

# Great Lakes Water Supply Program



GREAT WATER  
ALLIANCE



## Plan of Operation Report

September 2019



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### LIST OF ATTACHMENTS

- Drawing set including site plans, utility plan, grading and stormwater plan, landscaping plan, and architectural floor plans and elevations.
- Architectural building elevations in color
- Architectural renderings in color
- Site lighting plan
- Geotechnical report for the subject site
- Stormwater Management Plan: Booster Pumping Station
- Site plan in color
- Landscape plan in color
- Master Plan Update for Minooka Park, Waukesha County, July 2018

PROGRAM TEAM MEMBER CONSULTANTS:



## PURPOSE

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This Plan of Operation report has been developed and organized to meet the requirements of the Conditional Use Application Checklist and the requirements of Seciton275-24(C).t

## **SECTION 1 The Proposed Use of the Land and/or Structures**

This project is an essential component of a larger project designed to provide safe drinking water to the residents of the City of Waukesha. The City of Waukesha needs an alternative public water supply because the water from its deep wells contains unacceptable levels of radium. The City is under a court order to resolve the radium issue by September 2023. The court order further requires that construction on the project be 50% complete no later than June 1, 2022 and, if it is not, then Waukesha will be forced to spend millions of dollars in interim treatment costs.

After several years and detailed studies by both the Waukesha Water Utility (WWU) and the Southeastern Wisconsin Regional Planning Commission, the City sought approval from the Wisconsin Department of Natural Resources to use water from Lake Michigan because it provided the most sustainable long term and safe public water supply option. Because the proposed solution involved use of Great Lakes water approval from the governors of eight states that are part of the Great Lakes Compact was required and was obtained.

Since approval of the diversion, Waukesha has designed the route and location of water pipeline and pumping station and storage facilities necessary to support the delivery of the water and has undertaken the engineering to allow construction to proceed. Over the past 2 years, Waukesha has been working with the City of New Berlin with respect to facilities to be sited in New Berlin. In addition, Waukesha has applied for numerous permits and approvals from the Wisconsin Department of Natural Resources and the Public Service Commission for these facilities.

This portion of the project in New Berlin involves two primary structures, a Booster Pumping Station (BPS) and two water storage tanks. The structures and location are shown on the attached drawing set, site plans and architectural plans. The BPS and Storage Facilities are essential components of a system designed to deliver drinking water from the City of Milwaukee to the Waukesha Water Utility and then to the public. Water for Waukesha will be provided by the City of Milwaukee and will be conveyed by the Oklahoma Pumping Station (OPS) to the BPS.

- The Storage Facilities provide the water storage required between the OPS and Waukesha to attenuate demands and provide for emergency storage. The storage will be provided by two 8.6 million gallon water storage tanks. The water storage tanks were sized based on evaluations of operation, equalization, and emergency storage needs. Appropriate emergency storage is critical to provide water to the City of Waukesha if the Water Supply Pipeline or OPS is temporarily unable to provide water to the BPS.
- The BPS will include variable-speed pumps to adjust the pumping rate for the actual demand within the City of Waukesha. The BPS will house a centralized chemical feed facility to provide the ability to maintain water quality characteristics, including residual disinfectant and corrosion inhibitor levels. The chemicals that will be stored on site are sodium hypochlorite (bleach) and liquid ammonium sulfate, a stable, non-hazardous, non-toxic aqueous ammonium sulfate solution. Neither of these chemical solutions are flammable.

## **SECTION 2 Activities to Occur Both Inside and Outside All Principal and Accessory Structures**

The primary activities occurring inside the structures is the pumping and storage of water as noted above. The building will be fully automated and controlled from Waukesha Water Utility's (WWU)'s Supervisory Control and Data Acquisition (SCADA) system at their administrative office. The daily activity at the site will be minimal and typically only involve the following:

- Two operators arriving in one standard utility truck will visit the site Monday through Friday to perform routine maintenance and to check on the facilities for a duration varying from between an hour to four hours.
- The WWU Operations Manager will visit at most once week in a car or standard utility truck.
- Chemicals will be delivered in a standard delivery truck one truck at a time every few weeks.
- In an emergency, two crew trucks and a car with a supervisor or manager may be on site.

There are no activities anticipated to occur outside the principal and accessory structures except for routine maintenance of landscaping.

### **SECTION 3 The Frequency and Duration of All Activities**

See response to prior sections

### **SECTION 4 The Number of Employees of Any Commercial or Industrial Enterprise**

Although this project does not involve commercial or industrial enterprises, see response to prior questions for anticipated employees on site.

### **SECTION 5 The Estimated Number of Occupants of a Multifamily Residential Use**

This portion of the code does not apply to this project as this is not a multifamily residential use property and there are no residents.

### **SECTION 6 The Number, Size, and Type of All Vehicles Associated with the Use, including Number of Vehicle Trips**

As noted in response to prior sections, normal operation would involve one standard utility truck for a period of one to four hours a day during the week, one car or utility truck once a week for the Operations Manager, and one delivery truck for chemical treatment once every few weeks.

### **SECTION 7 Plans for Compliance with the General Development Standards Set Forth in Article VIII of This Chapter**

The plans for this project comply with Article VIII as outlined in the following sections of this report.

#### **7.1 §275-52 General Provisions**

This project meets the requirements of the above stated code with the exception of a fencing waiver requested and attached to this application for security reasons.

All drawings have been designed by licensed professional engineers, architects, and landscape architects that are registered in the State of Wisconsin. Signed and sealed drawings will be provided to the City of New Berlin after all comments have been received and addressed.

## 7.2 §275-53 Site Plan Review Principles and Standards

Please see attached site plans and the more detailed descriptions for each of the principles in the following sections. In summary, this project meets the above cited code as follows:

- There is a proper relationship between the existing and proposed streets and highways within the vicinity of the project in order to assure the safety and convenience of pedestrian and vehicular traffic. There are no new streets proposed, and traffic in and around the site will be minimal.
- The proposed on-site buildings, structures, and entryways are situated and designed to minimize adverse effects upon owners and occupants of adjacent and surrounding properties by providing for adequate design of ingress/egress, interior/exterior traffic flow, stormwater drainage, erosion, grading, lighting, and parking, as specified by this chapter or any other codes or laws and as described in the following sections.
- Natural features of the landscape are retained where they can enhance the development on the site, or where they furnish a barrier or buffer between the project and adjoining properties used for dissimilar purposes, or where they assist in preserving the general safety, health, welfare, and appearance of the neighborhood.
- Adverse effects of the proposed development and activities upon adjoining residents or owners are minimized by appropriate screening, fencing, or landscaping as provided or required. As described below, to address previously expressed concerns of New Berlin residents regarding aesthetics, the height of the storage tanks has been reduced 10 feet, so that the total height is within the 35 feet authorized under the Conditional Use Permit standards for the P-1 zoning district. As a result, existing and proposed vegetation will be able to substantially screen the storage tanks. See attached renderings.
- Land, buildings, and structures are readily accessible to emergency vehicles.
- Traffic generation and circulation is not included on the site plans as the anticipated traffic is anticipated to be one vehicle per day and one delivery truck for chemicals every few weeks. The pavement design does include sufficient space for a delivery truck to turnaround.
- The BPS site includes no outside storage or dumpsters.

## 7.3 §275-54 Natural Resource Protection

The project will protect existing natural resources. The limits of site disturbance are shown on the attached site plans and the impacts have been described in both the Environmental Impact Statement that Wisconsin Department of Natural Resources (WDNR) has prepared for this project and the Wetland and Waterways Impacts Permit Application for the Program that has been drafted and submitted to WDNR for review in November 2018. The Wetland and Waterways Impacts Permit Application has been reviewed and the public comment period ends on September 19, 2019. A permit is anticipated before November 2019.

As part of the application, a Wetland and Waterway Delineation occurred from August 8, 2017 to November 1, 2017 and May 7, 2018 through June 1, 2018. The delineation was led by Ron Londre and Lesley Brotkowski, both WDNR Assured Wetland Delineators, with TRC Environmental Corporation. It confirmed a wetland exists on the adjacent Lot 2 (wetland limits shown on the attached site plans). However, that wetland area will be avoided and not impacted by this project. No other waterbodies are present on the property.

Through a review of the WDNR Natural Heritage Inventory database and desktop and in-field survey, no threatened, endangered, or Federally-listed species were reported to be potentially within the in the vicinity of the subject

property, and it is anticipated that the property improvements are not likely to adversely affect federally or state listed species.

The full Wetlands and Waterways application was submitted on April 23, 2019, to Nicole Hewitt and Tamara Simonson at the City of New Berlin. If additional information is needed, it will be provided upon request.

#### **7.4 §275.54.1 Woodland, Tree and Vegetation protection (existing lands)**

The trees on the subject property are not high value trees, but the project was sited and designed to avoid the removal of any trees. While tree removal is not anticipated, should any trees need to be removed as a result of unanticipated construction requirements, the removal will be limited to fewest trees possible and additional trees will be planted to screen the BPS and storage facilities.

#### **7.5 §275-55 Grading and Drainage**

Grading and stormwater management will be undertaken to comply with applicable DNR codes in Wis. Admin Codes NR 151.12 and the 10 foot wetland setback defined in Section 275.36 D.(3) (a) for P-1 Districts. Details of these plans are shown in the attached Grading, Erosion Control, Sanitary and Stormwater Piping Plan (BC7). In particular grading and drainage features include the following:

- The BPS will meet stormwater detention requirements as defined in NR 151.121 and City of New Berlin Ordinance 2267 Post-Construction Storm Water Management Zoning Ordinance (S.07) and the stormwater detention ponds will be located on site to achieve the water quality requirements.
- The stormwater detention ponds are located in the front of the parcel along South Racine Avenue to enhance the natural buffer between the right-of-way and the new buildings and take advantage of the naturally low lying area of the site.
- The two stormwater detention ponds are required based on the open space available within the parcel and the detention requirements. The majority of the site will discharge to a wet pond (pond with a constant water level) for total suspended solids (TSS) removal and then will flow to a dry pond (grass bottom pond) where additional detention is located.
- Based on the size requirements of the stormwater detention ponds, the grading of the Dry Pond will not encroach within the 10-foot wetland setback, and will not encroach on the delineated wetland limits. No impervious areas will be located within the protective area under NR 151.12.
- Waukesha County will be granting a temporary easement during construction. Grading will be performed on this parcel within the wetland setback to accommodate the haul road to and from the site and stockpile location. This is necessary to remain outside the We Energies easement setback for the natural gas pipeline and maintain drainage to the wetland.

#### **7.6 §275-55.1 Post-construction Stormwater Management**

The project will not cause unreasonable soil erosion or have unreasonable adverse effect on rare or irreplaceable natural areas. As described in the Grading and Drainage section, the post-construction stormwater management will consist of Wet and Dry Ponds. The on-site stormwater management will meet the requirements as defined in NR 151.12 and City of New Berlin Draft Ordinance 2267 Post-Construction Storm Water Management Zoning Ordinance (S.07) and the stormwater detention ponds will be located on site to achieve the water quality requirements. See attached draft Stormwater Management Plan: Booster Pumping Station for further information. Comments previously provided by the City of New Berlin on August 15, 2019 have been addressed.

## **7.7 §275-55.2 Construction Site Erosion Control**

The contract documents require that the contractor submit for local and state permits for erosion and sediment controls. The contractor will be required to prepare and submit a site specific Storm Water Pollution Prevention Plan (SWPPP) as part of the Stormwater Management Plan submitted to WDNR for approval prior to construction. The SWPPP will adhere to the requirements and standards set forth by NR 216.46 and NR 151.11 of the Wisconsin Administrative Code.

The construction plans identify and show required wetlands jurisdictional lines and buffers, and require that these areas be protected during the contract work. Site reporting and monitoring will follow the most recent requirement of Wisconsin Administrative Code NR 216.48, per WDPES Permit No. WI-SO67831-5. Typical recurring site reports include weekly inspections or after every 0.5-inch rain event.

## **7.8 §275-55.3 Illicit Charges and Connections**

The BPS and Storage Facilities have been designed such that there are no discharges or connections and any stormwater generated on site will be treated on site and discharged to the adjacent confined wetland as permitted by WDNR.

## **7.9 §275-56 Landscape and Buffering**

The attached Landscape and Restoration Plan shows the property easements and setbacks. The proposed landscaping for the property will be native grasses, shrubs, and trees, similar to a park and in accordance with City of New Berlin ordinances. The site landscaping plan has been revised per the feedback received from the Architectural Review Subcommittee and at the public hearing on June 27. As a result, the storage tank heights have been reduced by 10 feet to bring them within the 35 foot height limit allowed as a conditional use.

When the trees are fully mature, tree heights will range from 30 to 60 feet and the landscaping would screen the majority of the views of the storage tanks from Swartz Road and South Racine Avenue. The reduced height of the storage tanks will allow substantial screening to occur long before the trees are fully mature. See revised site rendering attached.

## **7.10 §275-57 Off-street parking, Loading and Access.**

This portion of the code is not applicable to this site as there will be no off-street parking, loading or access to interstate highways.

South Racine Avenue is classified as a county trunk highway and requires an access permit from Waukesha County in order to construct an access driveway to the site. The permit was submitted and approved by Waukesha County.

## **7.11 §275-58 Adequate Public Facilities**

The BPS site will place little or no burden on public facilities. Potable water service will be provided by the Water Supply Pipeline for Milwaukee and wastewater and stormwater will be treated on site, creating no burdens on public facilities. No traffic impact analysis is required because the traffic impact thresholds are not exceeded. The existence of the BPS and storage tanks and the presence of one or two employees for a few hours a day will not place any additional burden on the ability of the City of New Berlin to provide services such as sewer disposal, water supply,

schools, and transportation. Electricity and natural gas will be supplied from We Energies with dedicated service feeds for the site. The BPS will be fenced in and include continuous camera surveillance by the WWU. Police Department support is anticipated to be minimal. A hydrant is located on site and will be inside the fence to be used for the fire protection for this property only and a fire suppression system is designed to meet the requirements of the City of New Berlin Fire Code. Fire Department support is anticipated to be minimal.

## 7.12 §275-59 Architectural Design Standards

Architectural board already unanimously approved the above grade building and storage design and materials on June 27, 2019.

The parcel is bordered on the south by a heavily wooded area of Minooka Park, on the northwest by a strip of wetlands, on the east by South Swartz Road, and South Racine Avenue runs diagonally along the northeast edge. South Racine Avenue is a county trunk highway, connecting Interstate 43 to Waukesha. South Swartz Road is a secondary road due to its short length. As such, the site is oriented toward South Racine Avenue as the front.

The parcel gently slopes from the woods on the south towards a swale along South Racine Avenue. There is a narrow access point over the swale on South Racine Avenue. South Swartz Road follows the slope described above and allows the parcel to be easily accessed from the east. Currently the parcel is used for agricultural purposes, and the adjacent properties are a mixture of residential and farm land.

The BPS will be located near the north side of the parcel, east of the wetlands, and will extend along South Racine Avenue. The storage tanks will be located along the south property line, which is considered to be the back of the BPS site. This location will aid in diminishing the prominence of the storage tanks on-site. Access to the BPS will be from South Racine Avenue.

The placement of the building avoids the adjacent wetlands, thus keeping the natural hydrology of the site intact. Doing so reduces the negative impacts of stormwater on nearby infrastructure while maintaining an important habitat for local plants and animal species. Entry to the BPS will be controlled by a perimeter fence and slide gate with electronic access.

The exterior walls of the BPS will be clad in brick and cast stone and the roof will be finished with a standing seam metal system. In combination with the building's massing, these finishes were selected to subtly relate to WWU's Well 8 facilities and to adhere to the prairie style reviewed and approved by WWU. The fenestration formalizes this appearance by including a series of clerestory windows that provide natural light to the Pumping Room. These clerestory windows are protected by projected roof eaves that emphasize the horizontality of the structure and prevents excessive glare and solar heat gain. This approach takes advantage of one of the prairie style elements to creatively and economically enhance the building's overall appearance and provides a more weather resistant solution for roof penetrations.

To relate the BPS more fully to its surroundings, design motifs that reference the unique character of the site and region are proposed. For example, the site was once a part of a Wisconsin flagship farm: Swartz's Cornalfa Farm. Thus, it is proposed that the building subtly incorporate agrarian décor elements on friezes, column capitals, and elsewhere to make reference to the corn and alfalfa that were once harvested there and blend into the surrounding landscape. The BPS adopts many of the characteristics associated with that style, including low-sloped roofs, large cantilevers that emphasize horizontality, brick columns, and clerestory buildings among others.

The landscaping around the BPS will also help commemorate the uniqueness of the site. Anticipated plants include those identified by SEWRPC as indigenous to the region. Additional landscape strategies will include painting the storage tanks a neutral color and surrounding them with a heavily vegetated berm of native plants that meet requirements of the code and require minimal maintenance.

### **7.13 §275-60 Performance Standards**

The performance standards in this code are being met as follows:

#### *1. Air Pollution*

The BPS and Storage Facilities have been designed to not emit smoke, fly ash, dust, particulates, fumes, vapors, mists, or gases in quantities to exceed established state or federal air pollution standards or constitute a nuisance to surrounding property owners.

#### *2. Fire and Explosive Hazards*

The chemicals that will be stored on site are sodium hypochlorite (bleach) and liquid ammonium sulfate, a stable, non-hazardous, non-toxic aqueous ammonium sulfate solution. Neither of these chemical solutions are flammable. The BPS will have a fire suppression system that meets the requirements of the City of New Berlin Fire Code.

#### *3. Glare and Heat*

The BPS and Storage Facilities have been designed such that no activity shall emit glare or heat that is visible or measurable outside its premises.

#### *4. Water Quality Protection*

The BPS and Storage Facilities have been designed such that no water discharge or impact to water quality is anticipated. Stormwater from on site will be treated through a wet pond and dry pond stormwater detention system will be discharged to the confined wetland adjacent to the property as approved by the WDNR.

#### *5. Noise*

The booster Pumping Station and Storage Facilities have been designed such that no activity shall produce a sound level outside its premises that exceeds the limits of City of New Berlin Code 275-60.

- Due to the sound-attenuating properties of the masonry walls of the BPS, sound from equipment operating within the building will be below zoning regulation limits at all points outside the building at all frequency bands regulated by this code.
- The natural gas generator will be located outside of the BPS. The natural gas generator will typically be run once per week for approximately 30 minutes to exercise the equipment.
  - The day and time of the test will be coordinated with the City of New Berlin to minimize any potential impact to nearby residents.
  - The only other time the natural gas generator will be run is during emergency situations when there is no electrical power to the site.
  - The natural gas generator is being specified to an acoustical performance that is better than the zoning requirements at the property line, including overall limits and the frequency band limits. Air exhaust opening from the generator set is directed upward to minimize sound reflected off of the building and storage tanks.

- The approximate overall sound pressure level due to the natural gas generator will not be more than 62 decibels (dB) at the nearest property line (west side) and not more than 54 dB at the Racine Avenue frontage property line.
- At 1,000 feet from the property, the noise level would be undetectable.
- For reference, below are typical sound pressure levels.
  - A passenger car traveling at 65 mph, 25 feet away has a sound pressure level of approximately 77 dB.
  - A vacuum cleaner typically has a sound pressure level of approximately 70 dB
  - A conversation in restaurant typically has a sound pressure level of 60 dB.
  - A quiet suburb or a conversation at home typically has a sound pressure level of 50 dB.

#### 6. *Odors*

The BPS and Storage Facilities have been designed such that no odor shall be created for periods exceeding a total of 15 minutes per day which is detectable by a healthy observer who is unaffected by background odors such as tobacco and food, at the property line of the regulated use where any such use abuts any residential, business, office, institutional, or park district.

#### 7. *Radioactivity and Electrical Disturbances*

The BPS and Storage Facilities have been designed such that no activity shall emit electrical disturbances outside its premises that are dangerous or adversely affect the use of neighboring premises. The BPS and Storage Facilities have no radioactive material on site.

#### 8. *Vibration*

The BPS and Storage Facilities have been designed such that no activity shall emit vibrations that are discernible without instruments outside its premises.

#### 9. *Lighting*

Exterior lighting on the building perimeter is provided for operator safety and emergency egress from the BPS to the public way in case of emergency. Emergency lighting is designed to meet International Building Code, which is adopted by the state and the City of New Berlin. Exterior lighting at the generator will be switched off, except during required operations. While we are able and willing to meet the lighting requirements of the City of New Berlin for the P-1 Zoning, it is not required for the safety and operation of the facility and therefore so we would like to ask for an exemption to the lighting requirements to be responsive to stakeholder feedback to minimize the lighting on site. A description of our proposed plan is outlined below and a photometric plan was completed for the site and is included as attachment to the application for reference.

The code is being met as follows:

- All exterior lighting at the BPS site will be provided by LED fixtures and will not be positioned to face neighbors or up to the sky.
- Lighting at the site entrance is provided to allow for safe site access by utility staff, emergency vehicles, and to allow for imaging of approaching vehicles and people at the entry gate by the security cameras. The single pole mounted light at the site entrance is mounted less than 25-feet above grade.
- At the property line near the entry gate, illuminance will exceed 0.5 foot-candles into the public right-of-way, as allowed under this code for public safety.

We are asking for an exemption to reduce the lighting at the site as follows:

- Illuminance from exterior lighting at property lines will be less than 0.01 foot-candles at the ground as shown on the Lighting Plan. The maximum of 0.01 foot-candles at the property line is fifty times less than the zoning required maximum of 0.5 foot-candles per the code.
- To maintain the rural character of the area, the New Berlin zoning minimum illuminance requirements are not being met by the proposed design to limit light pollution, as the site is not generally manned and has no public access. Additional lighting in the parking lot would be required to meet the minimum requirements of this code.
- If necessary, a waiver will be applied for this variance to New Berlin code.

#### **7.14 §275-61 Signs**

This portion of the code is not applicable to this application as there are no new signs proposed for this site. A sign is located in the northeast corner of the site. This sign was erected by the Waukesha County Historical Society Museum (WCHSM) in 2004 to commemorate the influence and historic significance of Cornfalfa Farm to the region. The Cornfalfa Farm was owned by the Swartz family, who was notable for a number of products, and held a copyright for the Cornfalfa Farm name. Coordination with the WCHSM took place to determine the significance of the sign to the Program. A letter was received from the Historical Society dated August 23, 2017, which provided the following statement:

*“The placement of the historical marker is incidental, and in no way implies any restriction of land use or inhibits use of the land. WCHSM works with local citizens, businesses, and other interested community groups to raise funds for the erection of historic markers. Should a marker need to be relocated WCHSM is to be notified with sufficient advance notice, and permitted to make arrangement to find a new location for the marker.”*

The existing Cornfalfa Farm designation sign will be protected during construction and will remain in its existing location.

#### **7.15 §275-61.1 Newsracks**

This portion of the code is not applicable to this application as there are no newsracks proposed for this site.

### **SECTION 8 The Season, Days, and Hours of Operation**

The BPS and Storage Facilities will operate continuously year round, 24 hours a day.

### **SECTION 9 The Expected Starting and Completion Dates of Construction**

The project duration will be approximately two and a half years and construction is scheduled to begin in early 2020, pending regulatory approval. Construction needs to be substantially complete by November 2022.

### **SECTION 10 The Proposed Phasing of the Project**

There is no proposed phasing for the project at this time. The BPS and Storage facilities would be constructed from approximately Spring 2020 to November 2022.

## **SECTION 11 Resolution or Mitigation of Any Hazards or Adverse Impacts Resulting from the Project**

There are no hazards or adverse impacts anticipated from this project.

One concern that has been expressed by community members is an impact to private wells. The Oakwood Knoll subdivision is the subdivision with private wells in closest proximity to the BPS site. The highest pumping elevation during well construction observed in a private well in this subdivision was at elevation 926 feet. Even with the revised lowered storage tank elevation, a minimum of 36 feet of vertical separation and at least 700 feet of horizontal separation between potential dewatering at the BPS site and the maximum elevation of any private well pumping levels would be provided in the Oakwood Knoll Subdivision. Therefore, no significant impacts to the private wells of the residents of the City of New Berlin are anticipated due to potential dewatering during construction at the BPS site or pipelines.

There will of course be certain potential adverse impacts associated with the construction of the project but every effort will be taken to minimize such impacts. Erosion control will be maintained in accordance with state law. Construction activities will be undertaken in accordance with all applicable local requirements.



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