



Eden Prairie GSR and Pump Station

To: Janet Jeramiah
Community Development Director
City of Eden Prairie

From: Jason Benson, PE - AE2S

Date: December 5, 2018

Re: Eden Prairie GSR and Pump Station
Project Narrative

1 PURPOSE

The purpose of this written narrative is to provide a summary of the Ground Storage Reservoir (GSR) and Pump Station, its relationship to the Comprehensive Guide Plan, surrounding land uses, and compliance with zoning regulations.

2 GENERAL DESCRIPTION

Representatives of the City of Eden Prairie recognize the significant growth and development trends in the area and have been earnestly working to proactively plan and guide land use and development. The ability to sustain this anticipated growth will become increasingly dependent on the City's ability to meet the infrastructure demands of the growing number of housing units and businesses. One of the City's primary objectives is to provide an adequate supply of safe, clean, and affordable drinking water for the current and future residents of Eden Prairie.

The City has identified that additional water storage will be necessary to support the expansion of water service to future growth areas while improving the operation of the distribution system and maintaining adequate water service under emergency situations. The City began planning in earnest for a new water storage facility back in 2015, and completed a sizing and siting evaluation study in which 15 sites were reviewed as potential locations. At the conclusion of the site-selection process, the city proceeded to negotiate the purchase of the most practical and cost-effective site from MnDOT, which was ultimately completed in 2018. A new 140-foot diameter prestressed

concrete ground storage reservoir and associated pump station are proposed for construction on that site to meet the needs of the City.

3 LAND USE & CITY COMPREHENSIVE PLAN

In anticipation of this project, the purchased property for the ground storage reservoir has been guided to be zoned “public” in Eden Prairie’s Aspire 2040 comprehensive plan. Since the parcel was formerly within MnDOT Right of Way, no mention of this parcel was made in previous comprehensive plans. The purchase of the land and intended use is consistent with the public infrastructure and benefit Highway 212 currently holds.

Immediately adjacent parcels to the north are proposed medium density residential. To the east, across Highway 212 is a combination of Public / Semi Public, Parks and Open Space, and minor Low Density Residential.

4 ZONING

The proposed parcel for the GSR and Pump Station is designated for public use in the Aspire Eden Prairie comprehensive plan update. It is anticipated this property will be established as a public zoning district. The purchase of the land and intended use is consistent with the public infrastructure and benefit Highway 212 currently holds.

Parcels immediately adjacent to the north are zoned Public and General Industrial.

5 VARIANCES OR PUD WAIVERS

The project will require two planning and zoning waivers for historical reasons. The ground storage reservoir and pump station is located very close to Eden Prairie’s original railroad depot and water-stop known as the Washburn Station. During preliminary planning discussions, it was decided to design the pump station to resemble the old railroad depot, to provide the public with an educational display of the city’s transportation heritage, while ensuring the facility remains completely functional for its public water supply mission. This dual-purpose function of the facility will require design waivers in order to maintain a semblance of the original railroad depot’s appearance. The two design waivers necessary will be:

1. Waiver for exterior construction materials – Public buildings are required to be constructed of three distinct material types at certain percentages. To resemble the old wooden depots of the 1880’s era when the Washburn Station was in use, a viable construction method meeting today’s building maintenance expectations can be achieved by overlaying a concrete block building with fiber-cement siding, such as James Hardie lapboard siding, to capture the exterior appearance of wood siding used on the original structure. Similarly, the natural cedar shingles

used on the original structure could be replicated by steel roofing or fiber-cement roofing designed to look like wooden shakes. Installation of these types of materials would provide significantly greater durability than the natural materials used on the original depot, while providing the same profile and appearance of the historic structure. Detailed specifications for the building products, including material selection and appearance standards, will be developed with City staff during the final design process to create the bidding documents necessary for the public bidding process. Following award of the bid to the lowest responsible bidder, shop drawings will be received from the selected contractor for the specified products. The shop drawings will be reviewed to ensure that the products selected by the contractor meet the requirements of the specifications. Along with the shop drawings, color charts and samples will be provided for final selection by the City.

2. Waiver for exterior colors – Public buildings are required to be designed to display three complimentary colors in the exterior design. To meet the historical appearance of the old depot it is likely that there will be less than three complimentary colors in the design.

6 LAND USE

The area being proposed for the new ground storage reservoir and pump station was highway right of way until March of 2018, when the city purchased the property from the State of Minnesota to facilitate the construction of the pumped water storage facility.

This land was set aside for the construction of US Highway 212 but was never used. The city has designated this property for public use in the Aspire Eden Prairie comprehensive plan update. It is anticipated this property will be established as a public zoning district.

7 SUSTAINABILITY

The ground storage reservoir and pump station will incorporate several forms of sustainability practices in the design of the buildings and site to reduce energy consumption. Practices include:

- Improving the overall sustainability of the water utility by:
 - Using the most energy efficient design practices permitted by the Minnesota Department of Health in a drinking water facility.
 - Providing the flexibility in operations of the public water distribution system to enable the optimization of energy used over much greater periods of time. This, in effect, allows for the optimization of the distribution system pumping scheme.
 - Reducing the peak energy consumed by the utility's older, less efficient pump station by allowing the greater storage volume to span periods of

high water use that formerly required the water treatment plant to dramatically increase pumping volumes with a subsequent dramatic increase in electrical energy consumption.

- Participating in the Xcel Energy - Energy Design Assistance Program, which includes:
 - High efficiency mechanical equipment.
 - Low flow plumbing fixtures.
 - High efficiency lighting throughout the building and site.
 - Premium efficiency motors and variable frequency drives for water pumping equipment.
 - Increased quality of specific building materials with greater energy efficiency.
- Protecting as many of the desirable, significant trees on-site as is possible during the preparation of the construction site. Significant trees that absolutely have to be removed during construction will be replaced to the extent required by the planning commission with diverse species to meet or exceed City requirements.
- Optimizing construction efficiency through design by intentionally reducing fossil fuel consumption. Consideration will be given to limiting material being hauled off-site, which reduces the trucking necessary.
- Implementing stormwater Best Management Practices (BMPs) to treat, control and manage stormwater runoff from the site.
- Performing a Green Infrastructure Analysis in the Stormwater Management Plan, and implementing the recommendations in the project design.

8 SCHEDULE

The project is anticipated to be bid in early spring of 2019, with a construction start-time of spring of 2019 and final completion in June of 2020.

9 DEVELOPMENT METHOD

This parcel and improvements will be incorporated into the City's infrastructure.

10 LEGAL

A survey of the site has been completed by Hanson, Thorp, Pellinen, Olsen, Inc. A temporary permit will be required from MnDOT for construction of watermain to the site from Eden Prairie Road. Utility and trail crossing easements will be required from the Hennepin County Regional Rail Authority for sewer service and secondary site access.

11 LAND/BUILDING USE PROFILE

The site is located between US Highway 212 and the Three Rivers Park District trail located on Hennepin Regional Rail Authority property approximately 1,400 feet east of Eden Prairie Road.

- Pump Station – The pump station will consist of a lower level pump room, mechanical room, electrical room, and a single unisex bathroom. See the Architectural Design Memo for additional building features.
- Ground Storage Reservoir – The ground storage reservoir will be a 140-foot diameter pre-stressed concrete tank with a concrete dome roof. The reservoir will be mostly buried with a total water depth of approximately 37 feet. The tank will be constructed into the side of a hill with the exposed wall height ranging from approximately 4 to 22 feet. Architectural treatment of the pre-stressed concrete will be considered for the exposed wall area visible to the public and alternatives from the manufacturer will be reviewed to determine additional cost.
- Public Access - A trail annex and signage relevant to the historical depot may be provided along the frontage with the trail at the pump station location.
- Security/Fencing – Fencing will be provided for security around the proposed ground storage reservoir and pump station with a gated access. The fencing will likely be routed to the back corners of the proposed pump station to allow the public to view the historical nature of the site from the existing trail. The fence visible to the public who visit the educational site will be more ornamental in nature with an anti-climb design for site security. Fencing not visible from the public trail frontage will be standard chain link with security in mind. Standard chain link fence will be sufficient as it will not be readily visible for public viewing.
- Parking - The site will include a parking and turn around area behind the proposed pump station within the boundary of the perimeter fence for operations and maintenance access by City of Eden Prairie water utilities personnel. Public will not have access to this parking area.
- Other Structures/Features - In addition to the proposed ground storage reservoir and pump station, the following features are included in the project design:
 - An emergency generator necessary to provide electrical power to the pump station during power-outages will be placed behind the building/parking area.
 - A small wooden stave water tank may be constructed next to the pump station to replicate the appearance of the historic depot.. This water tank will be designed to closely resemble the water-stop facilities common at every train station that supported steam locomotive operations during the late 1800's. This feature will be bid as an alternate and may or may-not be constructed, depending on available funds. A similar design example is shown here.



- A short length of railroad track may be constructed adjacent to the pump station building to replicate the rail line on which the old locomotives travelled. This feature will be bid as an alternate and may or may-not be constructed, depending on available funds.

12 SIGNAGE

See the Architectural Design Memo.

Signing will be provided on Eden Prairie Road and the access road, ensuring the public will not enter the site.

Internal street signage will be minimal due to the extremely low volume of City personnel who will use the facility on a daily basis.

Educational signage providing visitors historical information about the Washburn Depot and Eden Prairie's past will be developed in collaboration with city staff and placed where appropriate for public visitors.

13 LIGHTING

Lighting will be provided as necessary to provide safety for operations while maintaining adequate night-time site security.

14 TRANSPORTATION

The proposed facilities will be accessed once or twice a day by City of Eden Prairie utilities staff for routine operation and maintenance activities. It will not be open to public vehicular travel.

Some maintenance activities may require additional vehicular traffic, but this will be limited to occasional events.

15 ENVIRONMENTAL ASSESSMENT

An environmental assessment is not required.

16 SHORELAND ORDINANCE/FLOODPLAIN

This project is not within any shoreland ordinance or floodplain zones.

17 AIRPORT ZONES

This project is not in any airport zones.

18 DISPOSITION OF EXCESS LAND

Excess land on the property will stay open space.

19 LIMITS OF DISTURBANCE

The limits of disturbance are the entire property plus the horizontal permit area along MnDOT property from Eden Prairie Road to the site and two utility easements located on Hennepin County Regional Rail Authority property.

20 STORMWATER MANAGEMENT

See Stormwater Management Plan for details.

21 WATER AND WETLANDS

A Wetland Determination Report prepared by Kjolhaug Environmental has been submitted to the City Engineering Department and subsequently reviewed and approved by MnDOT. No wetlands have been delineated on the site.

22 WILDLIFE

Not applicable.

23 SOILS

The site was a fill/spoils area for the construction of Highway 212. The undocumented fill soils generally consist of sandy lean clay (CL) as well as clayey sand (SC). The underlying native soils are predominately composed of sand with silt (SP-SM) as well as occasional seams of sandy lean clay (SC), sand (SP), and silty sand (SM).

24 EXISTING STRUCTURES

There are no existing structures located on the property. The property is close to the location of the old Washburn train depot in Eden Prairie, which hasn't existed for some time.

25 OTHER RELEVANT ITEMS

26 OWNERSHIP

The property is owned by the City of Eden Prairie.

27 DEVELOPER

Not applicable.

28 FINANCING

Funding for this project has been planned for several years and included in the City's water utility capital improvement plan. Water Access Charges will provide most of the necessary revenue to construct this project with the balance funded through the sale of water revenue bonds.