute 281.33(6)(a)(1) was changed to limit the ability of local governments to adopted higher standards for runoff volume through local ordinances. In response to climate change, the City of Madison adopted peak rate control for the 200-year storm event in their ordinance in June 2020. Dane County adopted this same peak rate control requirement as well as requirements for closed basins in November 2021, which made these requirements universal to all of the communities in Dane County.

The City of Fitchburg proposes to mitigate the urban nonpoint source impacts of the proposed development by requiring the implementation of stormwater best management practices that are designed and constructed to meet current Dane County standards for pollutant reduction,

runoff volumes, peak flows, water temperature, and groundwater recharge to address the potential urban nonpoint source impacts of the proposed development on the receiving waters.

It is the Regional Planning Commission 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

Regional Planning Commission staff recommends approval of this amendment, based on the land uses and services proposed, and in recognition of the state and local requirements for the following:

1. State and local review and approval of stormwater management plan(s) is required, including Regional Planning Commission staff review and approval as part of the sewer extension review process.
 - a. Stormwater 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.
 - b. Peak rates of runoff are required to be controlled for the 1-, 2-, 10-, 100-, and 200-year 24-hour design storms to "pre-development" levels, in accordance with the City of Fitchburg and Dane County Stormwater Ordinances.
 - c. Sediment control is required that achieves at least 80% sediment control for the amendment area based on the average annual rainfall, with a minimum of 60% of that control occurring prior to infiltration, in accordance with the City of Fitchburg and Dane County Stormwater Ordinances.
 - d. Runoff volume control is required that maintains the post development stay-on volume to at least 90% of the pre-development stay-on volume for the average annual rainfall period, without exemptions, in accordance with the Dane County Stormwater Ordinance. Furthermore, City of Fitchburg ordinance requires post-development infiltration (stay-on) volume as close to 100% as practicable of the average annual pre-development infiltration (stay-on) volume, for the amendment area since it is within a closed basin.
 - e. Adequate storage is required within the closed basin watershed area for the runoff volume from back-to-back, 100-year 24-hour design storms, in accordance with the Dane County Stormwater Ordinance.
 - f. Development of an emergency drawdown or pumping plan is required, in accordance with the Dane County Stormwater Ordinance.
 - g. Oil and grease control are required that treats the first 0.5 inches of run-off using best management practices at commercial and industrial sites, in accordance with the City of Fitchburg and Dane County Stormwater Ordinances.
 - h. Maintaining pre-development groundwater recharge rates from the Wisconsin Geological and Natural History Survey's 2012 report, *Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model* (a range of 10 to 11 inches/year for the amendment area or by a site specific analysis, when required by the City of Fitchburg and Dane County Stormwater Ordinances.

2. Easements and perpetual legal maintenance agreements with the City, to allow the City to maintain stormwater management facilities if owners fail to do so, are required for any facilities located on private property.
3. Environmental corridors are required to be delineated to include the restored wetland, required buffers, and stormwater management areas to meet the Environmental Corridor Policies and Criteria adopted in the *Dane County Water Quality Plan*.

Additional Agreements for the Amendment Area

In addition to the existing state and local requirements the City of Fitchburg and the development team have agreed to pursue the following water resource management measures for the amendment area:

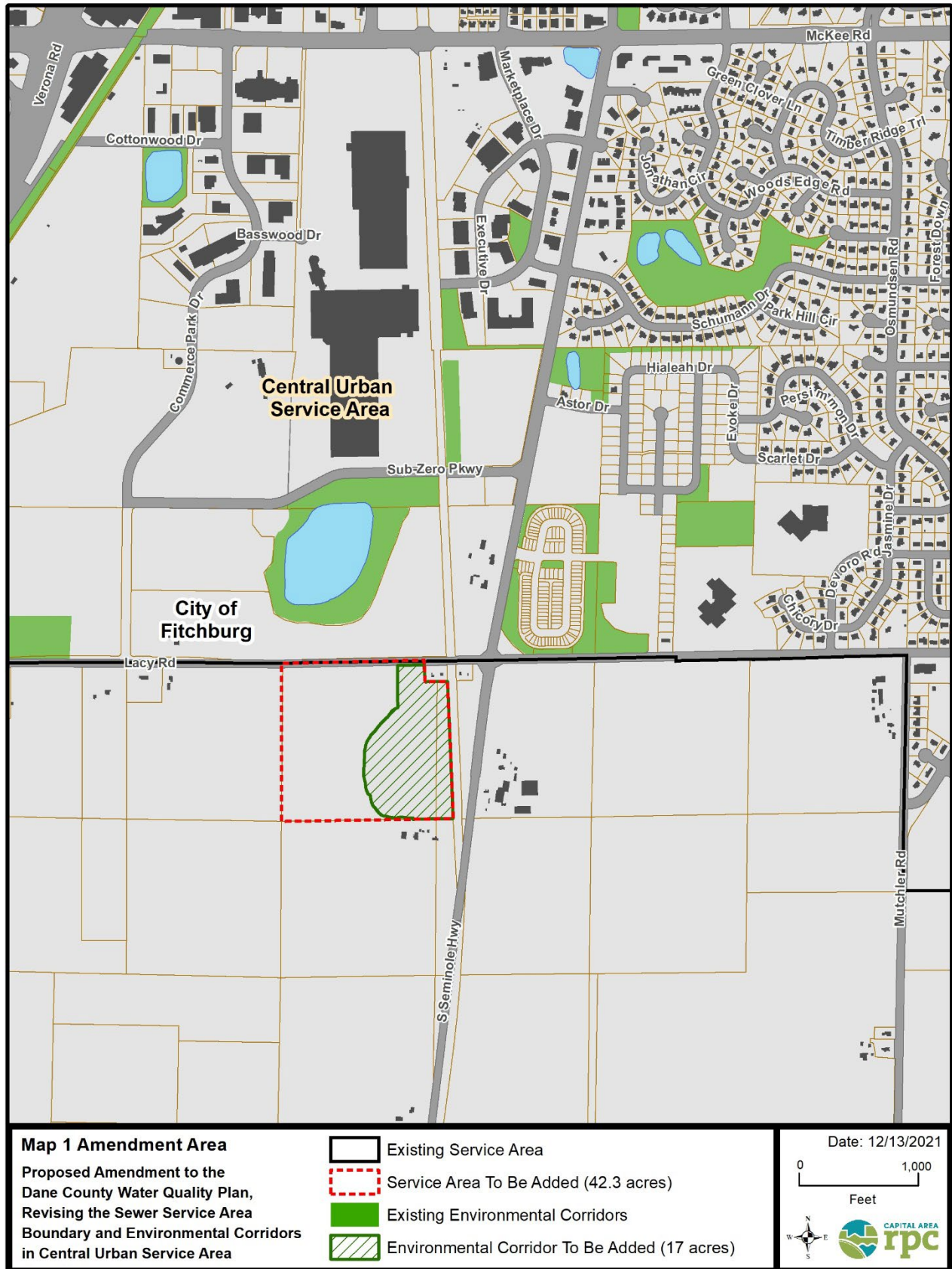
1. Develop and implement a wetland restoration plan for the wetland within the amendment area, including the use of native vegetation in the wetland buffer areas where appropriate.
2. Continue to foster the responsible use of chlorides by encouraging Edgewood College to become Salt Wise certified or use winter maintenance companies who have attended the winter salt certification classes offered by Wisconsin Salt Wise.

Recommendations

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

1. Request a formal Endangered Resources Review by the WDNR or one of their certified reviewers for potential impacts to endangered resources like rare plants, animals and natural communities and take necessary habitat protection measures if species are found.
2. Encourage the use of native flora favored by the Rusty Patched Bumble Bee in landscaping to provide suitable habitat for this pollinator, where appropriate.

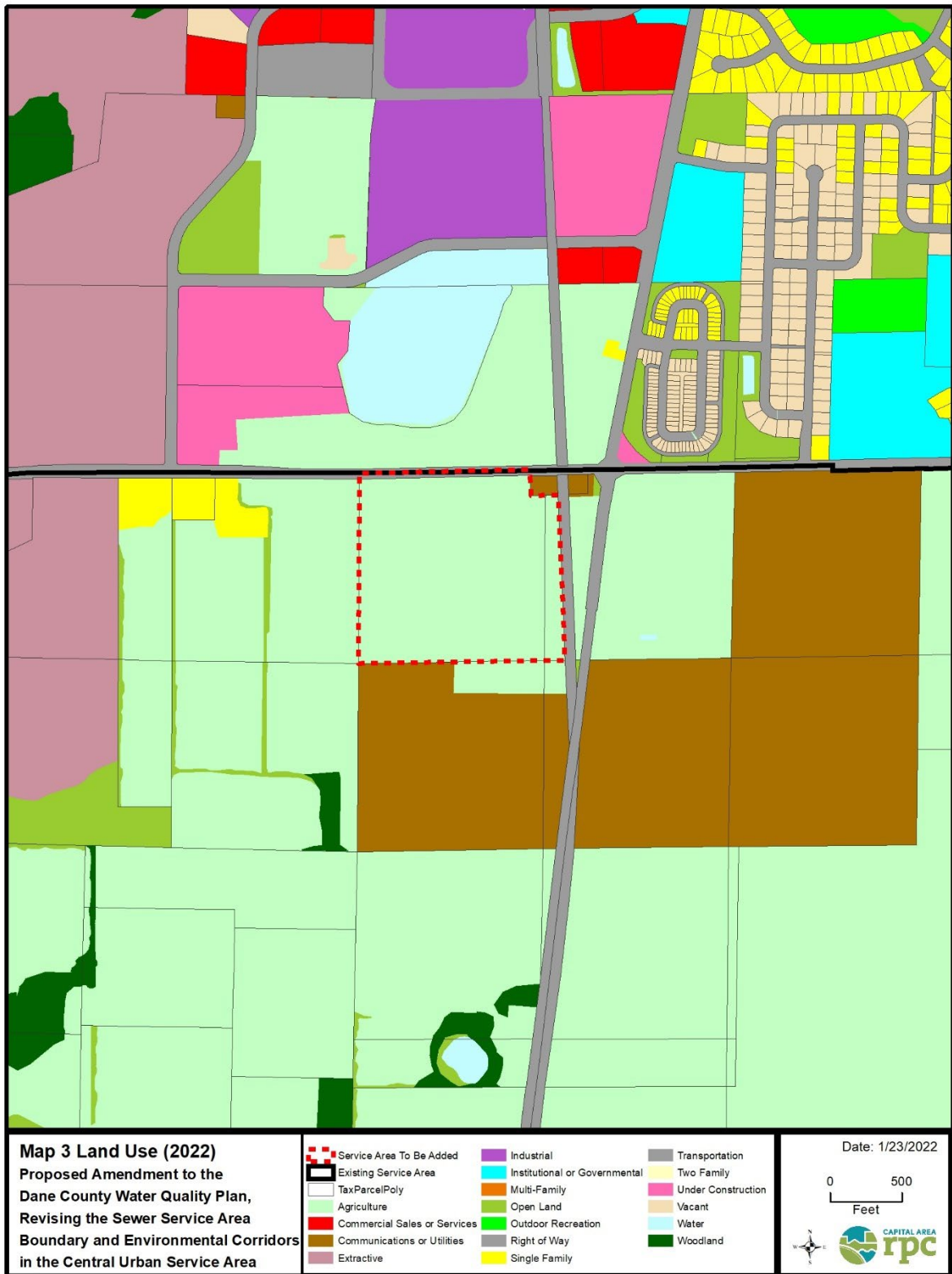
Map 1 - Amendment Area



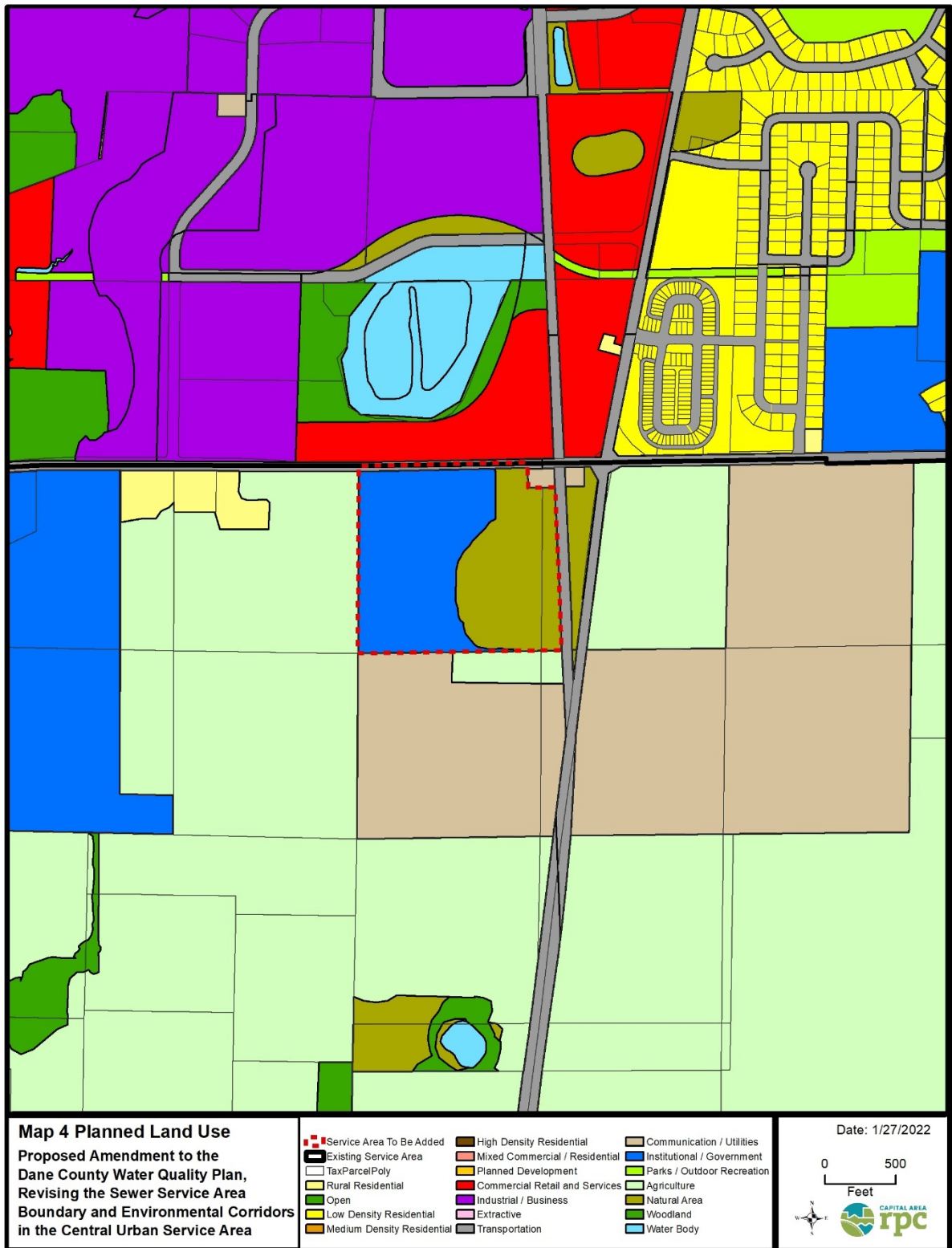
Map 2 – Aerial



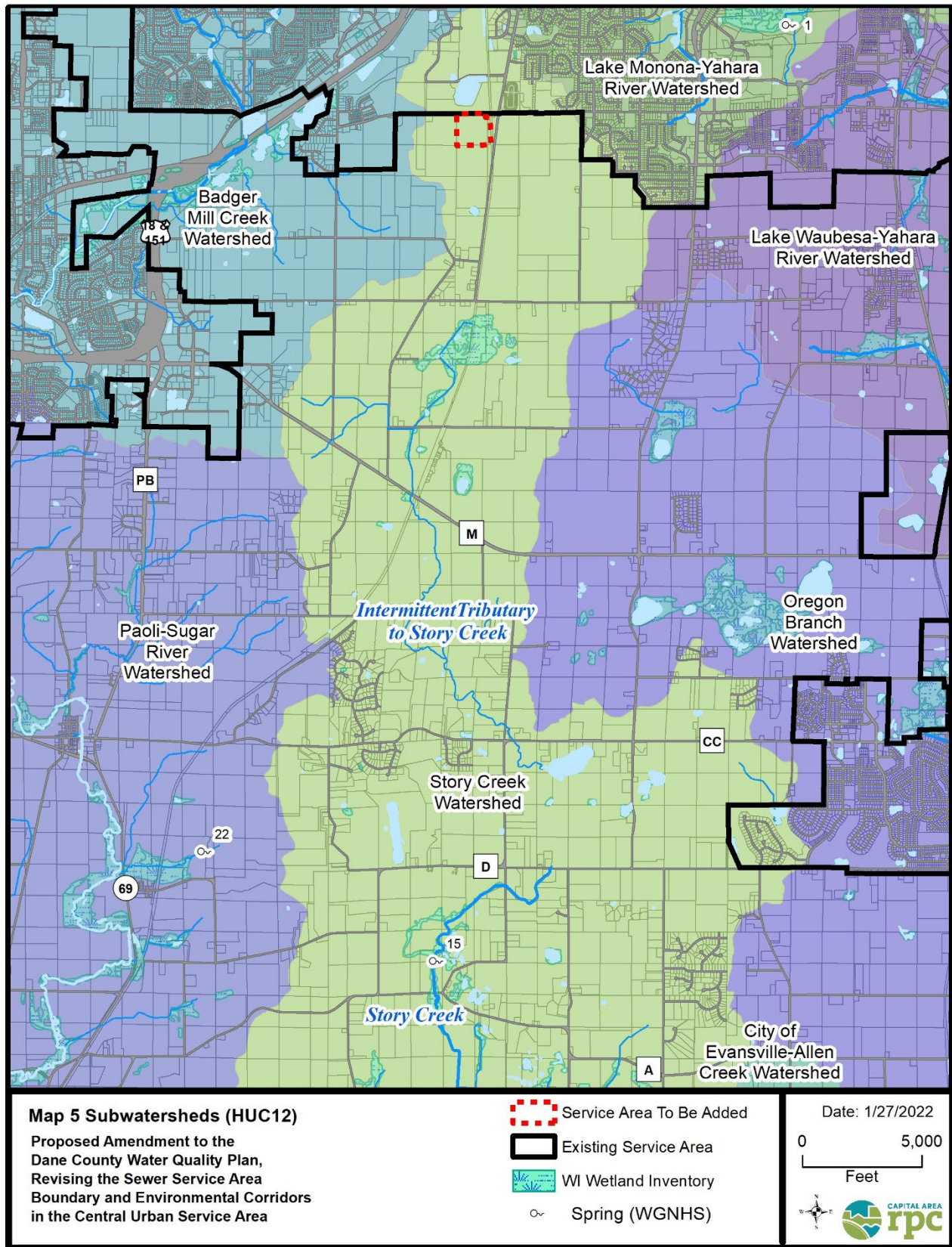
Map 3 – 2022 Land Use



Map 4 – Planned Land Use



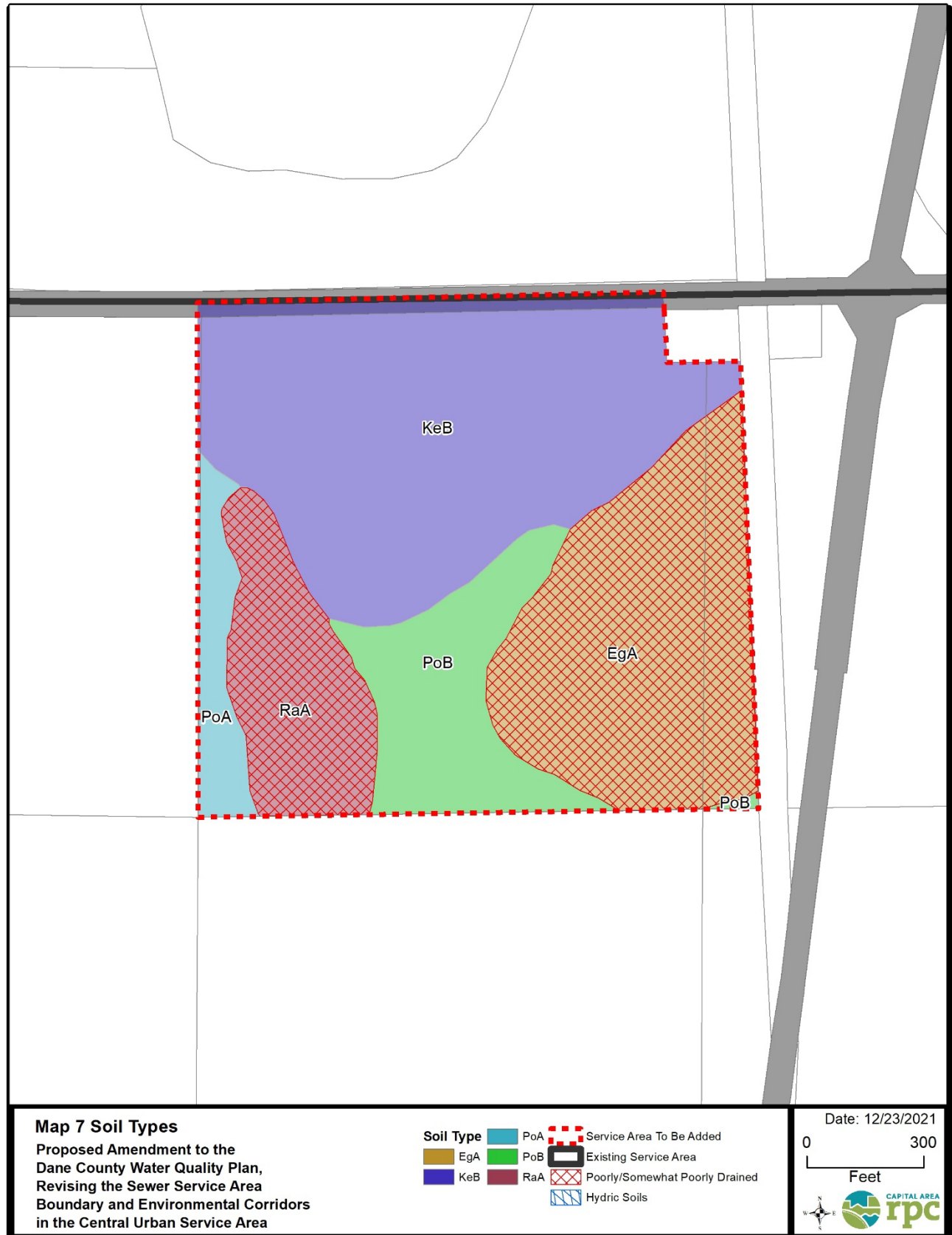
Map 5 – Subwatersheds



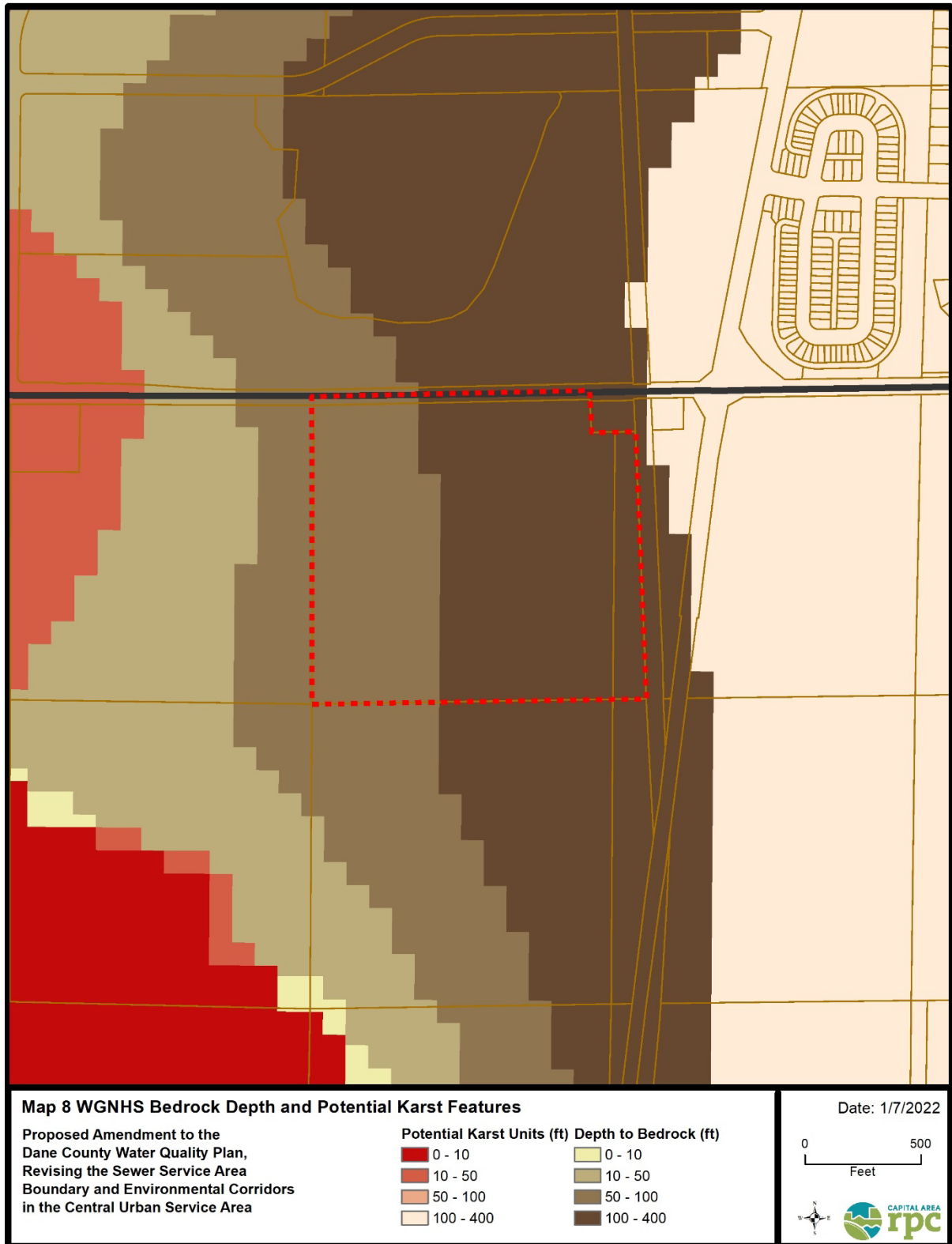
Map 6 - Elevations



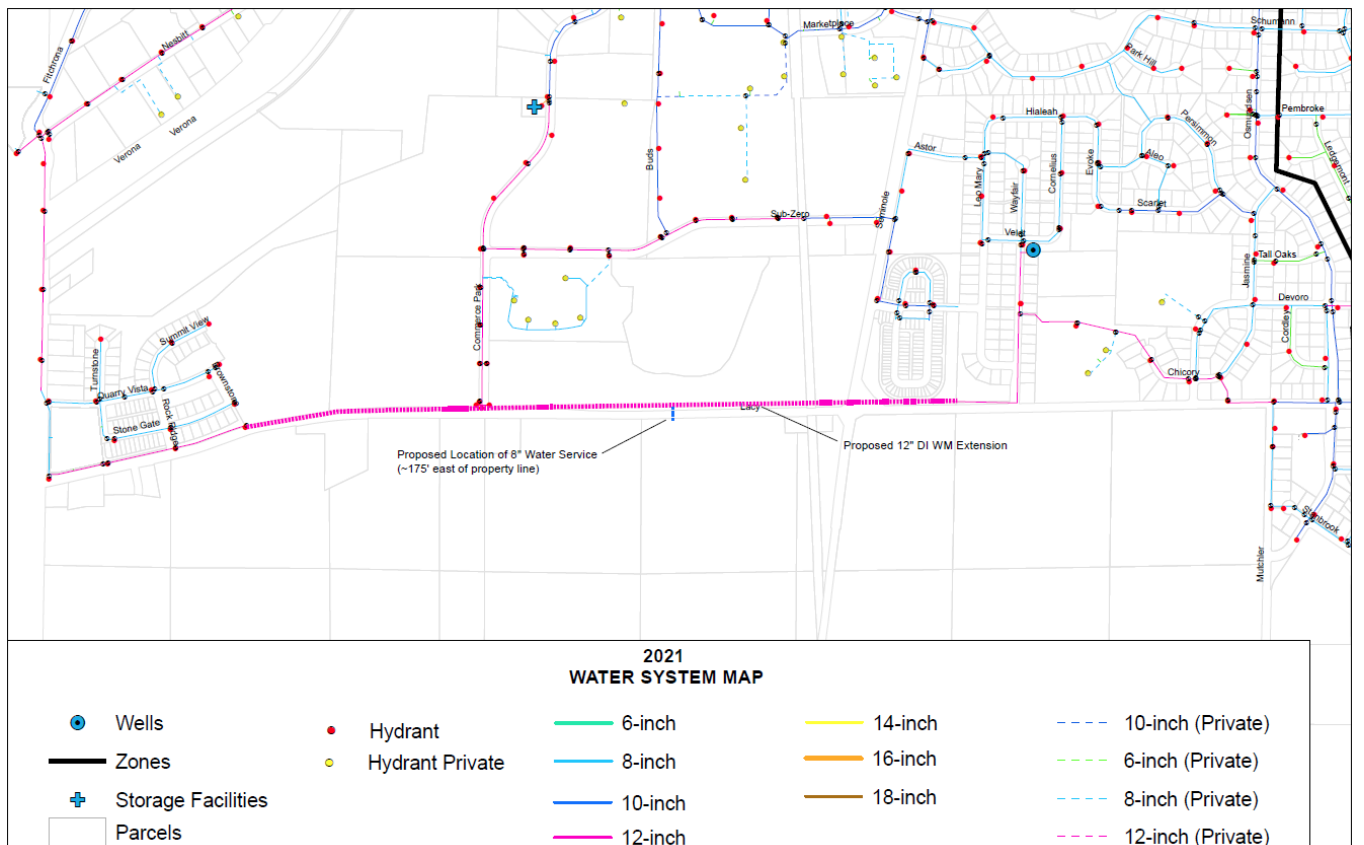
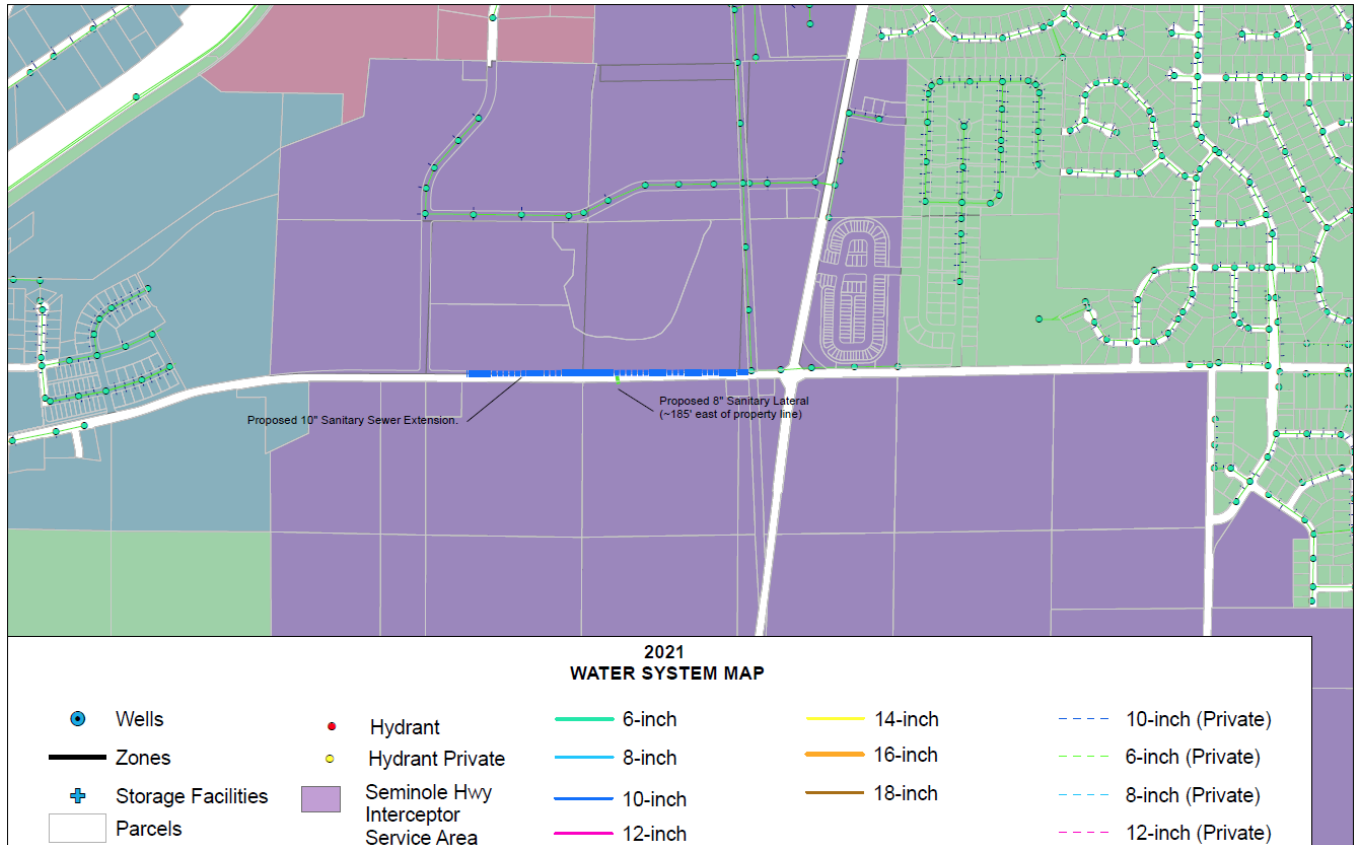
Map 7 - Soil Type



Map 8 – WGNHS Bedrock Depth and Potential Karst Features



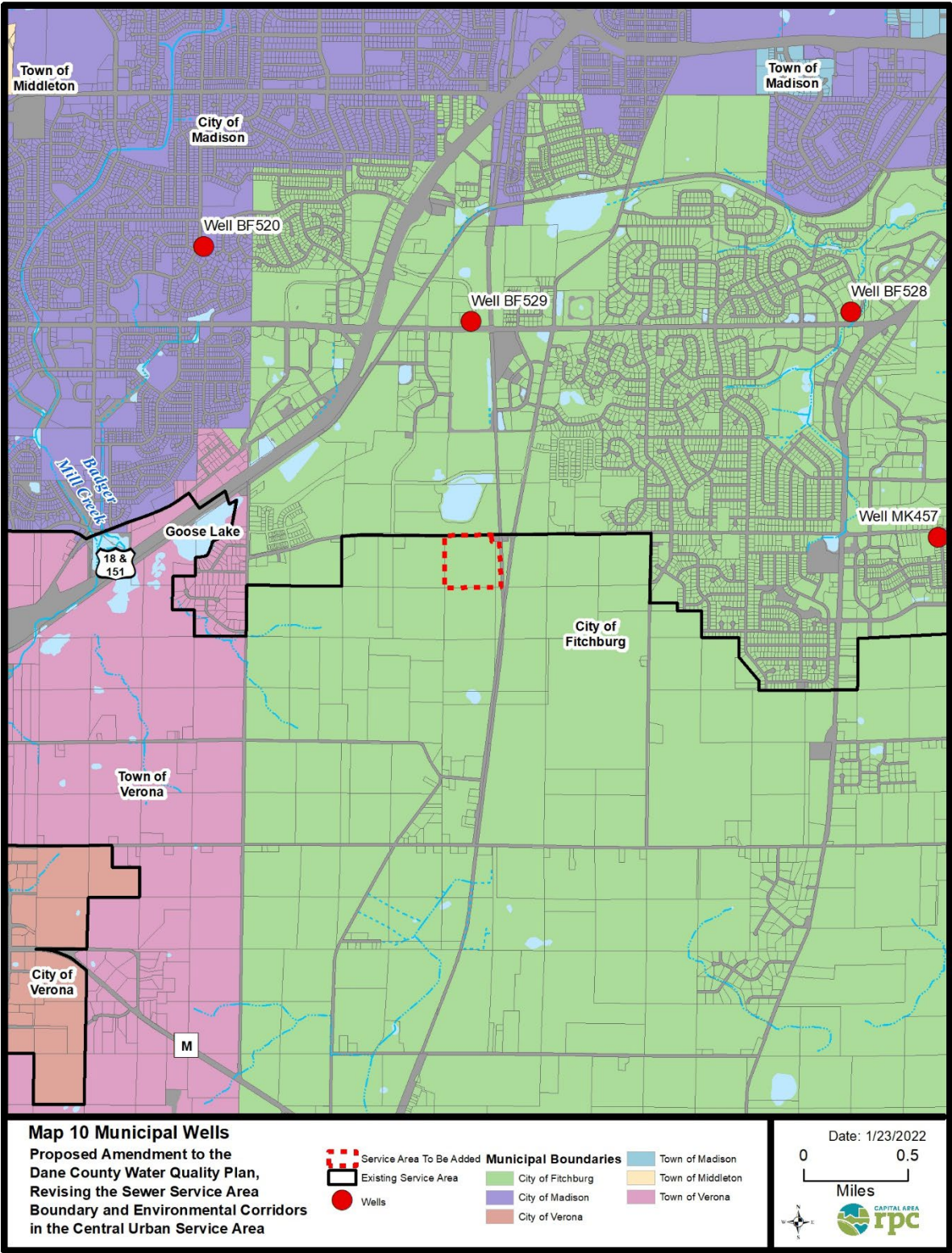
Map 9A – Proposed Sanitary Sewer and Water Main



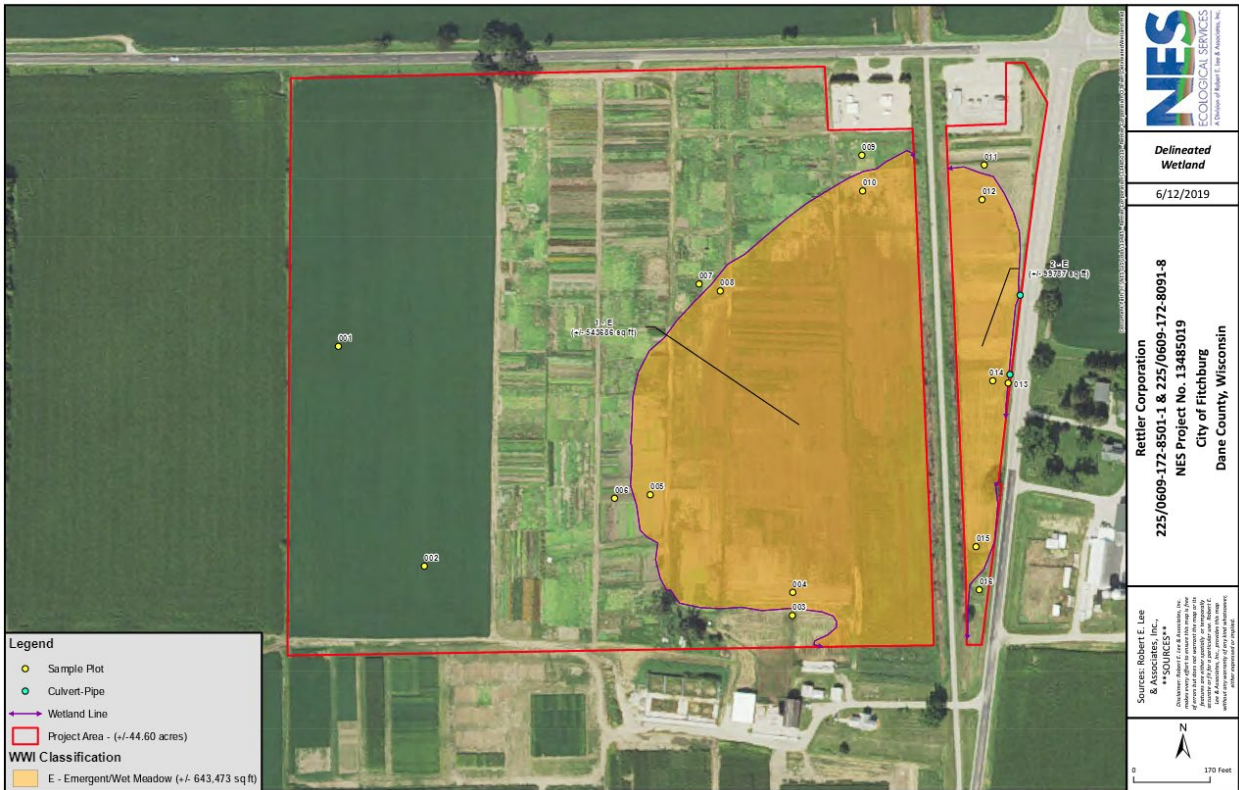
Map 9B – Proposed Stormwater Management



Map 10 – Municipal Wells



Map 11 – Wetland Delineation





January 24th, 2022

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

RE: Proposed Amendments to Fitchburg (Dane County) Water Quality Plan.

Dear Mr. Higgins:

No previously recorded archaeological sites have been recorded in, or adjacent to the parcels delineated in the amendment. The Service Area is not in proximity to wetlands, drainages, or other landscape features that are typical indicators of American Indian settlement and the parcel has been subjected to significant ground disturbance. Therefore, we see no reason why the Fitchburg amendment cannot proceed without survey.

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,

James M. Skibo, PhD
State Archaeologist
State Archaeology and Maritime Preservation
608-264-6496
James.Skibo@wisconsinhistory.org

Collecting, Preserving and Sharing Stories Since 1846
816 State Street Madison, Wisconsin 53706
wisconsinhistory.org

Mike Rupiper

From: Haley Smith
Sent: Tuesday, January 11, 2022 11:48 AM
To: Steve Steinhoff; Mike Rupiper; Larry Palm; David Pfeiffer
Subject: FW: Edgewood Sports Complex / More Public Comments

FYI --

From: Ali Bram <busy@alibee.us>
Sent: Tuesday, January 11, 2022 11:37 AM
To: Haley Smith <haleys@capitalarearpc.org>
Cc: Aaron Richardson <aaron.richardson@fitchburgwi.gov>; Jim.Wheeler@fitchburgwi.gov;
Randy.Udell@fitchburgwi.gov
Subject: Edgewood Sports Complex

Re: Proposed Edgewood Athletic complex in Fitchburg

The Edgewood proposal to build their athletic complex in Fitchburg is fraught with numerous issues that should be of concern to every resident. Therefore, approval for the complex must be decided not only by the city council, but by all Fitchburg citizens. Concerns include:

1. Will Edgewood, as a religious organization, be exempt from paying property taxes? If so, how will taxpayers be reimbursed for use of its city services, including fire and police protection, sanitation, and road maintenance?
2. Will such a complex require *additional* services such as another tax-funded fire station, more traffic control and policing, and further road construction?
3. Should city residents to be subjected to increased traffic congestion, air, litter, light and noise pollution-all permanent disruptions to quality of life-while receiving few if any benefits?
4. If Fitchburg citizens desire a sports complex in a residential area, would a better option be for the city to build a sports complex that would serve *all* Fitchburg citizens and that could be rented out to multiple, private organizations as well?

The Edgewood complex affects every citizen and it is therefore imperative that the Edgewood project be decided by referendum.

Ali Bram
2155 Ryeland St
Fitchburg, WI 53711
509-492-3089
busy@alibee.us

Mike Rupiper

To: Haley Smith
Subject: RE: FYI CARPC meeting 1/13 re Edgewood project on Semionle and Lacy

From: Mary Power <skipower92@gmail.com>
Sent: Tuesday, January 11, 2022 11:32 AM
To: Haley Smith <haleys@capitalarearpc.org>
Cc: Gabriella Gerhardt <votegabriella@gmail.com>
Subject: Fwd: FYI CARPC meeting 1/13 re Edgewood project on Semionle and Lacy

Good Morning Haley, I am submitting some questions re the proposed Edgewood sports complex in Fitchburg. My alderperson, Gabriella Gerhardt, suggested that I send these questions on to you. I look forward to your response.

Thank you.

Mary Power

Fitchburg

----- Forwarded message -----

From: Mary Power <skipower92@gmail.com>
Date: Tue, Jan 11, 2022 at 9:51 AM
Subject: Re: FYI CARPC meeting 1/13 re Edgewood project on Semionle and Lacy
To: Gabriella Gerhardt <votegabriella@gmail.com>
Cc: Ali Bram <busy@alibee.us>, William Tishler <wtishler@wisc.edu>

Good Morning Gabriella, thank you for your email alert in this matter. I'm offering the following as to my concerns/objections to the proposed Edgewood sports complex.

I fear this may be a done deal already, but I would offer the following as my main objections.

1. what city services will be needed to accommodate the increase in policing this area
2. what city services will be needed to handle the increase in snow removal/plowing

3. what city services will be needed to handle the increase in waste management
4. what city services will be needed to handle traffic control
5. who will decide if noise mitigation is, or becomes, a problem and how would that be handled
6. what financial compensation is being offered BY EDGEWOOD to pay for the increase for all of the above
7. how will the city enforce, or hold accountable, Edgewood if or when they do not adhere to agreements
8. lastly, and most importantly, has our current city council properly informed the citizens of Fitchburg re this, because frankly I suspect many Fitchburg residents are unaware of what's about to transpire

I have shared this email with my friends and neighbors Ali Bram and William Tishler, two well informed and active citizens of our city, as I know they share my concerns.

Again, thank you for keeping me posted.

Mary Power

On Tue, Jan 11, 2022 at 6:37 AM Mary Power <skipower92@gmail.com> wrote:

Thank you very much for the update.
I will be back in touch.

Sent from my iPhone

On Jan 10, 2022, at 8:58 PM, Gabriella Gerhardt <votegabriella@gmail.com> wrote:

Hi Mary,

I just found out the CARPC meeting to decide on the Edgewood project is THIS THURSDAY and there is a public hearing. A great chance to share your thoughts!

See info below, and please let me know if you need any help navigating this.

I hope you're well. Happy New Year!

Gabriella Gerhardt

Fitchburg Alder District 2, Seat 4

cell (608) 285-2586

[website](#)

[facebook](#)

[sign up for e-newsletter](#)

----- Forwarded message -----

From: Gabriella Gerhardt <Gabriella.Gerhardt@fitchburgwi.gov>

Date: Mon, Jan 10, 2022 at 8:56 PM

Subject: CARPC meeting 1/13 re Edgewood project on Semionle and Lacy

Hi all,

As Bill mentioned, the CARPC meeting is on Thursday 1/13. You can give public comment, I believe it's "Public Comment Question #1". Public Hearings should begin at 7pm.

Find the agenda here: <https://www.capitalarearpc.org/meetings/>

Register to speak at the meeting

here: <https://us02web.zoom.us/meeting/register/tZEvdGurD4sHTJOtRXXzLnhyE0FGjt4PJs9>

You can find the Edgewood Presentation to the council at this link: <https://youtu.be/xYpDUNeqSso?t=1778>

Let me know if there's anything else I can help with.

-Gabriella