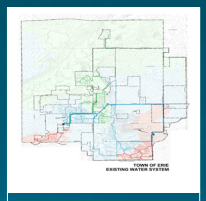

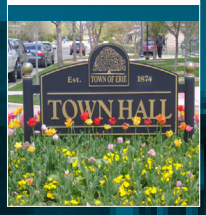


# NON-POTABLE WATER MASTER PLAN UPDATE

Submitted to:

Town of Erie

TOWN OF ERIE
1874

Submitted by:

MERRICK®

2480 West 26th Avenue, B225 • Denver, CO 80211
Tel: +1 303-964-3333 • Fax: +1 303-964-3355
www.merrick.com

August 27, 2020

Ms. Wendi Palmer, PE, Civil Engineer
Town of Erie
645 Holbrook Street
Erie, Colorado 80516

**Re: Non–Potable Water Master Plan Update**

Wendi:

Submitted herewith is our Non-Potable Water Master Plan Update.

This update of the Master Plan is well timed. Erie has grown significantly over the past five years and added new developments and several key infrastructure projects to its non-potable water system. The Plan verifies previous assumptions for turfgrass and median water demands but revised (increased) demands for sports turf grass working with the Parks and Recreation Department.

The Plan also outlines management policies, practices, design criteria, and operating and maintenance procedures needed for establishing a Non-Potable Water Utility.

Recommended near-term (10 year) and long-term capital improvements are set forth in the Plan and illustrated on the Master Plan drawing.

Very Truly Yours,
**Merrick & Company**

Allyson Junker, PE

Terrence P. Kenyon, P.E.

cc: Todd Fessenden, Public Works Director
David Pasic, Interim Town Engineer

2480 W. 26th Street, Unit B225
Denver, Colorado 80211

Tel: +1 303-964-3333

hello@merrick.com
www.merrick.com

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**Appendices**

# Section I – Introduction

## Background

The Town of Erie (Town) is located north of the Denver Metro area, west of Interstate 25 and is split between Boulder and Weld Counties. The Town is home to approximately 26,250 people and a small number of commercial developments. A portion of the Town's irrigation needs in its parks/open spaces and some new developments is met with non-potable water.

The *Erie Non-Potable Water Master Plan Update,* completed by DiNatale Water Consultants in 2014, addressed water rights implications of reusing treated wastewater for irrigation as a feasible alternative for Erie. The report identified potential irrigable areas in parks and developments for non-potable water usage. Merrick built on the 2014 report to provide master planning and preliminary design recommendations. Merrick evaluated the existing Non-Potable Water Pump Station (NPWPS), located at the North Water Reclamation Facility (NWRF), the 16-inch diameter reclaimed water main to the South Water Reclamation Facility (SWRF) and the overall service area for non-potable water service. It was determined that two pressure zones are required. Two service zones as well as recommendations for expanding the NPWPS pumping capabilities and for sizing South Zone pumps were proposed.

The Town recognizes the need for a comprehensive non-potable water master plan based on design decisions that have arisen out of these studies. Continued development will significantly impact the demands for non-potable irrigation water and will require additional investments in this infrastructure.

## Purpose

The purpose of this Non-Potable Water Master Plan is to update the previous report and to provide technical guidance for building out and operating the utility. The Master Plan and accompanying hydraulic model evaluate the Town's long-term non-potable water needs and existing infrastructure to identify deficiencies and to recommend phased improvements as dictated by system requirements and continued development. The report also aims to identify potential opportunities for reclaimed water use and outline policy needs.

This master plan focuses on the regional non-potable water facilities. Regional facilities generally serve the entire Town and include transmission and primary distribution mains, storage tanks, and pump stations. Local facilities (such as developer/private storage, metering vaults, and local irrigation systems) are not included in this study. However, the effects of the local distribution systems on regional facilities (e.g., local storage versus direct connection) are considered in the hydraulic model and discussed in this report.

# Section II – Design Criteria and Demand Projections

## Service Area

The study area for the Non-Potable Water Master Plan Update is the Planning Area Boundary (approximately 48 square miles), established by Erie's 2015 Comprehensive Plan, plus probable areas of annexation as identified with staff, e.g. Parkdale development area. This defines a logical boundary for efficient expansion of municipal services to undeveloped areas, providing a basis of inclusion for determining future demands. The Planning Area is illustrated on the Non-Potable Water System Master Plan Drawing bound at the back of this report (Drawing 1).

## Non-potable Water Demand Projections

The 2014 Non-Potable Master Plan provided estimated annual water use for non-potable water use sites. The Plan estimated a non-potable water demand of 0.23 AF per acre of residential development land and half as much for commercial development areas; non-potable water demands for existing parks was based on historical water use data.

We updated the potential sites based on new development plans and calculated projected flowrates. The annual flowrates were then distributed over the summer months, with July having the highest irrigation demand. The 2014 Master Plan also established a 10-hour nightly irrigation window as appropriate for planning. These assumptions are considered reasonable for most areas and were used to determine maximum irrigation demands and to size facilities.

However, the assumed irrigation window and typical demand did not reflect the actual irrigation practices at the Erie Community Park. The large sports complex has a higher irrigation demand than typical bluegrass turf; public use of the complex shortens the irrigation window. As a result, the combined peak demand for the Erie Community Center and Park and the High Plains Library is approximately 750 gpm to 1,000 gpm (for 8- and 6-hour windows, respectively), including additional planned park areas.

The Parks and Recreation Department also provided an irrigation run time calculator for sports turf. Based on the historic evapotranspiration rates for July (ET = 1.5 inches/acre) and the recommended precipitation requirements for sports turf grass (1.1 inches/hour/square foot), the irrigation rate should be about 12.2 gpm/acre using a 8-hour daily watering window. The Town's actual irrigation rate at ECC is closer to 15.3 gpm/acre (using the same window), indicating the peak day demand is about 1.25 times the maximum month average rate. The actual irrigation rate (15.3 gpm) was used for calculating demands for future sports complexes.

## Land Use Planning and Growth Projections

The 2014 Master Plan included most of the development areas. We have cross referenced the updated Comprehensive Plan and Land Use Map with the projected development demands.

Since the 2014 report, development of Lost Creek Farms, Meadowlark, and Sunwest North have continued but provision of a reclaimed water main extension to the west was not included in

development plans. If the Town intends to serve these developments non-potable water, it is optimal to include this infrastructure in the western development plans.

Flatiron Meadows has also proceeded with development in the western South Pressure Zone (Blue); the development has made provisions for irrigation using potable water source, since no raw water mains reasonably served the area at the time of development. The Flatiron Meadows development is in the South Boulder Canyon Ditch historical irrigable area, so may be able to use this ditch as a non-potable source. Connection to the ditch would require obtaining easements through rapidly developing areas to convey raw water so it may not be feasible. However, it is recommended that the Town explore the possibility further because it would be an excellent use for the Town's South Boulder Canon Ditch shares that have been changed to municipal use.

The Golden Run (Aaron Harber property) development status has been put on hold because the property has been de-annexed from the Town; portions of the property may become open space and the development density for the remainder may be lower than previously planned. To be conservative, we have assumed the land use planning numbers as a high demand estimate.

The Town also annexed land to the south for the proposed Parkdale development. Parkdale is in South Zone (Blue) but is west of Coal Creek. Reclaimed water service to this property will not be feasible without significant infrastructure investment. However, two irrigation ditches run through or near the property; Parkdale may be able to take advantage of ditch water for non-potable use, depending on water rights and previous irrigated land.

The parks already using non-potable water or that could be easily converted were included in the 2014 Plan: Reliance, Coal Creek, Coal Miners, Lehigh, Country Fields, and Erie Community Parks. Other parks are too far away from the non-potable water system to be feasibly converted. However, they may be able to use decentralized ditch irrigation systems as a non-potable water supply alternative.

The Parks and Recreation Department also indicated that a planned recreation center in the Erie Highlands neighborhood will also have approximately 8 acres of sports fields with higher irrigation demand and limited irrigation window, similar to the Erie Community Park. To account for these differences, we separated this area from the Erie Highlands development and modeled as its own node. There is also a long-range plan for a 25-acre sports complex near the Erie High School. This complex was modeled as a future alternative with the same irrigation demand and window as Erie Community Park and Erie Highlands Sports Complex; the area was subtracted from the State Land Board (Section 16 ) property.

A summary of the demand projections by park/development is provide in Appendix A.

# Section III – Existing Non-Potable Water System

## Water Supply

The non-potable water sources include raw water from various irrigation ditches and reclaimed water from the NWRF. However, the CBT portion of the Town's water rights may not be reused – effectively limiting the quantity of water (long-term) the Town may divert for reclamation through its non-potable system. The Windy Gap and a portion of (future) NISP water rights are reusable to exhaustion; using these sources for potable water in the winter months (when roughly 95% of potable water use returns to the NWRF) maximizes their reuse capacity in the non-potable system. In addition, a portion of the water for the Town's well project will also be reusable, however, that amount is not yet defined and is not included in the table below.

As for ditch rights, raw water is available for irrigation within historical ditch service areas. The Town also has 155 shares on the Leyner Cottonwood Ditch (LCD) decreed for municipal use, but this cannot be delivered to the WTF by gravity, except a carriage agreement with the South Boulder Canon Ditch (SBCD) Company. However, it is only practical when there is (existing) flow in the SBCD due to ditch conveyance losses, and there is available capacity to carry the LCD shares. The most practical use of raw ditch water, therefore, is as part of the non-potable water system within the historical irrigation area; these ditch rights could provide an irrigation source for parks and developments without ready access to the reclaimed water infrastructure. Flatiron Meadows, Thomas Reservoir, Country Fields, and Longs Peak Parks are all in the South Boulder Canyon Ditch historical irrigable area.

A summary of the Town's various raw water sources with average annual yield is provided below, based on assumptions that the Chimney Hollow Reservoir Project and NISP are completed.

**Table 1: Summary of Town's Raw Water Sources**

| Source Name | Quantity | Notes | Avg. Annual Yield (AF) |
|---|---|---|---|
| CBT | 7831 units | Includes 1312 units under Lease/Purchase Agreement with Erie Finance Corp.<br>Not reusable | 5166 |
| Windy Gap | 20 units | | 2000 |
| Erie Reservoir | 239 AF | | 239 |
| Thomas Reservoir | 148 AF | Physical capacity = 213 AF | 148 |
| NISP | Up to 6500 AF | Source not guaranteed – under Federal permitting process; a portion would be reusable | 6500 |
| **Ditch Rights** | | | |
| South Boulder Canon Ditch Co. | 205 shares | 60 shares decreed for municipal use<br>2 shares owned by Town of Erie Urban Renewal Authority | 594.5 |

| Source Name | Quantity | Notes | Avg. Annual Yield (AF) |
|---|---|---|---|
| Leyner Cottonwood Consolidated Ditch Co. | 337.5 shares | 155 shares decreed for municipal use | 182.25 |
| Erie Coal Creek Ditch & Reservoir Co. | 98 shares | | 480.2 |
| Frico Marshall Lake Division | 8.24 shares | Via Community Ditch | 33 |
| New Consolidated Lower Boulder Reservoir and Ditch Company | 2 shares | Preferred – Allan Farm Open Space | |
| Base Line Land and Reservoir Company | 1.33 shares | Allan Farm Open Space | |
| Coal Creek | 3.01 cfs | Junior water rights for irrigation at Vista Ridge Golf Course<br>Town owns additional absolute and conditional water rights for exchanges and storage at the Vista Ridge ponds. | |
| **Other** | | | |
| NWRF Reservoir | 1000 AF | Non-potable uses only | |
| | | **TOTAL ANNUAL AVERAGE / FIRM YIELD:** | 15,343/ 11,415 |
| | | Total Reusable*: | 4600 |
| | | Total Raw/Ditch Rights: | 1290 |

*Assumes 40% of NISP water rights will be reusable.

## Storage and Pump Stations

The NWRF was constructed in 2011 and is located north of Highway 52, just east of County Line Road. The NPWPS and 1,000 AF reclaimed water reservoir were constructed on the NWRF site in 2012. The non-potable pump is a Flowserve 250 HP vertical turbine centrifugal pump, rated for a flow of 2,500 gpm at 240 feet of head; the pump was modified with a VFD installation to provide lower flow rate to the non-potable system initially. The reclaimed water main, constructed in 2011, includes a 24-inch line from the NPWPS to Highway 52- and 16-inch line from there to the SWRF. The existing facilities are shown on Drawing 1.

The North Zone Alternatives Study and Pre-design identified an ultimate pumping requirement of 4,220 gpm for the NPWPS. At the recommended hydraulic gradeline, the pump operates on its curve at roughly 2,500 gpm at 240 ft. of head, requiring an additional 1,700 gpm to serve the ultimate demand. The hydraulic grade line provides an approximate high-water elevation of

5,140 ft., with the ability to push it to approximately 5,160 ft. by filling the storage tank during low demand periods. This operation expanded the North Zone (Green) service elevation to approximately 5,110 ft., greatly increasing its (single pump) service area.

The previous Study also recommended the addition of a non-potable water storage tank to serve the South Zone, to reduce peak pumping requirements, and to provide redundancy. In 2018, the Town completed construction of the tank north of the High School, on State of Colorado owned land. The tank has a 1 MG capacity, buried post-tensioned concrete construction.

The tank project included construction of a pump station to serve the South Zone. The tank high-water elevation is 5,161 feet. However, the Town will not equip the pump station until the transmission main through Colliers Hill to the tank is completed. Two pumps, each with a design capacity of approximately 1,000 gpm at 160 ft, are recommended. TDH will meet the maximum demands; a third pump will provide reliability. Installation of pumps will be phased as needed to meet development demands.

### Transmission/Distribution System

The 16- to 24-inch reclaimed water main from the NWRF transmits reclaimed water to the non-potable system. There are four major planned distribution branches off this transmission main. The Colliers Crossing line is partially complete; eventually, the 16-inch main will connect to the 1 MG storage tank. The 16-inch southern extension from the SWRF currently stops just south of Erie Parkway; the Town plans to continue the main to the Erie Commons Irrigation Pond or farther, with the help of developments served. (The existing 6-inch main connection to the pond will be inadequate for ultimate system.) Proposed 12-inch mains to the north and west will be partially constructed by the developments that they will serve. Existing and proposed transmission mains are shown on Drawing 1.

### Pressure Zones

The elevation and pumping capabilities of the NPWPS require two pressure zones, with the North Zone (Green) fed directly by the NPWPS and the South Zone (Blue) fed by a pump station near Erie High School.

Pressure zone delineations are a function of elevation and the required minimum non-potable water pressure. The highest elevation proposed for irrigation service is 5,250 ft. A minimum pressure of 20 psi is recommended for reliability of service. This established a minimum hydraulic grade line (high water level) for the South Zone of approximately 5,300 ft. The existing reclaimed water storage pond located at the NWRF has a typical operating elevation of 4,920 feet and maximum water elevation of 4,927 feet. The North Zone Alternatives Study and Pre-design established 5,110 feet as the non-potable pressure zones boundary, with an upper limit for the North Zone's hydraulic grade line of 5,160 feet.

Approximately 60 percent of demands are served in the North Zone (Green). Note that for sites that span both pressure zones, we have assumed irrigation water which would require booster pumping to serve the whole development. The South Zone (Blue) pump station will serve the developments in the mid and south east portions of the service area, except for Vista Ridge and Vista Pointe (served by CNGC pump station). Table 2 provides a summary of the pumping, storage and transmission needs for each component of the non-potable water system.

**Table 2: Summary of Regional Flow Rates**

| | Pressure Zone | Total AFY | Peak Month Demand (AF) | Peak Month Demand (MG) | Peak Day* Demand (GPM) |
|---|---|---|---|---|---|
| NWRF pump | 1 | 95 | 19.38 | 6.31 | 339 |
| West Line (developer) | 1 | 45 | 9.44 | 3.07 | 165 |
| Colliers Hill Crossing | 1 | 269 | 54.83 | 17.86 | 400 |
| Erie Community Center/Park | 1 | 168 | 34.25 | 11.16 | 750 |
| Erie Commons Irrigation Pond | 1 | 31 | 6.38 | 2.08 | 47 |
| Southern Extension | 1 | 184 | 37.49 | 12.21 | 657 |
| North Line (developer) | 1 | 276 | 56.36 | 18.36 | 604 |
| Zone 2 Pump | 2 | 517 | 105.47 | 34.37 | 1897 |
| Parkdale | 2 | 55 | 11.14 | 3.63 | 195 |

*10-hour irrigation window assumed, except at sport complexes (8-hour window) and storage ponds (24-hour)

## SCADA Controls

Controls for the non-potable water pumps include a Hand/Off/Auto (HOA) selector switch, allowing for automatic start/stop based on water level in the tank. A pressure transmitter located at the non-potable water tank senses water level and is equipped for both indicating and recording. In the Auto mode, preset tank levels will call for start/stop of the NPWPS pump(s). A high-water alarm will be provided and will sound if the water level in the 1 MG non-potable water tank reaches a preset tank level. An alarm will also be activated if the tank water level falls below a preset point.

Controls for the existing and proposed irrigation storage ponds would include a motor operated valve (MOV) or diaphragm valve at the pond inlets. In the Auto mode, the valves may be opened or closed based on preset pond levels. The valves should be modulating, so that open position can be adjustable to allow for controlling flow rate/velocity. For private (developer) ponds, the valve and controls shall be the responsibility of the developer. However, telemetry should be integrated with the Town's SCADA system for monitoring.

Metering of the water supplied to non-Town users occurs prior to any on-site storage such as ponds or holding tanks. A standard detail was developed for use a minimum standard; however, each design will be unique and should be reviewed and approved by the Town Engineer prior to signing a service Agreement or construction of facilities.

# Section IV – Non-Potable Water System Master Plan

## Design Criteria

Non-potable water mains should be sized to minimize the head loss through the system. The system is already under low-pressure, so additional losses will have a greater impact on the functionality of the system. Minimum recommended service pressure is 20 psi at the point of delivery. Local storage ponds should be capable of receiving non-potable water throughout the day so that peak demands are reduced at these developments. For developments that span pressure zones, the Town will deliver non-potable water to the lower North Zone; private booster pumps should fulfill the developments, local irrigation needs.

## Hydraulic Modeling

Computer network modeling completed for the proposed reclaimed water system verified:

- Pipeline sizes, headloss and velocities,
- Tank volumes and operating water levels, and
- Pump operation and sizing.

The demands in the model are over a 10-hour window, except for sports complexes and areas served by a storage pond. The sports turf at the Erie Community Park and Erie Highlands Sports Complex have a higher irrigation demand over a shorter watering window. An 8-hour watering window was used in the model with good results (the model indicated that the 6-hour water window could result in low pressures). For the developments with planned storage ponds as well as Lehigh Park and developments pumping from the Town's Erie Commons Irrigation Pond, the peak month demand is spread over 24-hour period to model continuous fill of ponds with local pond pumping systems. Developments and parks fed exclusively by raw water are not included in the model.

The 72-hour extended period simulations were completed at peak demands using EPANET. The results verified pipe sizes, pumping rates, and storage requirements. Based on the hydraulic modeling results, we have revised the pipe size of several proposed transmission mains in the non-potable system to improve service pressures, as shown on Drawing 1. The NPWPS pump run times were approximately 18 hours per day at approximately 1,900 gpm each (two pumps). South Zone pump run times were 10 hours per day at approximately 970 gpm each (two pumps). The unit headloss was nominally 2 ft./1,000 ft. or less in all pipelines, except for the 12-inch portion of the North Line which had 4 ft./1,000 ft. at peak flows and the northern portion of the existing 16-inch main which had 3 ft./1,000 ft. at peak flows.

In most of the system, pressures were adequate. The minimum service pressure occurred at peak flow (1 am) at the Country Fields Park and was only 13 psi. (The pressure in Colliers Hill was lower but this was a function of elevation; the Colliers Hill localized system will use private storage ponds and pumps to provide adequate service pressures within the development.) The demand

node for Compass and Golden Run developments saw a low pressure of 15 psi. High demands at these developments also reduced pressure to the southernmost demand node, i.e. Convair Hangars/Sierra Vista/Vista Ridge Filing #6 developments. All other demand nodes maintained pressures greater than 20 psi.

The proposed 1 MG South Zone tank was modeled based on a hydraulic grade line of 5,300 feet, located at the existing potable water tank site.

Requiring a local storage pond at the Golden Run development would significantly reduce the local peak demand and improve pressures along the southern extension. In an alternative scenario, Golden Run hypothetic storage pond at an elevation of 5,100 feet was filled over a 24-hour period via an 8-inch main 1,000 feet in length, reducing peak month demand from 331 gpm to 137 gpm. The local pond improved pressures in the model. Country Fields Park still had the lowest pressure at 16 psi. New low pressure for the southern extension developments was 19 psi – just short of the 20 psi design goal, but these developments will have booster pump stations to provide portions of their property in the South Zone (Blue). It's recommended that the Town require large developments, similar to Colliers Hill Golden Run, to provide non-potable storage for their local use rather than connect directly to the reclaimed water transmission mains.

### Alternate Scenario: 25-acre Sports Complex

The Department of Parks and Recreation mentioned long range planning for a 25-acre sports complex near the Erie High School property. To assess the impacts of irrigating such a complex with non-potable water, we created a hydraulic modeling scenario with the sports complex. We subtracted 25-acres from the State Land Board (Section 16) demand node and created an adjacent demand node for the area subject to sports turf irrigation conditions (i.e. similar to Erie Community Park unit demand and watering window).

The hydraulic model shows that if the sports complex connects directly to the South Zone pump discharge line, it takes flow away from other developments in the South Zone; the lowest pressures in the system are now Pratt (5 psi), Sunset (7 psi), and State Land Board (16 psi). The tank storage remains sufficient but the required pump operation increased to 1150 gpm over 10 hours per day; the Town would have to plan to add pumping capacity.

Alternatively, if a local storage pond is incorporated into the sports complex design, the peak demand is mitigated over a 24-hour period; the hydraulic model shows pressure across the South Zone stay above 20 psi. A dedicated storage pond would also allow the sports complex more flexibility in its watering schedule – potentially allowing for a shorter watering window and more night games. The pump requirement is 1020 gpm over 10 hours per day (50 gpm more than generic).

## Non-potable Water Quality

The Town's non-potable raw and reclaimed water sources present different water qualities. While reclaimed water undergoes a standard level of treatment and disinfection, effluent nutrient concentrations and buildup of salts are of concern in the irrigable areas. On the other hand, raw water quality varies tremendously according to ditch conditions and local intake structures. Without treatment or disinfection, the growth of organisms is a greater risk in raw water infrastructure.

### Raw Water Organisms

The use of untreated raw water to feed the non-potable system risks introducing algae, *Bryozoa*, and other organisms. These organisms exist naturally in waterways and are often present in irrigation systems without causing problems; however, a bloom could potentially obstruct or clog irrigation piping and sprinklers. While algae can be controlled with the use of algaecides, *Bryozoa, Cordylophora,* sponges, and other invertebrate animals can resist chemical treatments at levels acceptable to public distribution. (Wood, T., 2005). These animals can persist in the distribution system in dormant phase, withstanding adverse environmental conditions (e.g. freezing cold, desiccation, etc.) and chemical treatment, and reemerge when the conditions improve.

The best recommendation for using raw surface water in any irrigation systems is to monitor and control the growth of these organisms. Filtration at the raw water entry point can remove food sources and large colonies of organisms, reducing the growth of organisms downstream but does not eliminate *Bryozoa* or other organisms from the system. (Mant, Moggridge, & Aldridge, 2011). Although disinfection does not impact invertebrates in their dormant phase, regular treatment of the irrigation system with sodium hypochlorite can kill young colonies and control growth to prevent a bloom. Regular disinfection throughout the irrigation system is recommended, typically early spring, late spring and early fall. (Wood, T., 2005). In order to classify and monitor the raw water, the Town should conduct regular water quality analysis at entry points and set "traps" to collect *Bryozoa,* their statoblasts, and other invertebrate animals. Planned monitoring and control of raw water will require additional staff man-hours and training, as well as capital and operating costs for any filtration and disinfection systems installed.

On the other hand, the reclaimed water already receives treatment at the North Water Reclamation Facility. Reclaimed water is filtered and disinfected prior to being stored for non-potable reuse. There is a potential for the reclaimed water to become contaminated at the reclaimed water reservoir or one of the storage ponds located throughout the system. Again, monitoring at the intake structures is recommended along with appropriate control measures, such as periodic chlorination.

### Agronomic Application Rates

Reclaimed water contains inorganic nitrogen which Regulation 84 limits for non-potable uses. For 90% turf grass cover, the acceptable agronomic rate of nitrogen application is 174 pounds per acre per year.

The Town's non-potable water system focuses on the long-term irrigation of turf grass lawns and accounts for most of the irrigated area; irrigation of native species is only allowed during a two-year establishment period. Since 2015, the annual average total inorganic nitrogen (TIN) concentration has been 10.2 mg/L, during the irrigation season. The highest concentration (13 mg/L) was recorded in October 2015. Based on historic data, the agronomic application rate in Erie is approximately 80 pounds per acre; even at this highest recorded concentration, the actual application rate (i.e. 101 pounds per acre) would be far below the acceptable agronomic rate.

Historical effluent TIN concentrations, as measured at the NWRF, are provided below based on measures between 2015 and 2018 (Table 3). The approximate agronomic rates for TIN loading, at ultimate buildout, based on calculated irrigation demands, are presented in Table 4.

**Table 3: Historic Effluent TIN Concentrations**

| Average TIN | |
|---|---|
| **Month** | **mg/L** |
| January | 9.87 |
| February | 10.93 |
| March | 10.47 |
| April | 11.36 |
| May | 10.00 |
| June | 10.97 |
| July | 9.62 |
| August | 8.97 |
| September | 10.39 |
| October | 10.32 |
| November | 10.20 |
| December | 9.72 |

**Table 4: Irrigation and Agronomic Rate at Buildout**

| Month | NWRF Effluent TIN (mg/l) | | Monthly Non-Potable Water Demand | | | Agronomic Rate |
|---|---|---|---|---|---|---|
| | | | in/ac | AF | MG | lbs/ac |
| | | | | | | |
| April | 11.4 | | 2.5 | 124.0 | 40.4 | 6.43 |
| May | 10.0 | | 4.1 | 203.3 | 66.2 | 9.29 |
| June | 11.0 | | 6.4 | 317.4 | 103.4 | 15.90 |
| July | 9.6 | | 6.6 | 327.3 | 106.6 | 14.38 |
| August | 9.0 | | 6 | 297.5 | 96.9 | 12.19 |
| September | 10.4 | | 5.8 | 287.6 | 93.7 | 13.65 |
| October | 10.3 | | 3.1 | 153.7 | 50.1 | 7.24 |
| | | | | | | |
| **Annual Avg.** | **10.2** | | **TOTAL** | **1711** | **557** | **79.95** |

Over a long period of time, salts may buildup in soils irrigated with reclaimed water due to the total dissolved solids (TDS) concentrations in this source. The extent of salt accumulation and its impact on landscape plants varies based on irrigation rates, plant species, and soil types. The Town and its non-potable water customers should be aware of the potential increase in soil salinity over time. When soil salinity increases are observed, the owner should monitor salinity and may need to (periodically) switch to raw and/or potable water sources. During hot, dry periods, increased irrigation frequency and watering in excess may minimize salinity stress on vegetation (Kotuby-Amacher, et al., 2000).

In soils with good internal drainage, an application of 6-inches of low salt water can reduce soil salinity levels by 50% when water drains through the soil profile (Swift & Koski, 2015). Additional salinity reduction can be achieved with higher flush water application rates. For example, Denver Water has mitigated salinity impacts in their Recycle Water program by providing potable water for about two weeks during the spring and keeping the system filled with potable water during winter months. This operation provides flushing water for irrigation customers while also ensuring compliance for their discharges to waters of the State during spring startup. The Town should evaluate the option to fill the non-potable water system from a potable water source and advise/allow for irrigation customers to periodically flush their soils with raw or potable water sources.

# Section V – Non-Potable Water Policies

This section briefly outlines the management policies and practices needed for establishing a Non-Potable Water Utility, which should be similar to those for the existing potable water and wastewater utilities. Appendix B contains supporting documents for the Non-Potable Water Utility, including Rules and Regulations; Letter of Intent Form; User Agreement template; standard detail for an irrigation meter vault; norms for labeling non-potable infrastructure; and information for (private) operators.

## Management Policies

The Town's utility must conform with the Colorado Department of Public Health and the Environment's (CDPHE) Regulation 84. It must adhere to the terms and conditions for the use of reclaimed wastewaters as set forth in the Notice of Authorization. A key requirement is that the Town must submit to the Division an amended Letter of Intent (LOI) for the addition of a new user at least 30 days prior to adding that user. The Town's utility is also responsible for establishing approved uses; monitoring, recordkeeping, and reporting requirements; and enforcement. Finally, the Town must follow the allowable application rate for reclaimed wastewater based on the agronomic rate for TIN, as discussed in the previous section.

The Town adopted Rules and Regulations for the Reclaimed Water System in 2016 (Ordinance 11-2016). These rules and regulations protect the Town's interests and establish consequences if the User does not comply with the criteria for use in Regulation 84 and those outlined in the Agreement. Key provisions of the Rules and Regulations include definition of terms; ownership and operations (i.e. regional-town responsibility versus local- customer responsibility); conditions of service; contractor qualifications and requirements; and enforcement provisions.

A summary of the facilities classifications is provided in the following table.

**Table 5: Non-Potable Water Utility Facilities Classifications**

**TOWN OF ERIE**
**NON-POTABLE WATER UTILITY**
**FACILITIES CLASSIFICATIONS**

| CATEGORY | DESIGN RESPONSIBILITY | REVIEW/ INSPECTION RESPONSIBILITY | CAPITAL COST | MAINTENANCE/ REPLACEMENT RESPONSIBILITY |
|---|---|---|---|---|
| **Local/Customer** ("Retail") | | | | |
| • Meter/Control Vaults<br>• Distribution Mains<br>• Small Booster Pumps | Developer's Engineer | Town's Engineer/Inspector | Developer | HOA |
| • Service Lines | Customer | Town's Inspector | Customer | Customer |
| **Regional** ("Wholesale") | | | | |
| • Non-Potable Supplies<br>• Treatment Facilities<br>• Transmission Mains<br>• Booster Pump Stations<br>• Storage Tanks | Town's Engineer | Town's Engineer/Staff | Town CIP-Use SDF Income | Town |

Water rates and fees for non-potable water service were added to Title 2, "Revenue and finance," Chapter 10, "Fee Schedule" by adoption of Ordinance 12-2016. The non-potable water tap fee includes the water rights fee. Tap fees are only applicable to private customers. The non-potable water rates and fees are summarized below:

**Table 6: Non-Potable Water Rates and Fees Summary**

| **Non-Potable Water Rates** | **Volume charge, amount per 1,000 gallons** |
|---|---|
| Vista Ridge development | $1.33 |
| Town-owned facilities | $1.33 |
| Customers with on-site on-potable water storage | $2.66 |
| Customers with direct connection to Town's non-potable system | $4.32 |
| | |
| **Non-Potable Water Tap Fees** | |
| Per acre-foot | $17,410 |

## Design Criteria and Standard Detail Drawings

Establishing utility standards will simplify the operation and maintenance of the utility in the future. By preparing design criteria and standard details, the Town will ensure that new non-potable water assets conform with system requirements and are easily maintained. Standard permits and/or agreements provide a pass-through for any State charges, if agronomic application rates are exceeded or other violation occurs. The draft User Agreement is included in Appendix C.

The Town of Erie should own and operate all non-potable irrigation meter vaults via SCADA. The Developer will construct and pay for the meter and vault; however, it will become the property of the Town following acceptance (the policy should be similar to that for the potable water connections and meters) to ensure that the Town maintains control of the meter and the control valves. All components of the system downstream of the meter vault will remain the responsibility of the Developer.

We have prepared a schematic diagram of the recommended Non-Potable Meter Vault and previously provided cutsheets for the typical components. Designs submitted by Developers should be reviewed to maintain the minimal functional intent of this Standard. Typical operational requirements are listed as follows:

1. The vault provided is to be 7 ft. by 9 ft. minimum. A larger vault might be required for larger waterline/meter sizes.
2. All piping within the vault should be ductile iron.
3. A manual shutoff valve is to be provided upstream, and downstream if determined necessary, of the meter.
4. Water meter is to be a magnetic type with a lining that resists abrasion (due to higher total suspended solids levels of non-potable water) with flow output to SCADA. Elevation of the meter must ensure that the meter flows full.
5. A modulating flow control valve is to be located downstream of the meter – V-Port Ball Valve with an electric actuator is recommended. Operation of the valve would be controlled by the level of the pond and remotely through SCADA. Similar or equal to a Bray-FlowTek Advanced V-Control Valve with Tek-Fill Seat for modulating and abrasive material and Bray Series 70 Actuator. The valve shall be set as “Fail-to-Close” and alarm to SCADA for power outage.
6. Level control is to be provided within the pond using a submersible level transmitter, similar or equal to a Mercoid PBLT2 or PBLTX. Alternatively, level control could be provided from the Pump Station if integrated with the Town’s SCADA. Signal should be sent to SCADA and the V-Port Control Valve to operate the Town’s Non-Potable pump and to close the control valve on high water, and to alarm on a “high-high” water level. The transmitter should also alarm in case of power outage.

7. If an emergency interconnect with the potable system is provided, an approved reduced pressure backflow prevention device is to be installed.
8. A downstream isolation valve may be required, depending upon the high water level of the pond.

## Operating and Maintenance Procedures

Periodic operation of valves in the non-potable system is recommended to ensure they are in good working order. Town staff should also regularly observe meter vaults to conform meter readings and check for any leaks or illegal connections.

As new developments prepare to connect to the system, Town staff need to review irrigation and operation plans for conformance with the estimated irrigation rates and watering windows. These reviews should include any new Town parks and encourage collaboration with the Department of Parks and Recreation on actual irrigation operations versus planned operations. Deviations from the planned irrigation demands and water windows will impact the pressure available for adjacent non-potable customers.

As discussed in the previous Section, it is imperative that the Town monitor its non-potable system for algae, Bryozoa, and other organisms. While using reclaimed water provides some initial treatment, the non-potable water system is still susceptible to contamination at its open reservoir and storage ponds. Periodic disinfection at the storage facilities and installation of screens to prevent large colonies from entering the distribution network should keep organisms under control. If pipes of sprinkler systems experience an obstruction or clog, the Town should document the cause and determine the species contributing to the problems.

It is also recommended that the Town's Department of Parks and Recreation regularly test the soil salinity of its parks irrigated with reclaimed water. These testing records would provide some indication of the reclaimed water's impacts on irrigated areas across Town. If the Town observes soil salinity is increasing, the Town could devise alternative irrigation strategies before salt and TDS buildup becomes problematic for landscape plantings. The Department of Parks and Recreation keeps a list of trees, shrubs, and perennials with moderate to high tolerance to reclaimed water irrigation and salinity. A copy of the list is provided in Appendix D.

# Section VI –Recommendations

## Phased Capital Improvements Program

### Near Term CIP

In the next ten years, the Town can take steps to setup widespread, regular use of reclaimed water for irrigation purposes. Key items include:

- Investigate water tightness/infiltration of the Town's Erie Commons Irrigation Pond. Make necessary improvements for pond to start receiving reclaimed water.
- Complete Colliers crossing 16-inch water main linking to storage tank and pump station.
- Work with developers to build West Line to serve western developments: Lost Creek Farms, Meadowlark, Sunwest North, Calvery Church, Reliance Park and Country Fields Park.
- Upsize the existing 6-inch main currently terminating at the Town's irrigation pond to a 16-inch main, effectively extending the reclaimed water main to the pond.
- Replace 6-inch water main crossing Coal Creek with 12-inch main to reduce head loss in the main serving Erie Commons Filing No. 4 and the Erie Community Center and Park.
- Equip the new South Zone pump station – install pumps and controls – and install a second pump at the NPWPS.
- Construct 1 MG South Zone tank.

The recommendations for the Non-potable Water System Capital Improvements program are summarized in the following table.

**Table 7: Non-Potable 10-year Capital Improvements Program**

| Item | Description | Size | Length (ft) |
|---|---|---|---|
| 1. Erie Commons Irrigation Pond Study | Conduct a study of the Town's existing irrigation pond for leakage/infiltration to ensure the pond is capable of receiving reclaimed water for storage. | AF | N/A |
| 2. Erie Commons Irrigation Pond Improvements | As needed based on the Study, complete identified improvements to receive and store reclaimed water. | AF | N/A |
| 3. Colliers Crossing | Completion of the 16-inch main through Colliers Hill, linking to the storage tank and pump station. | 16" | 3,400 |
| 4. West Line Construction | Reliance Park connection. Construct 12-inch main to serve Lost Creek Farms, Meadowlark, Sunwest North and Country Fields Park. Developer driven. | 12" / 8" | 8,500 / 6,400 |
| 5. Reuse Line Extension | Upsize the existing 6-inch main along Coal Creek south of Erie Parkway to connect the existing 16-inch reuse main to Erie Commons Irrigation Pond. | 16" | 5,100 |
| 6. Coal Creek Crossing | Upsize existing 6-inch under Coal Creek to 12-inch, connecting reuse main to Erie Commons Filing 4 & Erie Community Park non-potable water systems. | 12" | 150 |
| 7. South (Blue) Zone & NPWPS Pump Stations Equipment | Install pumps and controls at the South Zone pump station and new pump at the NPWPS. | 1,000 gpm / 1900 gpm | N/A |
| 8. South Zone Tank | Construct tank at the existing potable water tank site | 1 MG | N/A |

### Long Term CIP

As development continues, the Town can loop the reclaimed water system to provide irrigation services to most new developments. Since these items are mostly developer driven, the Town should plan these items as developments progress. Key items include:

- Construct the North Line (cost-sharing with developers) to serve eastern developments: Erie Corporate Center, Summerfield, I-25 corridor.
- Extend the reuse line south along Coal Creek to connect existing and planned developments: Compass, Golden Run, Convair Hangars (Airpark), Sierra Vista, and Vista Ridge Filing No. 6.
- Develop raw water irrigation mains to irrigate additional parks/developments with ditch water (as practical).

- Evaluate construction of tributary mains to serve Creekside, Meadowlark, and Sunwest North developments.

Ultimately, the non-potable water system will include both raw (ditch) and reclaimed water connections to provide irrigation throughout the Town. Interconnection of the raw and reclaimed water systems will allow for variation of water source and prevent long-term buildup of salts and total dissolved solids (TDS) in irrigated soils.

## Preliminary Cost Estimates

An opinion of probable cost for the recommended non-potable water system improvements, at a master planning level, is presented following. Land acquisition costs have not been included for improvements since most follow Right-of-Ways or are shown in approximate locations for Master Planning purposes. A conservative estimate of the Irrigation Pond Improvements is listed, but actual scope and cost of this item will depend on the outcomes of the Erie Commons Irrigation Pond Study.

**Table 8: 10-year CIP Preliminary Cost Estimates**

| Recommended Improvements | Size/Quantity | Estimated Cost |
|---|---|---|
| 1. Erie Commons Irrigation Pond Study | N/A | $50,000 |
| 2. Erie Commons Irrigation Pond Improvements | N/A | $500,000 |
| 3. Colliers Crossing Completion, 16-inch | 3,400 lf | $600,000 |
| 4. West Line Construction (12-inch) | 9,500 lf | $1,135,000 |
| 5. Reuse Line Extension (16-inch) | 5,100 lf | $765,000 |
| 6. Coal Creek Crossing | 150 lf | $105,000 |
| 7. South (Blue) & NPWPS Pump Station Equipment | 950 gpm / 1900 gpm | $300,000 |
| 8. South One Tank | 1 MG | $1,250,000 |
| **Construction Costs.** | | **$4,705,000** |
| Add 25% for contingencies, engineering, inspection, legal and administrative costs. | | $1,176,000 |
| **Subtotal - Project Budget** | | **$5,881,000** |

For planning purposes, high-level cost estimates for some of the long-term capital improvements recommendations are provided in the following table.

**Table 9: Long Term CIP Preliminary Cost Estimates**

| | | | | | |
|---|---|---|---|---|---|
| 1 | Construction of North Line (Weld County Rd 5) | | | | $ 4,433,000.00 |
| | 12-inch Tank to Weld County Rd 12 | 8500 | $ 120.00 | $ 1,020,000.00 | |
| | 8-inch along Weld County Rd 12 | 6800 | $ 100.00 | $ 680,000.00 | |
| | 12-inch to State Highway 52 | 5000 | $ 120.00 | $ 600,000.00 | |
| | 16-inch to exist Reuse Line | 7400 | $ 150.00 | $ 1,110,000.00 | |
| | 30% Contingencies | | | $ 1,023,000.00 | |
| | | | | | |
| 2 | Extension of the South Reuse Line | | | | $ 2,913,000.00 |
| | 16-inch from irrigation pond to Vista Pkwy | 3900 | $ 150.00 | $ 585,000.00 | |
| | 16-inch Vista Pkwy | 3000 | $ 150.00 | $ 450,000.00 | |
| | 16-inch E. County Line Rd (Compass) | 2500 | $ 150.00 | $ 375,000.00 | |
| | 12-inch to Golden Run Pond | 1000 | $ 120.00 | $ 120,000.00 | |
| | 12-inch to Green Zone edge | 7700 | $ 120.00 | $ 924,000.00 | |
| | 30% Contingencies | | | $ 459,000.00 | |
| | | | | | |
| 3 | South Zone South Transmission Main | | | | $ 1,975,740.00 |
| | 16-inch from tank to Erie Highlands | 4432 | $ 150.00 | $ 664,800.00 | |
| | 16-inch to Sunset | 2200 | $ 150.00 | $ 330,000.00 | |
| | 12-inch to Pratt (Red Tail Ranch) | 3500 | $ 150.00 | $ 525,000.00 | |
| | 30% Contingencies | | | $ 455,940.00 | |
| | | | | | |
| 4 | South Zone East Transmission Main | | | | $ 1,014,000.00 |
| | 12-inch from Erie Highlands to Dearmin/Swink | 2000 | $ 120.00 | $ 240,000.00 | |
| | 12-inch to State Land Board | 2000 | $ 120.00 | $ 240,000.00 | |
| | 12-inch to Section 15 (commercial corridor) | 2500 | $ 120.00 | $ 300,000.00 | |
| | 30% Contingencies | | | $ 234,000.00 | |
| | | | | | |
| 5 | Longs Peak Park Ditch Connection | | | | $ 259,350.00 |
| | Local Pump station | 1 | $ 7,500.00 | $ 7,500.00 | |
| | 6-inch PVC pipe | 2400 | $ 80.00 | $ 192,000.00 | |
| | 30% Contingencies | | | $ 59,850.00 | |
| | | | | | |
| 6 | 12-inch to Thomas Reservoir | 5000 | $ 120.00 | $ 600,000.00 | $ 780,000.00 |
| | 30% Contingencies | | | $ 180,000.00 | |

## Conclusions

The review and update of the 2014 Non-Potable Water Master Plan was well timed. Over the past 5 years, the Town has grown significantly and added new developments to its non-potable water system. Several key infrastructure projects were completed, including the extension of the 16-inch reuse main, VFD installation at the NPWPS, completion of Phase I of the Colliers Crossing transmission main, and construction of the 1 MG storage tank and South Zone pump station (pumps not yet installed) near the high school.

The review of the non-potable demand projections verified that the assumptions for turfgrass and median plantings in developments and some parks are reasonable. However, where sports complexes exist, different irrigation requirements and use patterns affect the actual demand experienced. Using revised demands for these areas in the hydraulic model, we updated some of our previous recommendations regarding pipe sizes and pumping requirements to provide better service pressures across the system.

Our recommendations are presented as a series of near-term and long-term phased capital improvements programs. While the Town should plan and complete near-term projects over the next 10 years, long-term projects are dependent on growth and will require continued coordination with developers. By working with developers, the Town may be able to cost share portions of the proposed non-potable water system infrastructure, in particular construction of transmission mains and metering vaults.

The Master Plan findings also illustrate the need to obtain buy-in from Department of Parks and Recreation in order to adopt the non-potable water recommendations. The Non-potable Water Utility will need to partner with the Parks staff in operations (specifically at Town parks and Erie Commons Irrigation Pond) and in monitoring and evaluating the capabilities and limitations of the system. This cooperation will become increasingly critical as the non-potable water system moves towards integrating its raw and reclaimed water sources. Monitoring and controlling for *Bryozoa* and other organisms that may be introduced to the system will be a joint effort. Similarly, the two agencies will need to communicate and share soil salinity testing results for areas irrigated with reclaimed water.

While the Non-Potable Water Utility is still young, there is a need to establish utility standards, policies, and operating procedures early on. Development and adoption of these policies now will prevent confusion and unfair treatment of existing versus future developers. Robust standards, policies, and rules and regulations will protect the Town in the long-term and should be integral to the infrastructure planning of the system.

**References**

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Meter Station Review Memo, December 2015
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Non-Potable Water Policy Memo, January 2016
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North Zone Alternatives Study and Predesign Report, April 2016
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Kotuby-Amacher, J, R. Koenig, and B. Kitchen, 2000, "Salinity and Plant Tolerance." Utah State University Extension: AG-SO-03.

Mant, R.C., G. Moggridge, and D.C. Aldridge, 2001, "Biofouling by bryozoans, Cordylophora, and sponges in UK water treatment works." *Water Science & Technology*: 63.9, 1815-1821.

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# Appendix A – Non-potable Water Demand Projections

**Appendix A: Demand Projections**
**North Zone, Non-Potable Water System**
**Town of Erie, Colorado**

| Property Type | Development Name | Acres | AFY non-potable | AFY non-potable + 25% | Monthly Non-Potable Water Demand (AF) | | | | | | | Proposed Source | Peak Demand (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | April | May | June | July | August | Sept. | October | | |
| Existing Non-Potable Use | Lehigh Park | 7 | 22 | 27.50 | 1.5 | 3.4 | 5.4 | 5.6 | 4.9 | 4.0 | 2.7 | NWRF/ Erie Commons Irrigation Pond | 40.9 |
| | Erie Community Park & Center | 49 | 134 | 167.90 | 9.1 | 21.0 | 32.7 | 34.3 | 29.9 | 24.5 | 16.5 | Existing NWRF main | 750.0 |
| Existing Potable Conversion | Coal Creek Park | 6 | 7 | 8.75 | 0.5 | 1.1 | 1.7 | 1.8 | 1.6 | 1.3 | 0.9 | Existing NWRF main | 31.3 |
| | Reliance Park | 5 | 6 | 7.50 | 0.4 | 0.9 | 1.5 | 1.5 | 1.3 | 1.1 | 0.7 | NWRF (West Line) | 26.8 |
| | Country Fields Park | 11 | 14 | 17.50 | 0.9 | 2.2 | 3.4 | 3.6 | 3.1 | 2.6 | 1.7 | NWRF (West Line) | 62.5 |
| Annexation Agreement | Summerfield | 640 | 147 | 183.75 | 9.9 | 23.0 | 35.8 | 37.5 | 32.7 | 26.8 | 18.0 | NWRF (North Line) | 273.6 |
| | Colliers Hill | 933 | 215 | 268.75 | 14.5 | 33.6 | 52.4 | 54.8 | 47.8 | 39.2 | 26.3 | Collier Crossing | 400.2 |
| Potential Development | Compass | 160 | 37 | 46.25 | 2.5 | 5.8 | 9.0 | 9.4 | 8.2 | 6.8 | 4.5 | NWRF (South Extension) | 165.3 |
| | Sunwest North | 30 | 7 | 8.75 | 0.5 | 1.1 | 1.7 | 1.8 | 1.6 | 1.3 | 0.9 | NWRF (West Line) | 31.3 |
| | Erie Commons Filing No. 4 | 20 | 5 | 6.25 | 0.3 | 0.8 | 1.2 | 1.3 | 1.1 | 0.9 | 0.6 | NWRF (South Extension) | 22.3 |
| | Velodrome | 10 | 2 | 2.50 | 0.1 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.2 | NWRF/ Erie Commons Irrigation Pond | 3.7 |
| | Sierra Vista | 60 | 14 | 17.50 | 0.9 | 2.2 | 3.4 | 3.6 | 3.1 | 2.6 | 1.7 | NWRF (South Extension) | 62.5 |
| | Vista Ridge #6 | 30 | 7 | 8.75 | 0.5 | 1.1 | 1.7 | 1.8 | 1.6 | 1.3 | 0.9 | NWRF (South Extension) | 31.3 |
| | Calvary Church | 12 | 3 | 3.75 | 0.2 | 0.5 | 0.7 | 0.8 | 0.7 | 0.5 | 0.4 | NWRF (West Line) | 13.4 |
| | Lost Creek Farms & Meadowlark | 30 | 7 | 8.75 | 0.5 | 1.1 | 1.7 | 1.8 | 1.6 | 1.3 | 0.9 | NWRF (West Line) | 31.3 |
| | Right Move Lot 6 | 5 | 1 | 1.25 | 0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | NWRF/ Erie Commons Irrigation Pond | 1.9 |
| | Convair Hangars | 12 | 3 | 3.75 | 0.2 | 0.5 | 0.7 | 0.8 | 0.7 | 0.5 | 0.4 | NWRF (South Extension) | 13.4 |
| | Spring Hill (Andalusia) | 80 | 18 | 22.50 | 1.2 | 2.8 | 4.4 | 4.6 | 4.0 | 3.3 | 2.2 | Existing NWRF main | 80.4 |
| | Golden Run (Aaron Harber) | 320 | 74 | 92.50 | 5.0 | 11.6 | 18.0 | 18.9 | 16.5 | 13.5 | 9.1 | NWRF (South Extension) | 137.7 |
| | Morgan Hill | 250 | 58 | 72.50 | 3.9 | 9.1 | 14.1 | 14.8 | 12.9 | 10.6 | 7.1 | Existing NWRF main | 259.1 |
| Likely Future Growth | Erie Corporate Center (Section 10) | 640 | 74 | 92.50 | 5.0 | 11.6 | 18.0 | 18.9 | 16.5 | 13.5 | 9.1 | NWRF (North Line) | 330.6 |
| | | | | | | | | | | | | | |
| **Total Existing** | | 78 | 183 | 229 | 12.4 | 28.6 | 44.7 | 46.7 | 40.8 | 33.5 | 22.5 | | 818.9 |
| **Total Future** | | 3310 | 855 | 1069 | 57.7 | 133.6 | 208.5 | 218.1 | 190.3 | 156.1 | 104.8 | | 3820.7 |

Indicates demand is spread over 24-hour period, i.e. pond/reservoir fill.

## Appendix A: Demand Projections
## South Zone, Non-Potable Water System
## Town of Erie, Colorado

| Property Type | Development Name | Acres | AFY non-potable | AFY non-potable + 25% | Monthly Non-Potable Water Demand (AF) | | | | | | | Proposed Source | Peak Demand (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | April | May | June | July | August | Sept. | October | | |
| **Current Development** | Erie Highlands | 292 | 67 | 83.95 | 4.5 | 10.5 | 16.4 | 17.1 | 14.9 | 12.3 | 8.2 | South Zone PS | 300.0 |
| | Erie Highlands Sports complex | 8 | 16 | 20.56 | 1.1 | 2.6 | 4.0 | 4.2 | 3.7 | 3.0 | 2.0 | South Zone PS | 122.4 |
| **Potential Development** | Sunset | 100 | 23 | 28.75 | 1.6 | 3.6 | 5.6 | 5.9 | 5.1 | 4.2 | 2.8 | South Zone PS | 102.7 |
| | Red Tail Ranch (Pratt) | 290 | 67 | 83.75 | 4.5 | 10.5 | 16.3 | 17.1 | 14.9 | 12.2 | 8.2 | South Zone PS or CNGC PS | 299.3 |
| **Likely Growth** | Section 15 (commercial) | 640 | 74 | 92.50 | 5.0 | 11.6 | 18.0 | 18.9 | 16.5 | 13.5 | 9.1 | South Zone PS | 330.6 |
| | Parkdale | 190 | 44 | 54.63 | 2.9 | 6.8 | 10.7 | 11.1 | 9.7 | 8.0 | 5.4 | Western zone | 195.2 |
| | Westerly (Dearmin/Swink) | 320 | 74 | 92.50 | 5.0 | 11.6 | 18.0 | 18.9 | 16.5 | 13.5 | 9.1 | South Zone PS | 330.6 |
| | State Land Board (Section 16) | 400 | 92 | 115.00 | 6.2 | 14.4 | 22.4 | 23.5 | 20.5 | 16.8 | 11.3 | South Zone PS | 411.0 |
| **Future Alternative** | State Land Board | 375 | 86 | 107.81 | 5.8 | 13.5 | 21.0 | 22.0 | 19.2 | 15.7 | 10.6 | | 385.3 |
| | Future Sports Complex | 25 | 51 | 64.25 | 3.5 | 8.0 | 12.5 | 13.1 | 11.4 | 9.4 | 6.3 | | 382.7 |
| | | | | | | | | | | | | | |
| **Total Existing** | | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 |
| **Total Future** | | 2240 | 457 | 571.63 | 30.9 | 71.5 | 111.5 | 116.6 | 101.8 | 83.5 | 56.0 | | 2091.8 |
| **Total Future (Sports Complex Alt)** | | | 503 | 628.69 | 33.9 | 78.6 | 122.6 | 128.3 | 111.9 | 91.8 | 61.6 | | 2448.7 |

Indicates demand is spread over 24-hour period, i.e. pond/reservoir fill.

# Appendix B – Non-potable Water Utility Documents

Contents:

**ORDINANCE NO. 11 -2016**
**Series 2016**

**AN ORDINANCE OF THE TOWN OF ERIE, COLORADO, ADOPTING BY REFERENCE THE 2016 EDITION OF THE RULES AND REGULATIONS FOR THE TOWN OF ERIE RECLAIMED WATER SYSTEM; AND, SETTING FORTH DETAILS IN RELATION THERETO.**

**WHEREAS**, It has been determined by the Board of Trustees of the Town of Erie, Colorado, that it is necessary and expedient to adopt, by reference, the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System, published by the Town of Erie in March, 2016, setting forth the specific rules and regulations required for the operation of a reclaimed water in the Town of Erie; and,

**WHEREAS**, the Colorado state statutes provide that the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System, as referenced above, may be adopted by reference; and,

**WHEREAS**, after the introduction of this adopting Ordinance a public hearing was scheduled and held following notice of the public hearing published twice, once as least fifteen (15) days preceding the public hearing and once at least eight (8) days preceding the public hearing, as required by Colorado statute; and,

**WHEREAS**, three (3) copies of the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System were and are on file in the Town of Erie Clerk's office and are available for public inspection; and,

**WHEREAS**, all penalty clauses, if any, contained in the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System are set forth in full herein and shall be published along with this adopting Ordinance in full upon adoption; and,

**WHEREAS**, it is deemed to be in the best interest of the public health, safety and welfare of the residents of the Town of Erie for the Town of Erie to adopt, by reference, the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System.

**NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF ERIE, COLORADO, AS FOLLOWS:**

Section 1. The 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System, three (3) copies of which are on file in the Town of Erie Clerk's office, are hereby adopted by reference.

Section 2. The 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System adopted herein by reference contain no separate penalty clauses.

Section 3. All references to Town Standards and Specifications as contained in the Erie Municipal Code and elsewhere shall refer to the 2016 Edition of the Rules and Regulations for the Town of Erie Reclaimed Water System as adopted by reference herein.

Section 4. Severance Clause. If any article, section, paragraph, sentence, clause or phrase of this Ordinance is held to be unconstitutional or invalid for any reason, such decision shall not affect the validity or constitutionality of the remaining portions of this Ordinance. The Board of Trustees of the Town of Erie, Colorado hereby declares that it would have passed this Ordinance and each part or parts thereof, irrespective of the fact that any one part of parts may be declared invalid or unconstitutional.

Section 5. Repeal. All other ordinances, or parts of any ordinances or other Code provisions in conflict herewith are hereby repealed. The repeal established herein shall not be construed to revive any ordinance Code provision or part thereof that had been previously repealed by any ordinance which is repealed by this Ordinance.

Section 6. Effective Date. This ordinance shall take effect thirty (30) days after publication following final passage.

**INTRODUCED, PASSED, ADOPTED AND ORDER PUBLISHED IN FULL BY THE BOARD OF TRUSTEES OF THE TOWN OF ERIE THIS** 19th **DAY OF** April **, 2016.**

**PUBLISHED IN FULL ON THE** 27th **DAY OF** April **, 2016.**

**TOWN OF ERIE, COLORADO,** a Colorado municipal corporation

By: _____
Tina Harris, Mayor

TOWN OF ERIE CORPORATE SEAL COLORADO

ATTEST:

By: Nancy Parker
Nancy Parker, Town Clerk

# TOWN OF ERIE
# RULES AND REGULATIONS
# RECLAIMED WATER SYSTEM

## 1. DEFINITIONS

Cross-Connection shall mean any physical arrangement whereby the Town's Water Distribution System is connected, directly or indirectly with any reclaimed, non-potable or unapproved water supply system, sewer drain, well, conduit, pool, reservoir, plumbing fixture or other device which contains or may contain any contaminated water, liquid or other waste of unknown, non-potable or unsafe quality that could impart a contaminant into the Water Distribution System as a result of backflow.

C.R.S. shall mean the Colorado Revised Statutes.

Developer shall mean the Person(s) which is the Owner or operator of land and which seeks to have the land served by the Town.

Director shall mean the director of the public works department of the Town of Erie or their designee.

Local Facilities shall mean those facilities designed primarily to serve individual development irrigation systems and includes all facilities necessary to serve the infrastructure of the development. Local Facilities will generally be downstream of the irrigation meter/control vault.

Owner shall mean the fee title holder of record of a property, or the lessee of a piece of property, if the lessee has obtained the right from the fee title holder of record to develop the property.

Permit or Tap Permit. Shall mean the license and written permission of the Town authorizing a connection to a Main of the Town. A Permit grants the Permit holder a license to use the Reclaimed Water System or to receive service from the System operated by the Town as provided in the Rules and Regulations of the Town. A Permit is revocable upon the change of use of property served by the Town.

Regional Facilities shall mean those facilities generally serving the Service Area as a whole. Examples are: water sources, treatment plants, tanks and reclaimed water transmission lines.

Reclaimed (or Reuse) Water shall mean tertiary wastewater effluent treated to the standards set forth in the Water Quality Control Division (WQCD) Notice of Authorization and Water Quality Control Commission (WQCC) Regulation 84.

Reclaimed Water Main. Shall mean a Town owned water pipeline within the Service Area, carrying Reclaimed Water only and used only for irrigation and other uses authorized by WQCC Regulation 84, installed in rights-of-way, parcels, easements or other property interests approved by the Town.

Reclaimed Water System. Shall mean the Town's Reclaimed Water distribution system, all sources, Facilities, Mains, valves, Stub-ins/Stub-outs, pumps, conduits, pipes, fire hydrants, tanks, receptacles, fixtures, equipment, and all other appurtenances which are owned by the Town and used to convey and store Reclaimed Water used within the Service Area of the Town.

Service Area shall mean all property within the boundaries of the Town, as changed from time to time through annexation.

System Development Fee shall mean the one-time contribution required of new Users (or existing Users having change of use) to be used for capital investment in the Regional Reclaimed Water System Facilities.

System. Shall mean the Town Facilities and all other facilities and appurtenances related to the Town's Reclaimed Water System whether owned by the Town or any other Person.

Tap or Connection. Shall mean the physical connection of, or the act of connecting to the Reclaimed Water System either directly to a Main or a Stub-in/Stub-out

Tap Permit. Shall mean the Town's written authorization for Connection to a Reclaimed Water Main and/or other facilities of the Town under the conditions expressed in writing by the Town and granting the Applicant a revocable license to use the Reclaimed Water System under the conditions expressed.

User. Shall mean the Developer, Owner, or other person who uses Reclaimed Water for landscape irrigation, agricultural irrigation, fire protection, commercial or industrial uses under a User Agreement.

Violation. Shall mean non-compliance with these Rules and Regulations, the User Agreement, the WQCD Notice of Authorization requirements, or the WQCC Regulation 84 requirements.

Reclaimed Water Service. Shall mean the provision of Reclaimed Water service by the Town to a User.

## 2. OWNERSHIP AND OPERATIONS

**A. Responsibilities.** It is the Town's responsibility to plan, finance, design, and construct all designated Regional Facilities. The Town will only construct such facilities, or portions thereof, when the Council has made a determination that such construction is economically feasible. Such determination may require the User to prepay or guarantee future payment of System Development Fees - or other special arrangements as the Town may determine necessary.

It is the User's responsibility to finance, design, and construct all Local Facilities as defined herein. Such facilities shall be constructed in accordance with plans and specifications approved by the Town, and in accordance with minimum standards adopted by the Town. The Users hall pay the Actual Cost of all such facilities.

After construction, the Town will be responsible for the maintenance, operation, and replacement of all Regional Facilities. The User shall be responsible for the maintenance, operation, and replacement of all Local Facilities.

The Town shall not be liable or responsible for inadequate Reclaimed Water delivery or interruption of any services brought about by circumstances beyond its control.

**B. Ownership of Facilities.** All existing and future Regional Facilities connected with, and forming an integral part of, the Town's system and accepted for operation and maintenance pursuant to these Rules and Regulations shall become and are the property of the Town, unless any contract with an Owner or Customer provides otherwise. Said ownership will remain valid whether the lines and treatment works are constructed, financed, paid for, or otherwise acquired by the Town, or by other Persons.

That portion of all existing or future Local Facilities extending downstream from the Reclaimed Water Meter to the irrigation system shall become and is the property of the Owner/Customer. The Owner/Customer's ownership of the Local Facilities shall not entitle the Customer to make unauthorized uses of the Town's system once the Local Facilities have been connected to a Town Reclaimed main. All uses of the Local Facilities or any appurtenances thereto at any time after the initial connection to the Town system shall be subject to these Rules and Regulations.

**C. Right of Entry.** The Town's Inspector, agent, officers, employees, or other person so designated by the Town, bearing proper credentials and identification, shall be permitted to enter upon all properties for the purpose of inspection, observation, measurement, sampling, and testing, in accordance with the provisions of these Rules and Regulations. The granting of Right of Entry by the Owner and occupant is a condition precedent and a condition subsequent to the provision of Reclaimed Water service.

**D. Modification, Waiver and Suspension of Rules**. The Town acting on instructions of the Council shall have the sole authority to waive, suspend or modify these Rules and Regulations. Such waiver shall not be deemed an amendment of the Reclaimed Water Ordinance. No waiver will be deemed a continuing waiver.

**E. Ownership of Water and Return Flows.** The Town shall have dominion and control of all water supplied through the Reclaimed Water System, subject to the reasonable use thereof by Users in compliance with these Rules and Regulations. The Town retains the sole authority to determine the yield of all water, water rights and augmentation plans that are offered to the Town for any purpose.

## 3. CONDITIONS OF SERVICE.

**A. General.** The Town's Reclaimed Water System has been planned and constructed to provide water for industrial, landscape irrigation, commercial, fire protection, agricultural irrigation, or other uses approved under the terms and conditions and subject to the extent permitted by WQCC Regulation No. 84. No other use of the Reclaimed Water System shall be permitted.

**B. Reclaimed Water System Requirement.** All automatic sprinkler and irrigation systems shall be equipped and designed for use with the Reclaimed Water System, which may contain particulate matter or other foreign substances from time to time. Annual turn-on and shut-off, draining and servicing of sprinkler and irrigation systems shall be the responsibility of the User.

**C. Application for Service**. Application for service must be filed with the Town on forms provided by the Town and accompanied by appropriate fees prior to any action to connect to the system. Only upon authorized approval of the application and a receipt therefore may a connection to the system be made.

All information requested on the tap application form must be completed, and the location of the Reclaimed meter/control vault and tap location included. Should any information disclosed on the application prove at any time to be false, or should the applicant omit any information, the Town shall have the right to reassess the System Development Fees originally charged at the rate current to the discovery by the Town of the false or omitted information and/or disconnect the service in question, and/or back-charge the property in question for service fees that may be due and owing, and/or charge any other or additional fee or penalty specified in these Rules and Regulations, as amended. Any reassessment shall be due and payable, together with any penalties or other additional fees charged, and together with interest at the maximum legal rate on the entire balance, upon and from the date of the original application.

**D. Denial or Revocation of Application.** The Town reserves the exclusive right to deny an application for service when, in the opinion of the Town, the service applied for would create an excessive seasonal, or other, demand on the Town Facilities, or is otherwise not in the best interests of the Town. Denial may also be based upon an unresolved obligation between the Town and the Applicant, inadequate documentation of rights-of-way, parcels, easements or other property interests for facilities that serve the property, or any other reason as determined by the Town. The Town reserves the right to revoke Service for any violation of these Rules and Regulations.

**E. Construction, Extension and Oversizing of Facility/Line.** As a condition of receiving service, the Developer, Owner or Customer may be required to construct, extend or enlarge Reclaimed Water Lines or facilities in order to serve a particular property or properties. In addition, as a condition of receiving service, the Developer, Owner or Customer may be required, in the Town's sole discretion, to construct Reclaimed Water or facilities beyond the capacity required to serve a particular property or properties or extend such lines or facilities beyond the location required to serve a particular property or properties in order to effectively provide service to additional properties within the Town's Service Area at a later date.

**F. Cross-Connection/Dual Supply.** Water from the Town's Potable Water System and water from the Town's Reclaimed Water System or any other source shall be distributed through systems entirely independent of each other, and cross-connection between such supplies is strictly prohibited. A cross-connection is defined as any physical arrangement whereby the Town's potable water supply is connected, directly or indirectly with any Reclaimed Water System or unapproved Town water supply system, sewer drain, conduit, pool, reservoir plumbing fixture or other device which contains or may contain any contaminated water, liquid, or other waste of unknown or unsafe quality that could impart a contaminant to the Town's potable water supply as a result of backflow. Where a potential for backflow is present, a protective device or system acceptable to the Town shall be installed to prevent its occurrence.

All plumbing installations shall be designed and installed in conformity with the latest edition of the Colorado Department of Public Health and Environment's Backflow Prevention and Cross-Connection Control Rule and with the latest plumbing codes as adopted by the relevant local, states and federal authorities.

All backflow prevention installations shall be as approved by the Town. The Customer shall install, operate, test, and maintain the backflow prevention device as required by the Town. Tests shall be made on the device at a minimum of once per year or as determined by the Town in accordance with the Town's CROSS-CONNECTION CONTROL AND BACK FLOW PREVENTION REGULATIONS, as the same may be amended from time to time, which is available upon request from the Town.

## 4. CONTRACTOR QUALIFICATIONS AND REQUIREMENTS.

**Contractor Bonding/Responsibilities.** Reclaimed Water mains and facilities shall only be installed, repaired or replaced by a bonded contractor or User. Any Reclaimed Water facility installation, construction, connection, maintenance, repair or replacement work, design thereof and all materials used in connection therewith shall conform in their entirety to these Rules and Regulations, the requirements of the applicable Plumbing Code, the applicable regulations and design standards and specifications of the Town and may require approval of the Town's Engineer.

**Insurance/Bond.** Any contractor or User who wishes to install, construct, connect, maintain, replace or repair Reclaimed Water system facilities in the Town shall purchase and maintain, for the full period of any work, comprehensive general liability/auto liability and other insurance sufficient to protect the Town from all claims arising out of the Contractor's work, or the work of any subcontractor or anyone else for whose acts the Contractor may be liable. Each contractor's insurance coverage shall be sufficiently broad to enable the contractor to fully indemnify the Town and its directors, employees, agents, consultants and engineer (including their officers, directors, employees and agents) against any and all claims arising out of the work performed by the contractor. The contractor shall supply the Town proof of insurance prior to commencing work.

**Permits Required.** The right to take and use Reclaimed Water distributed through the Facilities of the Town shall exist only under Permit, and no physical Connection may be made or modified to any such Facilities or to any privately or publicly owned extension thereof for any purpose unless a Permit shall have first been obtained authorizing the use for which such a Connection is to be made. The Permit Application and Permit are available upon request from the Town. **The terms, conditions and requirements of the Permit Application and Permit are applicable to all work.**

Notwithstanding the issuance of a Permit, the Town reserves the full power and authority to determine all matters in connection with the control and use of water from the Reclaimed Water System.
**5. FEES**Tap fees and Service Fees shall be as set forth in the

## 5. ENFORCEMENT

**A. Violation.** It is unlawful for any person to violate any provision or fail to comply with any of the requirements of these Rules and Regulations. Any person who violates any of the provisions of this chapter shall be subject to one or more of the enforcement actions outlined in this section. The remedies and penalties set forth in this section are nonexclusive, and the Town may take any lawful action, either in law or in equity, to protect its property or its rights, powers

priviliges or immunities, or those of its citizens, which may include, but is not limited to, injunctions or civil actions or damages.

**B. Enforcement.** All authorized personnel under the supervision of the Director shall have the power to conduct inspections, give verbal direction, issue notices of violations and implement other enforcement actions under this section.

**C. Inspection.** Whenever the Director has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this chapter, the Director shall have the right to enter the premises at any reasonable time to determine if there exists an actual or potential violation of the requirements of this chapter. In the event that the owner or occupant refuses entry after a request to enter has been made, the town is hereby empowered to seek assistance from a court of competent jurisdiction in obtaining such entry.

**D. Revocation of Service.** Violation of these Rules and Regulations or the conditions or obligations set forth in any Tap Permit or agreement shall be grounds for the Town to revoke service. The User may be assessed the cost of the disconnection. The User's deposit for service, if any, shall be applied against the outstanding obligation. Discontinuance of service may be summary, immediate, and without written notice whenever, in the judgment of the Director, such action is necessary to protect the purity of the public potable water supply or the safety of the water system.

**E. Revocation of Tap Permit.** In addition to the other rights and remedies set forth in these Rules and Regulations, any User who violates these Rules and Regulations, any conditions of the Tap Permit or agreement, or violates any applicable local, state and federal regulations, is subject to having their Tap Permit revoked after receipt of written notice of such proposed revocation. If the Tap Permit is revoked, the User may reacquire such Tap Permit only by reapplying for service in accordance with the Reclaimed Water Ordinance, and after paying all fees due and owing the Town and the then-current Tap Fees charged by the Town under these Rules and Regulations for the use in question and complying with all other applicable requirements of the Town.

**ORDINANCE NO. 12 - 2016**

**Series of 2016**

**AN ORDINANCE OF THE TOWN OF ERIE, COLORADO, AMENDING TITLE 2, "REVENUE AND FINANCE," CHAPTER 10, "FEE SCHEDULE," SECTION 4, "PUBLIC WORKS FEES," AND SECTION 6, "BUILDING PERMIT AND OTHER FEES"; AND TITLE 8, "WATER AND WASTEWATER," CHAPTER 1, "WATER USE AND SERVICE," SECTION 18, "FEES AND CHARGES" OF THE TOWN OF ERIE MUNICIPAL CODE; ADOPTING WATER RATES AND WATER TAP FEES FOR NON-POTABLE WATER.**

**WHEREAS**, the Board of Trustees of the Town of Erie, Colorado, wishes to amend Title 2, "Revenue and Finance," Chapter 10, "Fee Schedule," Section 4, "Public Works Fees," and Section 6, "Building Permit and Other Fees,"; and Title 8, "Water and Wastewater," Chapter 1, "Water Use and Service", Section 18, "Fees and Charges" of the Town of Erie Municipal Code to reflect the adoption of new water rates and water tap fees for the provision of non-potable water; and,

**WHEREAS**, the Board of Trustees of the Town of Erie, Colorado has found and determined that it is in the best interest of the Town of Erie to amend the Erie Municipal Code in such manner.

**NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF ERIE, COLORADO:**

Section 1. That Title 2, "Revenue and Finance," Chapter 10, "Fee Schedule," Section 4, "Public Works Fees," of the Erie Municipal Code is hereby amended to add, after the table of potable water rates and before the table of oil and gas well development water rates, the new fees and charges for non-potable water, for four user classes, as follows:

| | |
|---|---|
| Water rates, non-potable: | |
| | |
| | |
| Volume charge, amount per 1,000 gallons: | |
| | |
| Vista Ridge development: | $1.33 |
| Town-owned facilities: | $1.33 |
| Customers with on-site non-potable storage: | $2.66 |
| Customers with direct connection to Town's non-potable system: | $4.32 |

Section 2. That Title 2, "Revenue and Finance," Chapter 10, "Fee Schedule," Section 6, "Building Permit and Other Fees," of the Erie Municipal Code is hereby amended to add the word "potable" to the headings of the Water Tap Fee table and the Fee in Lieu of Dedication (Water Rights Fee) table, thereby respectively renaming those tables "Potable Water Tap Fee" and "Fee in Lieu of Dedication (Potable Water Rights Fee)" without modifying the fees or any other content within those tables.

Section 3. That Title 2, "Revenue and Finance," Chapter 10, "Fee Schedule," Section 6, "Building Permit and Other Fees," of the Erie Municipal Code is hereby amended to add, at the end of Section 6, the new non-potable water tap fee, as follows:

| Non-potable Water Tap Fee:* | |
|---|---|
| | |
| Per acre-foot | $17,410 |

*The non-potable water tap fee applies only to private (i.e., non-public) customers and includes the water rights fee, so no separate fee in lieu of dedication is included herein.

Section 4. That Title 8, "Water and Wastewater," Chapter 1, "Water Use and Service," Section 18, "Fees and Charges," of the Erie Municipal Code is hereby amended to add the following new subsection G:

G. Water Rates and Water Tap Fees for Non-Potable Water: As of March 22, 2016, the Town imposes certain water rates and water tap fees for the provision of non-potable water. The water rates for non-potable water are set forth in Section 2-10-4 of this Code, and the water tap fees for non-potable water are set forth in Section 2-10-6 of this Code. As with all other water tap fees and water service rates, pursuant to Sections 8-1-18-A-1 and 8-1-18-B-1-a of this Code, respectively, the Town of Erie Board of Trustees shall have the right and authority to adjust tap fees by appropriate action at any time.

Section 5. The Town Board intends that the new rates and fees for non-potable water being adopted by this Ordinance are not intended to amend or alter any existing agreements with the Town with respect to non-potable water rates and fees.

Section 6. Severance Clause. If any part, section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be invalid, such invalidity shall not affect the validity of the remaining sections of the ordinance. The Town Board hereby declares that it would have passed the ordinance including each part, section, subsection, sentence, clause or phrase thereof, irrespective of the fact that one or more parts, sections, subsections, sentence, clauses or phrases be declared invalid.

Section 7. Repeal. All ordinances or resolutions, or parts thereof, in conflict with this ordinance are hereby repealed, provided that such repeal shall not repeal the repeal clauses of such ordinance nor revive any ordinance thereby.

Section 8. Effective Date. This ordinance shall take effect immediately.

**INTRODUCED, PASSED, ADOPTED AND ORDER PUBLISHED IN FULL BY THE BOARD OF TRUSTEES OF THE TOWN OF ERIE THIS 19TH DAY OF APRIL, 2016.**

**PUBLISHED IN FULL ON THE 27TH DAY OF APRIL, 2016.**

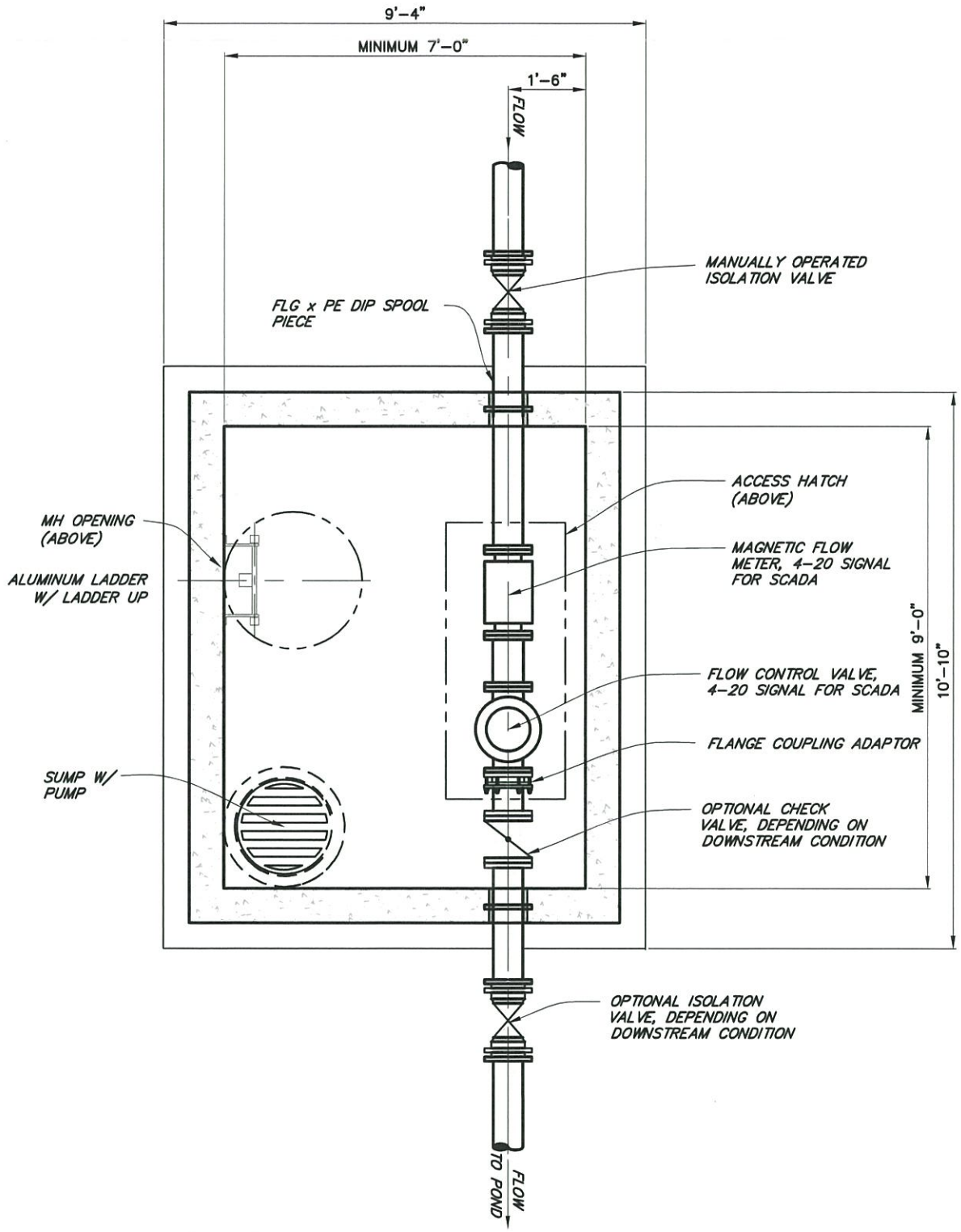
**TOWN OF ERIE, COLORADO,** a Colorado municipal corporation

By: _____
Tina Harris, Mayor

ATTEST:

By: _____
Nancy Parker, Town Clerk

TOWN OF ERIE CORPORATE SEAL COLORADO




# STANDARD IRRIGATION METER VAULT PLAN

MERRICK & COMPANY
McLaughlin Water Engineers
A DIVISION OF MERRICK & COMPANY
2420 Alcott St
Denver, CO 80211
T303.964.3333
F303.964.3355

DRAFT
DETAIL

1

# THIS PROPERTY
# USES RECLAIMED WATER

RECLAIMED WATER
A Recycled Resource

**Recycled Water Treated for Irrigation**
**Do Not Drink or Play in Reclaimed Water**

TOWN OF ERIE
1874

**303-926-2895**

**No tome del sistema de Agua Reciclada. El Agua Reciclada Esta Tratada Para Irrigar.**

# Information for Operators, Landscapers and Others Working on Reclaimed Water Systems

Recycled water is an important water resource today and for the future. The Town of Erie uses some of its wastewater effluent to produce reclaimed water, which is specially treated for land irrigation. The reclaimed water is treated to and classified as Category 2 standards by the Colorado Department of Public Health and Environment.

**RECLAIMED WATER IS NOT TREATED TO BE USED FOR DRINKING OR BATHING.**

All persons working on reclaimed water systems should be provided with information about reclaimed water and training in safe practices and the use of personal protective equipment (PPE) for working with reclaimed water. Safe practices include:

1. Provision of information, including reclaimed water quality information, about reclaimed water CDPHE Regulation No. 84 (available at https://www.colorado.gov/pacific/cdphe/water-quality-control-commission-regulations/84_2013(07)hrd.pdf).

2. Avoiding direct contact with reclaimed water by:
   - Wearing gloves, boots, and eye protection while working with reclaimed water.
   - Refraining from eating, drinking, or smoking while working with reclaimed water.
   - Washing with potable water and soap before eating, drinking, or smoking after working with reclaimed water.
   - Storing materials used to apply or convey reclaimed water securely in locations where they do not come into contact with potable water.

3. Wearing appropriate personal protection equipment (PPE), including, but not limited to gloves, boots, and eye protection.

4. Knowing what to do in case of direct contact with or consumption of reclaimed water:
   - In the event of direct contact with reclaimed water, immediately wash the affected area thoroughly with potable water and soap and change into clean, dry clothes. If irritation, rash, or other problems develop, be sure to tell your medical provider that the affected area came into contact with reclaimed water. She/he will be able to determine if the problem is related to the water.
   - If reclaimed water is accidentally consumed, it is unlikely to cause ill effects. However, if you should get sick after consuming this water, contact your medical provider and tell her/him that reclaimed water was ingested. She/he will be able to determine if the illness is related to the water.

5. Using tools that are dedicated for use only on reclaimed water systems and appurtenances. Tools that have been used on reclaimed water systems and appurtenances must be disinfected prior to use on the potable water system. Disinfection shall be the same as described in The 2006 Uniform Plumbing Code 609.9, Disinfection for Potable Water Systems.

TOWN OF ERIE
1874

# STATE OF COLORADO

**Dept of Public Health and Environment**
**Water Quality Control Division**

| For Agency Use Only |
| --- |
| Date Received ____/_____/_____ |

## User Plan to Comply for the USE OF RECLAIMED WATER for LANDSCAPE IRRIGATION, NON-FOOD CROP IRRIGATION, AND SILVICULTURE

*As Required by Regulation No. 84*

**Please print or type. Original signatures are required.** **Photo, faxed, pdf or email copies will not be accepted.**
All items must be completed accurately and in their entirety for the User Plan to Comply to be deemed complete. Incomplete User Plans to Comply will not be processed until all information is received which will ultimately delay the issuance of a Notice of Authorization. If more space is required to answer any question, please attach additional sheets to the application form. The User Plan to Comply must be submitted by mail or hand delivered to:

***Colorado Department of Public Health and Environment***
***Water Quality Control Division, WQCD-P-B2***
***4300 Cherry Creek Drive South***
***Denver, Colorado 80246-1530***

### A. CONTACT INFORMATION

#### 1. User Information

**User Organization Formal Name:** _____

**User is:** ☐ Property Owner ☐ Contractor/Operator

**Legal Responsible Person*:** the legal representative for the user organization that is **authorized to sign and certify** the User Plan to Comply application. This person receives all correspondences and is committing the user to be **legally responsible** for compliance with the Notice of Authorization.

Responsible Position (Title): _____

Currently Held By (Person): _____

Telephone No: _____

Email address_____

Mailing Address: _____

City: _____ State: _____ Zip: _____

*To be considered complete, this form must be signed by a Legally Responsible Person that is a legal representative for the user organization and facility. The legal representative shall be a person that has the authority to make legally binding commitments for the user. Examples of a Legal Responsible Person include a regional or facility manager or land owner. Consultants/contractors that were not contracted for overall operation of a facility would typically not have the authority to make a legal commitment for a user and therefore would in most cases not meet the requirement to be a Legal Representative.

#### 2. Site/Local Contact (contact for questions relating to the facility & discharge authorized by this permit.)

☐ Same as 1) Legally Responsible Person

Responsible Position (Title): _____

Currently Held By (Person): _____

Telephone No: _____

Email address_____

Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

3. **Other Contact Types** (check below) Add pages if necessary:

Responsible Position (Title): _____

Currently Held By (Person): _____

Telephone No: _____

Email address_____

Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

□ Landscape Contractor
□ Facility Inspection Contact
□ Consultant
□ Compliance Contact
□ Property Owner
□ Other _____

## B. FACILITY INFORMATION (where the reclaimed water will be used)

Facility Name Erie North Water Reclamation Facility

Street Address (or cross streets) 501 State Hwy 52

City Erie Colorado, Zip Code 80516

County Weld / Boulder

## C. Treater Requirements and Review

□ **YES:** The user has coordinated with the Treater (reuse water provider) and has been provided a copy of the Reclaimed Water Control Regulation No. 84. The user has been informed by the Treater of the regulation requirements and has prepared this User Plan to Comply in compliance with the Treater's Reuse System Management Plan. The Treater has reviewed this User Plan to Comply and has verified conformance with the Reuse System Management Plan on _____(date).

a) Name of Treater: Town of Erie, Dept. of Public Works Treater NOA Number COE028000

b) Request from Treater to amend Letter of Intent to add user (for new users) or to modify operation or physical use (for addition of a new use, use in a new location, etc.) attached?
□ **YES**

## D. SPECIFIC CONDITIONS FOR INTENDED USE

**Category of Reclaimed Water to be Used** (Check one):

□ Category 1 ■ Category 2 □ Category 3

**Type of Approved Use Irrigation Use** (Check all that apply):

■ Restricted-Access Landscape Irrigation (Category 1, 2, or 3)

■ Unrestricted-Access Landscape Irrigation (Category 2 or 3)

□ Silviculture (Category 1, 2, or 3)

□ Agricultural Non-Food Crop Irrigation (Category 1, 2, or 3)

□ Resident Controlled Landscape Irrigation (Category 3)

1. **Attach** an 8.5 x 11 or 11 x 17 map or schematic indicating the specific area(s) where irrigation with reclaimed water will take place. Has the required map been attached?
□ **YES**

2. If **Category 1** reclaimed water will be used: Describe below how the user will restrict access to reclaimed water, either by time or by barrier. If restricted by time, identify the period for which irrigation with reclaimed water will occur so as to strictly minimize public contact with reclaimed water. If restricted by barrier, describe physical barriers that will prevent public access to the site. If the barriers will only be in place during periods of irrigation, describe when those periods will be and processes to ensure that the ceasing of irrigation at least one hour prior to the barriers being totally or partially removed. (If Category 2 or 3 water us used, leave this part blank.)

3. Will irrigated vegetation be comprised of less than or equal to 90 % turf grass?
   □ **YES** ■ **NO**

   If yes, **attach** an agronomic calculation for vegetation that will be used, in accordance to Water Quality Policy 21.

4. Describe best management practices to be implemented to ensure that direct and windblown spray and other means of human exposure from irrigation systems will be confined to the irrigation area identified in this User Plan to Comply.

5. Describe best management practices the user intends to employ to ensure that application rates will be controlled to strictly minimize ponding, runoff, and the amount of applied water and associated nutrients that pass through the roots zone of the vegetation.

6. Will the landscape irrigation be Resident-Controlled (Category 3 only)?
   a) □ **Not Applicable:** Irrigation will not be Resident-Controlled
   -OR-
   b) □ **YES:** Irrigation will be Resident-Controlled. Reclaimed water shall not be extended to or supported from any residential structure and there shall be no accessible above grade outlets from the reclaimed water system at any residential structure. At least one exterior hose bib, supplied with potable water, shall be provided at each residential structure.

## E. GENERAL CONDITIONS FOR THE USE OF RECLAIMED DOMESTIC WATER

All conditions must be met prior to the use of reclaimed water. The user must confirm that these conditions will be met by checking the appropriate box and providing the required information for this User Plan to Comply to be considered complete. Attach additional pages as necessary.

1. **Authorized Areas**

   □ **YES:** Use of reclaimed shall be confined to the authorized use area, operation, or process.

   Describe how this will be achieved:

2. **Human Contact**

□ **YES:** Reclaimed water will not be sprayed on or supplied to occupied buildings, domestic drinking water facilities, facilities where food is being prepared or other areas where human contact with reclaimed water is possible.

Describe how this will be achieved:

3. **Public Notification**

□ **YES:** The public will be notified that reclaimed water is being used and is not safe for drinking.

Describe how this will be achieved:

4. **Marking Appurtenances and Equipment**

□ **YES:** All new, modified, or replaced piping, valves, controllers, outlets, and other appurtenances, including irrigation systems and any equipment used for fire protection or in a commercial or industrial operation or process shall be marked to differentiate reclaimed water from potable water or other piping systems.

Describe how this will be achieved for appurtenances and equipment:

5. **Potable Water Service Connections**

Check one of the following, if subsection b is checked, provide the required description:

a) □ **Not Applicable:** No potable water service connections will exist in reclaimed water use areas.

-OR-

b) □ **YES:** Potable water service connections will exist in the reclaimed water use area. An approved backflow prevention device or cross-connection control method shall be provided at all potable water service connections located in reclaimed water use areas.

Describe the potable water service(s) located in the reclaimed water use area(s) (e.g drinking fountains, wash facilities, restrooms), and the backflow prevention device(s) or cross-connection control method(s) to meet the above requirements:

6. **Personnel Authorization and Training**

□ **YES:** Operation of the irrigation system, including valves, outlets, couplers, and sprinkler heads, and commercial or industrial facilities and equipment utilizing reclaimed water, shall be performed only by trained personnel authorized by the user.

Describe how this will be achieved, including who will be trained and authorized to operate and maintain the reclaimed water system and how this training will occur:

**7. Supplement Water**

Check one of the following, if subsection b is checked, provide the required description:

a) □ **Not Applicable:** No potable, irrigation, or industrial well water will be used to supplement reclaimed water.

-OR-

b) □ **YES:** Supplementing reclaimed water with water from irrigation wells or industrial wells shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap. Supplementing reclaimed water with potable water by a user shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap. Where a backflow prevention device is used it must be tested on an annual basis by a Certified Cross-Connection Control Technician, unless there is a physical separation (e.g., removal of the connecting pipe, etc.) between the potable and reuse distribution systems.

Describe the source of the potable, irrigation, and/or industrial well water supplemental water and the backflow prevention measures to meet the above requirements:

**8. Reclaimed Water Impoundments**

Check one of the following, if subsection b is checked, provide the required description:

a) □ **Not Applicable:** No impoundment of reclaimed water associated with the reclaimed water use facility will exist

-OR-

b) □ **YES:** Impoundment of reclaimed water will occur at the user's facility

Describe all impoundments of reclaimed water. If those impoundments are lined, describe the material used to line the impoundment, and the permeability. Note that if a discharge occurs to the ground from an unlined impoundment, a separate CDPS discharge permit may be required. Indicate whether an impoundment of reclaimed water will be located within 100 feet of any well used for domestic supply (impoundments located within 100 feet of any well used for domestic water supply shall be lined with a synthetic material with a permeability of 10-6 cm/sec or less).

**9. Domestic Water Supply Wells**

Check one of the following, if subsection b is checked, provide the required description:

a) □ **Not Applicable:** Irrigation will not occur within 100 feet of any well used for domestic water supply

-OR-

b) □ **YES:** Precautions will be taken at locations where irrigation will occur within 100 feet of a domestic water supply well to prevent contamination of the well.

List the areas where irrigation will occur within 100 feet of a domestic water supply well. Specifically describe all precautions that will be taken to prevent contamination of the well. Note: these precautions will be included as a condition of the notice of authorization.

**10. Notification to Workers of Potential Health Hazards**

□ **YES:** All workers shall be informed of the potential health hazards involved with contact or ingestion of reclaimed water and shall be educated regarding proper hygienic procedures to protect themselves.

Describe how workers will be informed of the required information:

**F. REQUIRED CERTIFICATION SIGNATURE** (Reg 61.4(1)(h))

"I certify I have been provided a copy of the Reclaimed Water Control Regulation No. 84 and I agree to comply with the applicable requirements of the regulation, in particular the Conditions for Use of Reclaimed Water described in sections 84.8 and 84.9, and, if applicable, the Additional Conditions for Use of Reclaimed Water meeting Category 1 Restricted Access Standards (section 84.9). Furthermore, I agree to allow the Treater or the Division access to the site to determine whether I am in compliance with these regulations, and/or perform monitoring and analysis as may be required in section 84.10."

"I certify, under penalty of law, that the information I am providing in this submittal is true, accurate, and correct. This determination has been made under my direction and supervision in accordance with a system designed to ensure qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

"By signing this certification, I acknowledge that I have legal authority to certify on behalf of the user, and to bind the user to the Terms and Conditions of any Notice of Authorization issued pursuant to this User Plan to Comply."

Signature (Legally Responsible Person) _____Date _____

Name (printed) _____Title_____

# STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

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http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

**October 25, 2012**

**Gary Behlen, Public Works Director**
**Town of Erie, Department of Public Works**
**P.O. Box 750**
**Erie, Colorado 80516**

**RE: Treater's Notice of Authorization for the Use and Distribution of Reclaimed Domestic Wastewater**

**Dear Mr. Behlen:**

Please find enclosed, a Notice of Authorization (NOA) for the Use and Distribution of Reclaimed Domestic Wastewater. Please review this document carefully.

The Town of Erie will need to provide data on Total Inorganic Nitrogen (TIN) before any land application can begin in accordance with Water Quality Policy #21.

Please contact me at 303-692-3515 with questions, comments or concerns you may have.

Sincerely,

Elizabeth Lemonds, Environmental Protection Specialist
Reclaimed Domestic Wastewater Program
WATER QUALITY CONTROL DIVISION

cc: **Boulder County Health Department**
**Weld County Health Department,**
**File # COE-028000**

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Colorado Department of Public Health and Environment

# NOTICE OF AUTHORIZATION FOR THE DISTRIBUTION OF RECLAIMED WATER FOR LANDSCAPE IRRIGATION

Authorization Number: **COE028000**

Pursuant to the provisions of the Colorado Water Quality Control Act, sections 25-8-202 and 25-8-205, C.R.S. and the Colorado Reclaimed Domestic Wastewater Control Regulation (Regulation 84), this Notice of Authorization For The Use and Distribution of Reclaimed Domestic Wastewater, authorizes the **Town of Erie, Department of Public Works (Treater)**, whose Water Reuse Facility location is shown in attached Figure-1, to supply reclaimed domestic wastewater to user sites as listed in Appendix-A.

Significant physical or operational changes by the Treater, a change in the agronomic rate analysis provided in the original Letter of Intent (LOI), the addition of any new user, or significant modifications or changes to physical or operational uses by an existing user will require the submittal of an amended LOI by the Treater to the Colorado Department of Public Health and Environment, Water Quality Control Division ("the Division") in accordance with section 84.6(E)(7)(a-d). When adding a new user, the amended LOI shall be submitted at least 30 days prior to such addition. The Treater shall submit an amended Letter of Intent to the Division not more than 30 days after any deletion of a user has occurred. If the Division grants approval of an additional user, the Division will issue a revised Notice of Authorization. Permanent deletions or significant physical or operational changes of existing users will be documented in a revised Appendix A of the Notice of Authorization.

(A) Modifications to the legal contact information in Appendix A must be submitted by the Treater to the Division in a timely manner, but do not require an amended Letter of Intent or revised Notice of Authorization.

(B) Treatment of reclaimed domestic wastewater for direct reuse shall be performed in accordance with the limits set forth in section 84.7 Reclaimed Domestic Wastewater Categories and Standards of the Colorado Reclaimed Domestic Wastewater Control Regulation.

(C) Reclaimed domestic wastewater, for uses where there is unrestricted access to areas where such water is used, shall, at a minimum, receive secondary treatment with filtration and disinfection. The following reclaimed domestic wastewater standards shall apply at the point of compliance:

| Parameter | Limit |
|---|---|
| E. Coli / 100 mL | 126/100 mL monthly geometric mean and 235/100 mL single sample maximum in any calendar month. Individual values below detection limits shall be recorded as "below detection limits." A value of 1 E. coli/100 mL shall be used for purposes of computing the geometric mean. |
| Turbidity, NTU | Not to exceed 3 NTU as a monthly average and not to exceed 5 NTU in more than 5 percent of the individual analytical results during any calendar month. |

(D) Reclaimed Domestic Wastewater shall be used in accordance with applicable criteria of the Colorado Reclaimed Domestic Wastewater Control Regulation. The Treater is approved for the treatment and distribution of Category 2 (unrestricted use) reclaimed domestic wastewater for landscape irrigation, soil compaction and dust control and is responsible for compliance with the following:

(1) Use of reclaimed domestic wastewater shall be confined to the authorized use area, operation or process and application rates shall be controlled to strictly minimize ponding and runoff.

(2) Precautions shall be taken to ensure that reclaimed domestic wastewater will not be sprayed on any facility or area not designated for application such as occupied buildings, domestic drinking water facilities, or facilities where food is being prepared for human consumption.

(3) Notification shall be provided to inform the public that reclaimed domestic wastewater is being used and is not safe for drinking. The notification shall include posting of signs of sufficient size to be clearly read in all use areas, around impoundments, and on tanks, tank trucks and other equipment used for storage or distribution of reclaimed domestic wastewater, with appropriate wording in the dominant language(s) expected to be spoken at the site.

(4) All new, modified, or replaced piping, valves, controllers, outlets, and other appurtenances, including irrigation systems and any equipment used in a commercial or industrial operation or process, shall be marked to differentiate reclaimed domestic wastewater from domestic water or other piping systems.

(5) An approved backflow prevention device or cross connection control method shall be provided at all potable water service connections to reclaimed domestic wastewater use areas.

(6) Operation of the irrigation system, including valves, outlets, couplers, and sprinkler heads, and commercial or industrial facilities and equipment utilizing reclaimed domestic wastewater, shall be performed only by personnel authorized by the user and trained in accordance with subsection 84.9 (C)(10).

(7) Supplementing reclaimed domestic wastewater with potable water by a user shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap. Where a backflow prevention device is used it must be tested on an annual basis by a Certified Cross Connection Control Technician, unless there is a physical separation (e.g., removal of the connecting pipe, etc.) between the potable and reuse distribution systems.

(8) Supplementing reclaimed domestic wastewater with water from irrigation wells or industrial wells shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap.

(9) There shall be no impoundment or irrigation of reclaimed domestic wastewater within 100 feet of any well used for domestic supply unless:

(a) In the case of an impoundment, the impoundment is lined with a synthetic material with a permeability of $10^{-6}$ cm/sec or less; or
(b) In the case of irrigation, other precautions are implemented and included as a condition under item (11) of this Notice of Authorization, to prevent contamination of the well.

(10) Workers shall be informed of the potential health hazards involved with contact or ingestion of reclaimed domestic wastewater and shall be educated regarding proper hygienic procedures to protect themselves.

(11) The Treater shall implement its reuse system management plan in accordance with section 84.6(A)(4) of the regulation.

(12) For Landscape Irrigation, reclaimed domestic wastewater shall not be applied in excess of agronomic application rates. The agronomic rate means the rate of application of nutrients to plants that is necessary to satisfy the plants' nutritional requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants. For all uses, application rates shall protect surface and ground water quality and shall be controlled to minimize ponding.

(E) The Treater shall monitor the quality of reclaimed domestic wastewater produced and delivered at the **point of compliance** shown on attached Figure-1, according to the schedule below:

(1) Treater shall monitor the quality of Reclaimed Water produced and delivered at the **Point of Compliance** shown on attached Figure-1, according to the monitoring requirements as stated in WQD-25 Reclaimed Water Program Monitoring and Reporting Requirements for Reclaimed Water Treatment Facilities. (eff. 12-5-2007):

**Frequency of Monitoring for Reclaimed Water Parameters**

| Reclaimed Water Type | E. coli and TSS Sampling and Analysis Frequency | Sample Type |
|---|---|---|
| Category 2 | 2 samples per 7 days[1] | Grab |

1 No TSS monitoring is required for these Categories of reclaimed water

(2) Sampling and analyses for (1) E. coli and (2) either total suspended solids (TSS) (Category 1) or turbidity (Categories 2 and 3) are required for all categories of reclaimed water. Table 1 sets forth the sampling type, frequency and analysis for E. coli and TSS. *E. coli* samples should be representative of the reclaimed water delivered to users. Compliance is based on a single sample maximum and a monthly geometric mean.

(3) All samples shall be obtained at the approved point of compliance listed in the Treater's Notice of Authorization. Where Category 2 or Category 3 reclaimed water is delivered for less than 12 hours, a turbidity reading shall be taken at the point of compliance during the period of delivery. When reclaimed water is delivered for longer than a 12-hour period, a turbidity reading must be taken in the first 12 hours and every subsequent 12 hour time frame until the plant is out of service. The sampling frequency for turbidity was developed to ensure regulatory compliance could be met without placing a hardship on small facilities. The frequency of one (1) reading per twelve (12) hours of operation allows personnel to take the required readings during normal business hours. For those months in which a constant supply of reclaimed water is provided to users, approximately sixty (60) turbidity readings would be made; this is an adequate statistical data set to accurately represent the quality of reclaimed water being delivered.

(4) The current regulatory limit for turbidity is based upon a monthly average of all readings with no exceedance in 95% of all readings during a calendar month. Samples should be taken at random times during the filter operating cycle to provide unbiased data on filter performance.

**(F)** Records of all monitoring, inspections and self-certifications submitted to the Treater by the user shall be kept onsite for a period of three (3) years and shall be provided to the Division upon request. City of Westminster Department of Public Works Reclaimed WTF shall provide an annual report to the Division for the previous calendar year, by January 31st, that includes the following:

(1) Information demonstrating the Treater's compliance with the reclaimed domestic wastewater standards, including secondary treatment standards, described in section 84.7 of these regulations.

(2) Information supplied by each user to the Treater's demonstrating the user's compliance with the conditions of land application included in the Notice of Authorization.

(3) Confirmation that the Treater conducted inspections pursuant to section 84.10(A)(1) above.

(4) The user shall submit a certification statement with the information referenced in item (2), above. Both certification statements shall be submitted in the Treater's annual report. The certification statement shall be as follows:

*"I certify, under penalty of law, that the information I am providing in this submittal is true, accurate, and correct. This determination has been made under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."*

(5) The Treater shall report any violation of the Reclaimed Domestic Wastewater regulation at their treatment and distribution facilities, as shown in Figure 1, in writing to the Division within 30 days of becoming aware of the violation.

a. Where the Treater finds violations by any user, the 30-day period for reporting is waived for a period of up to 30 additional days if the Treater is working with the user to resolve the violation.

b. If the violation is resolved, no notice to the Division is required and the violation is to be reported in the Treater's annual report.

c. If the violation is continuing after a total of 60 days from the time the Treater became aware of the violation, the Treater shall report the violation to the Division within five (5) working days.

d. Discharges to surface waters, cross connections without a backflow prevention device, exceedences of the reclaimed domestic wastewater standards for E. coli or other violations posing an immediate threat to public health or the environment shall be reported to the Division orally within 24 hours of becoming aware of the violation (24-hour telephone number 877-518-5608) and shall be followed up by a written report within five working days. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including, to the extent known, exact dates and times; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Right of entry to the facility or a user site by an authorized representative of the Colorado Department of Public Health and Environment, Water Quality Control Division, is authorized by the Colorado Water Quality Control Act, Section 25-8-306, C.R.S. (1989 Repl. Vol. 11A) for performance of whatever site inspection, monitoring and sample collection is deemed to be necessary to assure compliance with the criteria contained in the Colorado Reclaimed Domestic Wastewater Control Regulation.

**Non-compliance with the conditions of this Notice of Authorization for the Use and Distribution of Reclaimed Domestic Wastewater may result in initiation of enforcement action by the Colorado Department of Public Health and Environment, Water Quality Control Division pursuant to Part 6 of the Colorado Water Quality Control Act, Section 25-8-601-612, C.R.S (1989 and 1993 Supp). Action may include revocation of this Notice of Authorization for the Use and Distribution of Reclaimed Domestic Wastewater.**

Terms and conditions contained in this Notice of Authorization for the Use and Distribution of Reclaimed Domestic Wastewater for Landscape Irrigation are subject to revision, addition or deletion based on any change in criteria contained in the Colorado Reclaimed Domestic Wastewater Control Regulation.

Authorization by the Colorado Department of Public Health and Environment, Water Quality Control Division, does not relieve the Treater or the users listed in appendix A of compliance with applicable regulations of any other state, federal or local agency having jurisdiction.

**NOTICE OF AUTHORIZATION FOR THE USE AND DISTRIBUTION OF RECLAIMED DOMESTIC WASTEWATER ISSUED THIS 25th DAY OF OCTOBER, 2012.**

Nathan Moore,
Unit Manager
Permits Section
Water Quality Control Division

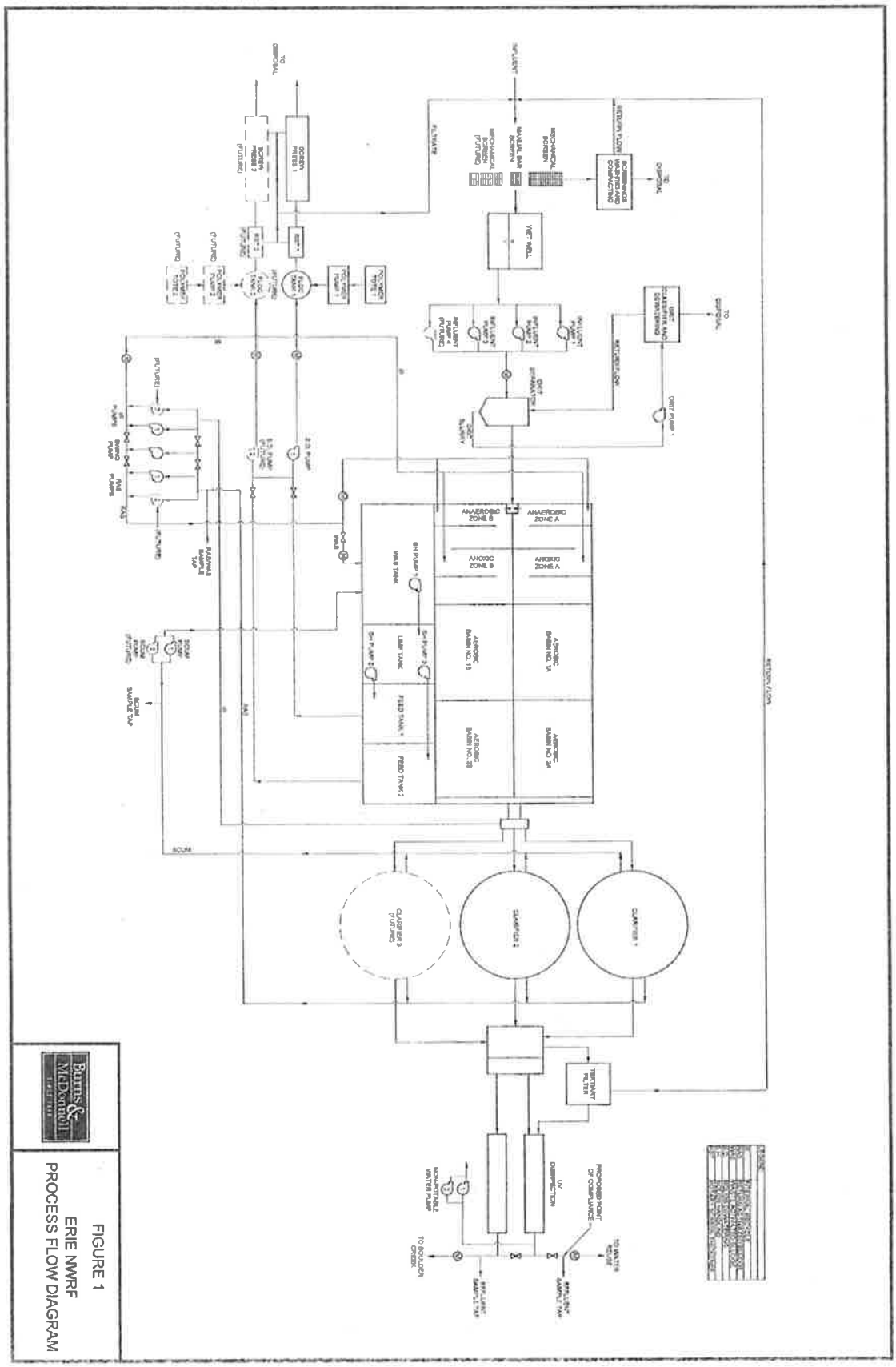
## APPENDIX A
## LEGAL CONTACT INFORMATION FOR NEW USERS

**TREATER COE-028000 – Town of Erie**
Mailing Address: Erie North Water Reclamation Facility
PO Box 750
Erie, Colorado

Facility Address: Erie North Water Reclamation Facility
645 Holbrook St.
Erie, Colorado 80516

Legal Contact: Gary Behlen, Public Works Director
Telephone: 303-962-2870 Email: gbehlen@erieco.gov
Point of compliance: After the UV disinfection, prior to reclaimed water impoundment.

**FIGURE 1**
**Erie North Reclamation Facility**



# STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment



June 6, 2011

Gary W Behlen, PW Dir
Erie Town of
PO Box 750
Erie, CO 80516

**RE: Renewal of Permit/Certification**
**Administrative Continuation**
**For: Erie North Water Reclamation Facility**
**Located at: 501 Hwy 52, Erie, Weld County**
**Permit No.: COR011415**

Dear Mr. Behlen;

The Division has received an application to renew the above permit/certification. It has been determined that there is sufficient information to make this permit/certification eligible for renewal. More information may be requested by the Division as progress is made in developing a new permit/certification for the above listed facility. This information must be made available to the Division when requested to complete the permit process.

The Division is currently in the process of developing a new permit or master general permit and associated certification for the above permitted facility. The development and review procedures required by law have not yet been completed. When the discharge permit issued to you for your facility expires on **June 30, 2011** your permit is administratively continued and remains in effect under Section 104(7) of the Administrative Procedures Act, C.R.S. 1973, 24-4-101, et seq (1982 repl. vol. 10) until the new permit/certification is issued and effective.

All effluent limitations, monitoring requirements, and other permit terms and conditions in your current permit will remain in effect until your new permit/certification is issued and effective.

Sincerely,

Debbie Jessop
Permits Section
WATER QUALITY CONTROL DIVISION

xc:
Permit File

# STATE OF COLORADO

Bill Ritter, Jr., Governor
Martha E. Rudolph, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

http://www.cdphe.state.co.us

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

December 29, 2010

Gary Behlen, Public Works Director
Town of Erie
PO Box 750, Holbrook St.
Erie, CO 80516

**RE: Permit Issuance, Colorado Wastewater Discharge Permit System**
Permit No.,CO0048445

Dear Mr. Behlen:

Enclosed please find a copy of the **permit** that was issued under the Colorado Water Quality Control Act. Your discharge permit requires that specific actions be performed at designated times. You are legally obligated to comply with all terms and conditions of your permit. It is especially important to note the "**EFFECTIVE DATE OF PERMIT**", not the "**DATE SIGNED**", located under the Director's signature of page 1, of your permit. It is illegal to discharge per the conditions of this permit until that date.

Please read the permit, fact sheet and water quality assessment. If you have any questions contact the permit writer John Nieland at 303-692-3553.

Sincerely,

Debbie Jessop
Water Quality Protection Section
WATER QUALITY CONTROL DIVISION

Enclosure

xc: Gregory Davis, Permit Team, Environmental Protection Agency (8P2W-P)
Regional Council of Government
Weld County, Local County Health Department
D.E., Technical Services Unit, WQCD
Permit File
Permit Fees

/lh issued

# Town of Erie Non-Potable Water System

## Agronomic Rate Calculations for Proposed Irrigation Locations

| User/Development | Area (acre) |
|---|---|
| 1. Reliance Park | 20 |
| 2. Coal Creek Park | 6.0 |
| 3. Erie Community Park | 57.0 |
| 4. Lehigh Park | 7.0 |
| 5. Erie Highlands | 9.0 |
| 6. Colliers Hill | 44.0 |
| 7. Morgan Hill | 32.0 |
| 8. Erie Parkway ROW | 11 |
| 9. Maxwell Avenue ROW | 3 |
| 10. Mason Street ROW | 11 |
| 11. Powers Street ROW | 3 |
| **TOTAL** | **203** |

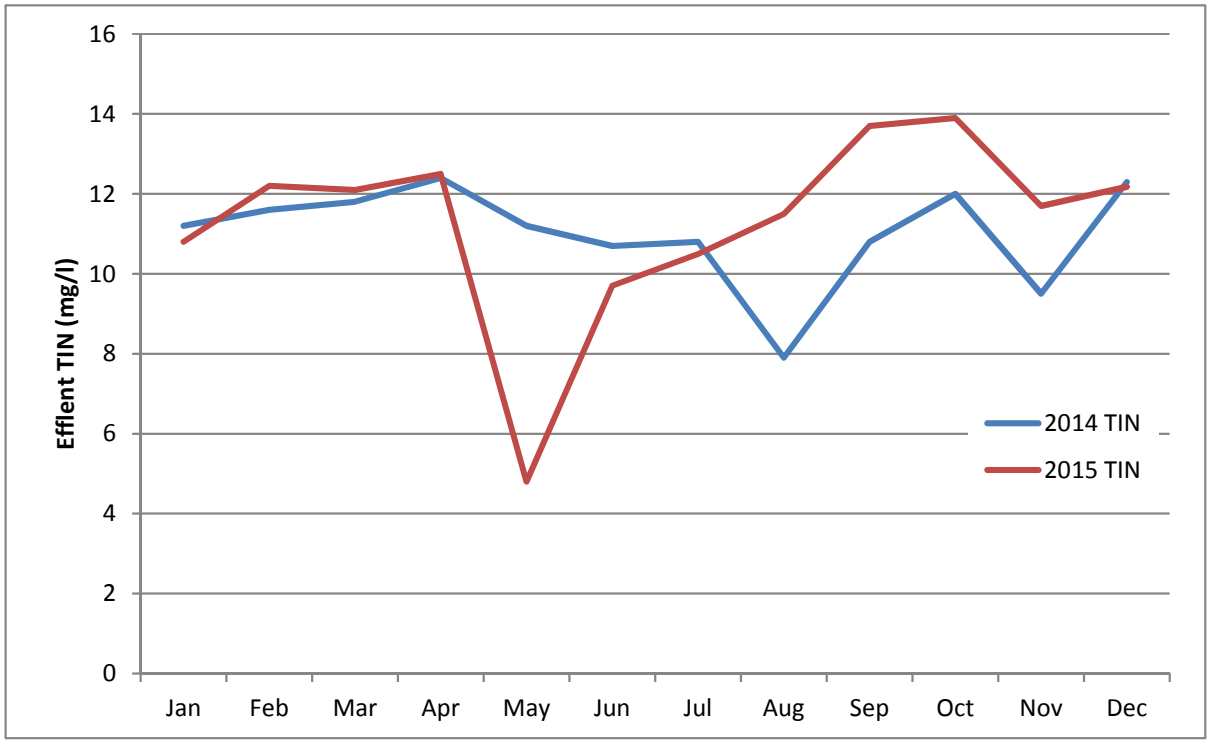
| Month | NWRF Effluent TIN Monthly Average (mg/l) | Monthly Non-Potable Water Demand | | |
|---|---|---|---|---|
| | | in/ac | AF | MG |
| | | | | |
| April | 12.5 | 2.5 | 42.3 | 13.8 |
| May | 8.0 | 4.1 | 69.4 | 22.6 |
| June | 10.2 | 6.4 | 108.3 | 35.3 |
| July | 10.7 | 6.6 | 111.7 | 36.4 |
| August | 9.7 | 6 | 101.5 | 33.1 |
| September | 12.3 | 5.8 | 98.1 | 32.0 |
| October | 13.0 | 3.1 | 52.4 | 17.1 |
| | | | | |
| **Annual Avg.** | **10.9** | **TOTAL** | **584** | **190** |

**Agronomic Rate =** **85.1 lbs/ac/yr**

**Acceptable Argronomic Rate= (≥90% turf grass)** **174 lbs/ac/yr**

# NORTH WATER RECLAMATION FACILITY
## 2014 AND 2015 EFFLUENT TIN DATA

| | Effluent TIN (mg/l) | | |
|---|---|---|---|
| **Month** | **2014** | **2015** | **Average** |
| Jan | 11.2 | 10.8 | 11.0 |
| Feb | 11.6 | 12.2 | 11.9 |
| Mar | 11.8 | 12.1 | 12.0 |
| Apr | 12.4 | 12.5 | 12.5 |
| May | 11.2 | 4.8 | 8.0 |
| Jun | 10.7 | 9.7 | 10.2 |
| Jul | 10.8 | 10.5 | 10.7 |
| Aug | 7.9 | 11.5 | 9.7 |
| Sep | 10.8 | 13.7 | 12.3 |
| Oct | 12 | 13.9 | 13.0 |
| Nov | 9.5 | 11.7 | 10.6 |
| Dec | 12.3 | 12.18 | 12.2 |
| Yearly Average | 11.02 | 11.30 | |



**AGREEMENT FOR THE DELIVERY AND USE OF RECLAIMED WATER**

THIS AGREEMENT is made and entered into on the_____day of_____, 20____, between the TOWN OF ERIE, COLORADO, a municipal corporation organized and existing under the laws of the State of Colorado, hereinafter referred to as "Erie" and _____ a corporation, hereinafter referred to as "User." Collectively, Erie and User are referred to as Parties.

WHEREAS, Erie owns and operates a non-potable water distribution system ("Non-Potable System") which is used to convey non-potable water supplies to customers in its current and future service area;

WHEREAS, non-potable water supplies delivered through the Non-Potable System include reclaimed water generated after the treatment of waste water at Erie's water reclamation facility known as the North Water Reclamation Facility and any additional facilities as may be developed in the future ("Reclaimed Water");

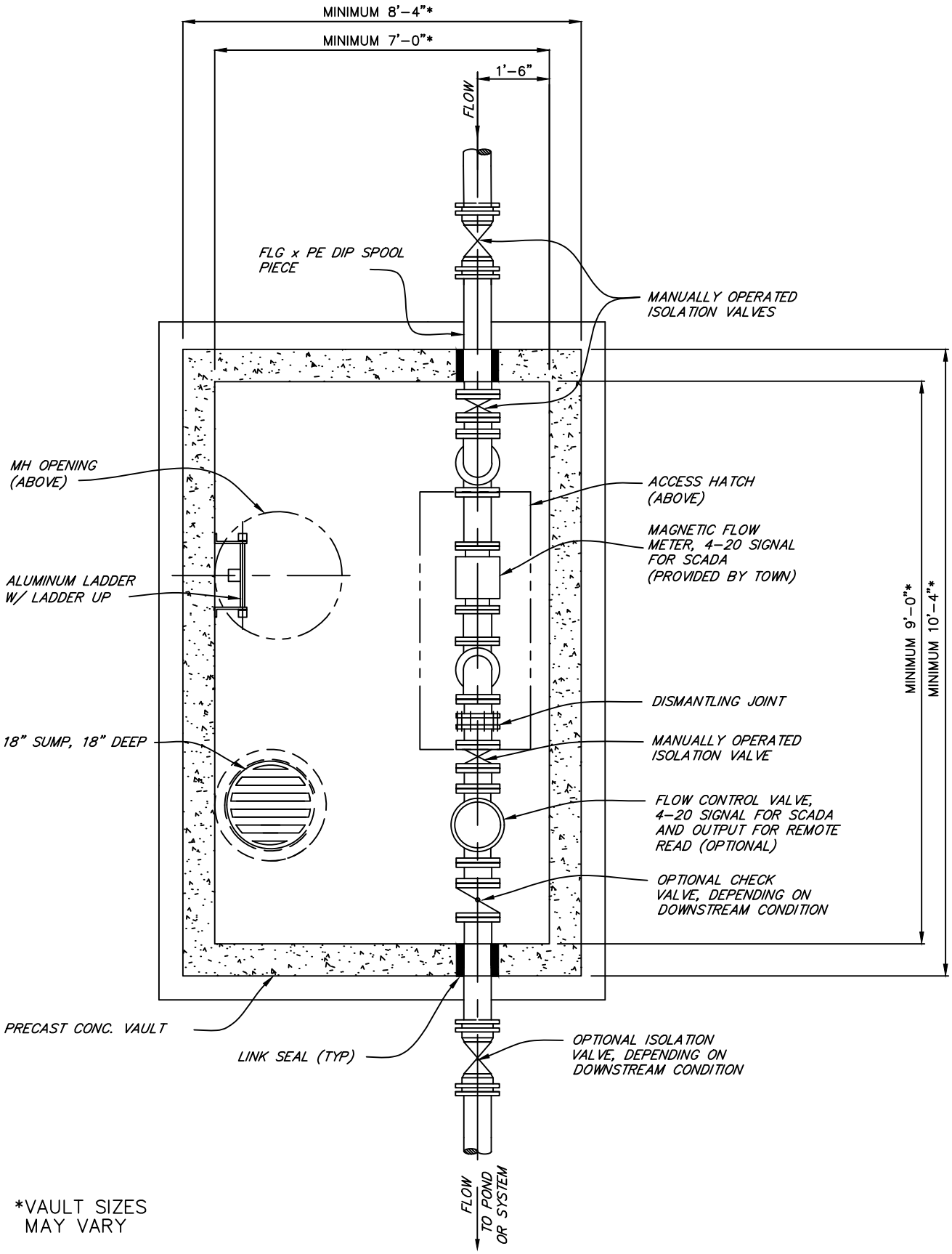
WHEREAS, Erie's provision of Reclaimed Water to its customers is subject to regulation by the Colorado Department of Public Health and Environment ("CDPHE"), through Erie's own rules and regulations, and by any other governmental or regulatory agencies having jurisdiction over the use of Reclaimed Water now and in the future (collectively, "Regulatory Entities");

WHEREAS, Erie must comply with all statutes, rules, ordinances, regulations, policies, guidelines, orders, agreements, and requirements of the Regulatory Entities, which include but are not limited to the Town of Erie's Ordinances and Erie's Rules and Regulations for Reclaimed Water Systems, adopted through Ordinance No. 11-2016 (collectively, "Erie's Rules"); the Water Quality Control Division's Notice of Authorization ("WQCD NOA"); and the Water Quality Control Commission's Regulation 84 ("WQCC Reg. 84") (collectively, "Regulations");

WHEREAS, User is the owner of certain property of approximately____acres of land which is located as described in **Exhibit A**, attached, and made a part hereof by reference ("Property");

WHEREAS, User desires to recieve Reclaimed Water delivered through the Non-Potable System for irrigaton purposes on the Property; and

WHEREAS, the Parties desire to set forth the terms and conditions on which Erie will provide to User Reclaimed Water for irrigation use on the Property.

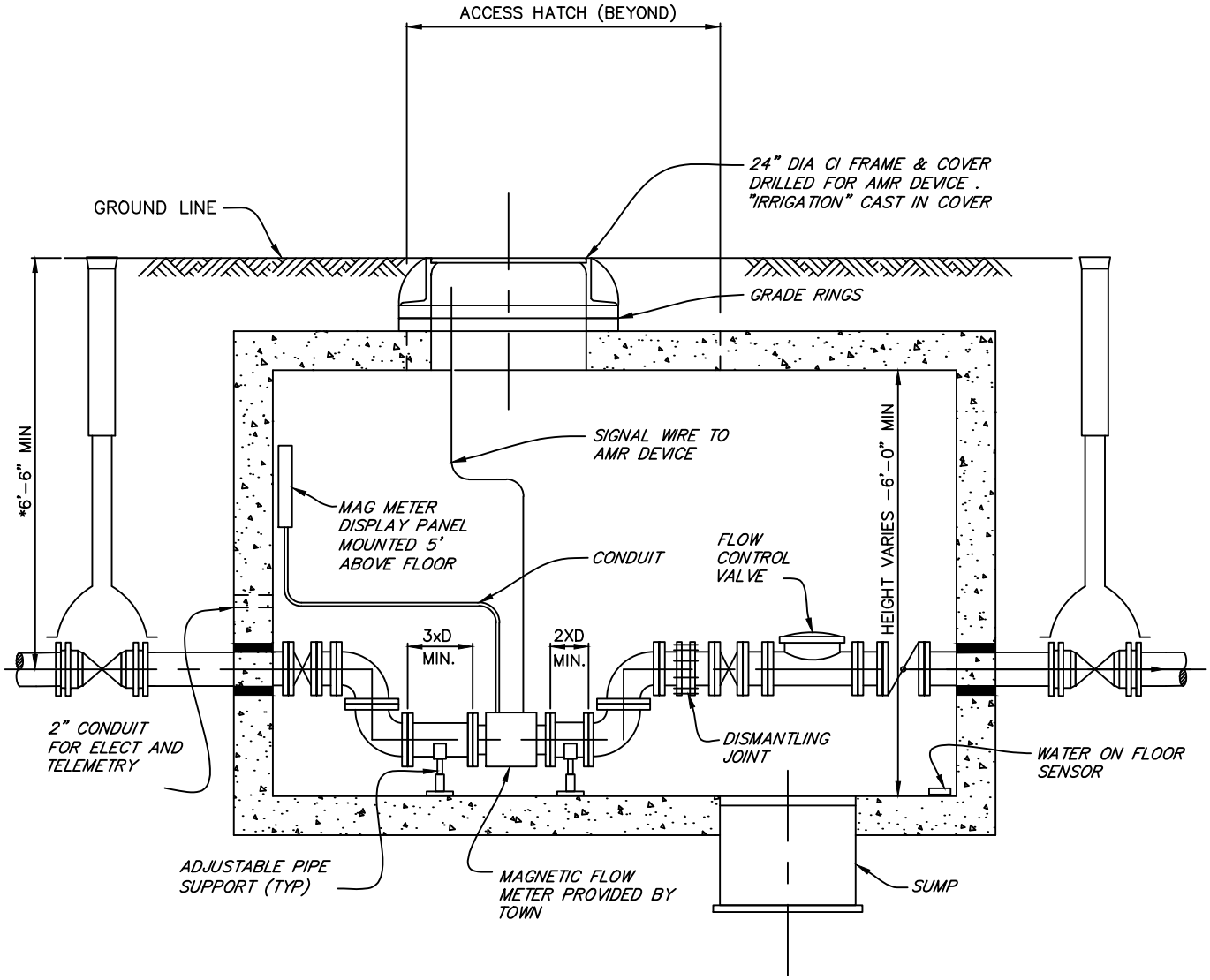



The Town of ERIE COLORADO

DRAWING TITLE: STANDARD IRRIGATION METER VAULT (PLAN VIEW) 3" – 6" METER

DRAWING NUMBER: W39A

DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 10/2018




STANDARD IRRIGATION
METER VAULT SECTION
*NOT DRAWN TO SCALE

The Town of ERIE COLORADO

DRAWING TITLE: STANDARD IRRIGATION METER VAULT (SECTION VIEW)
3" – 6" METER

DRAWING NUMBER: W39B

DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 10/2018

NOW THEREFORE, in consideration of the mutual commitments of the Parties as set forth in this agreement, the sufficiency of which is hereby acknowledged, the Parties agree as follows:

**AGREEMENT**

1. Delivery and acceptance of Reclaimed Water: Erie shall deliver and User shall accept and use Reclaimed Water for irrigation of the Property, subject to the terms and conditions set forth below.

2. Use of Reclaimed Water: User's use of Reclaimed Water will be limited to use for irrigation within the Property. User's use of Reclaimed Water will at all times be in compliance with Erie's Rules, the WQCD NOA, the WQCC Reg. 84, and any other Regulations, including any future amendments, and any new Regulations promulgated by any Regulatory Entity in the future.

a. Approval from Regulatory Entities prior to initial irrigation use: Prior to commencement of irrigation use at the Property, the User shall to submit to Erie a completed CDPHE's form entitled: "User Plan to Comply for the Use of Reclaimed Water for Landscape Irrigation, Non-Food Crop Irrigation and Silviculture,"and any additional forms required by the CDPHE to initiate irrigation use of Reclaimed Water on the Property ("CDPHE Forms"). Erie shall submit to CDPHE an amended Letter of Intent requesting a revised WQCD NOA. Irrigation of the Property cannot commence until a WQCD NOA issues.

b. Prohibited uses: In no event will User cause or allow the direct discharge of Reclaimed Water into surface waters of the State of Colorado, or permit or fail to take measures to prevent use of Reclaimed Water for human consumption or bathing. User shall not allow waste of Reclaimed Water on the Property.

c. Authorization for single use: User is authorized to make a single use of all Reclaimed Water delivered under this Agreement.

3. Infrastructure requirements:

a. User's infrastructure: User does or will own, construct, install, operate, repair, and maintain all infrastructure in the User's Reclaimed Water use system from the point at which User taps or connects to Erie's Non-Potable Water System, including from a non-potable water main or a stub-in/stub-out, and onto and within the Property ("User's System"). Construction, installation, operation, repair, and maintenance activities on the User's System will occur to the extent User deems necessary to ensure that Reclaimed Water

will be received and used in accordance with the provisions of this Agreement and all Regulations. User acknowledges that it has the obligation to make any and all future upgrades, improvements, or modification to User's System if required under then-current Regulations.

b. Minimum infrastructure requirements for irrigation use: User shall be responsible for installing a magnetic meter with control signal to Erie's SCADA system, and designing, constructing, and installing the necessary pipe, valves, strainer, fittings, drains, cover, box and appurtenances necessary to connect the User's System to the Non-Potable Water System. All construction will be performed a good and workmanlike manner. Design, construction and installation of User's System must be accordance with the construction detail shown in **Exhibit** ____ attached and made a part hereof by reference, and Erie's construction specifications.

c. Operational requirements: User shall follow all operating requirements outlined in **Exhibit** _____ and any requirements imposed by Regulations.

4. Delivery location and amount: Reclaimed Water is delivered to User at the point of connection between the Non-Potable Water System and User's System. Except as prevented as a result of adverse conditions described below, Erie will deliver Reclaimed Water at a minimum pressure of 20 psi.

a. Estimated volume of water: Total irrigation demands at buildout of the Property are anticipated to average _____ acre-feet per year.

b. No waste: Erie may refuse, in whole or in part, to deliver any volume of Reclaimed Water if, in Erie's sole discretion, the water to be delivered exceeds the amount of water that can be beneficially used by User within User's System.

c. Additional volumes of water: At times, User may have a demand for Reclaimed Water that exceeds the volume estimated in this paragraph. With prior approval and subject to availability as determined by Erie, User may take delivery of additional volumes of water.

5. Delivery schedule:

a. Initial deliveries: User is not eligible to begin to recieve delivery of Reclaimed Water under this Agreement unless and until Erie inspects and approves User's System as sufficient to accept such deliveries.

b. Scheduling deliveries: Erie and User will periodically discuss User's water supply needs and the timing on which User needs to take delivery of Reclaimed

Water to meet those needs. At the time of this Agreement, Erie has existing obligations and will assume additional obligations to supply Reclaimed Water to properties other than the Property. Reasonable efforts will be made to deliver water in a manner that accommodates the systems and practices of all users; however, Erie reserves the right to mandate an delivery schedule, if necessary, to accommodate the needs of all users, including but not limited to the right to impose use restrictions.

6. Delivery or non-delivery under adverse condititions:

a. Inadequate water supply, impossibility, *force majeure*: The Parties acknowledge that adverse weather conditions (*e.g.*, drought), water system outages, repairs, or maintenance, and other unexpected circumstances not caused by Erie or by User may affect the legal and physical availability of Erie's water supplies, which in turn will affect the availability of Reclaimed Water. Under such circumstances, Erie shall have the right to refuse to deliver water, modify the terms of delivery, and to take whatever actions may be necessary to protect the Non-Potable Water Supply System. User, under such circumstances, shall have the right to refuse, in whole or in part, delivery of Reclaimed Water if necessary to protect User's System.

b. Permitting, non-compliance: If the Regulatory Entities fail to issue permits, grant approvals, or otherwise authorize the operation of Erie's Non-Potable Water System or provision of Reclaimed Water, Erie will be excused from the performance of this Agreement until such time as Erie is again authorized to make deliveries of Reclaimed Water. If such permits, approvals, and authorizations are contingent on any change to Erie's treatment, transmission and distribution systems, in the operation or maintenance of User's System, or in the application and use of Reclaimed Water by the User, Erie is excused from the performance of this Agreement until such time as Erie or User is again in compliance with all such permits, approvals, or Regulations.

7. Payments: Tap fees and the rate structure for the sale of Reclaimed Water to customers are set pursuant to Erie's ordinances and are subject to change in accordance with the terms of those ordinances. All fees and rates will be assessed in accordance with the then-current ordinances.

8. No transfer of ownership interest: Erie, at all times, maintains all right, title, and interest in and to the Reclaimed Water and its appurtenances. Erie retains all rights of reuse, sucessive use, and reuse to exitinction to any and all Reclaimed Water not beneficially used or consumed by User's use of Reclaimed Water, including but not limited to lawn irrigation return flows resulting from the application of Reclaimed Water to irrigation on the Property and municipal system losses occurring within User's System. Delivery of Reclaimed Water to User for use in User's System does not deprive and must not cause Erie

to be deprived of legal dominion and control of its water, water rights, and other water supplies. Nothing herein authorizes User to change or make any other legal claim on Erie's water rights and water supplies through an application to the water court or a request for administrative approval from the Division of Water Resources.

9. Violations and enforcement: Failure to comply with all Regulations, including but not limited to the WQCD NOA and the WQCC Reg. 84, constitutes a violation of this Agreement and of Erie's Rules. In the event of a violation of the terms of this Agreement, Erie may take any and all enforcement actions authorized under Erie's Rules, as they currently exist or as may be amended in the future, and may enforce this Agreement through any lawful action in law or in equity, which may include but is not limited to injunctions, civil actions, or damages.

10. Notices: All notices required or authorized under this Agreement must be given in writing and served by mail or by hand delivery to the parties at the addresses listed below:

USER:

_____

_____

_____

TOWN:
Town of Erie, Colorado

645 Holbrook Street
Erie, Colorado 80516

11. Transfer and assignment:

a. By Erie: Erie may assign its rights and obligations, in whole or in part, under this Agreement to an entity which will assume such rights and obligations; provided, however, that Erie gives to User at least thirty (30) days prior written notice of such assignment.

b. By User: The User's right to sell, transfer, or encumber the Property is not be restricted by this Agreement; provided, however, that User gives to Erie written notice of any proposed sale or transfer at least thirty (30) days prior to the sale or transfer. At the time of sale or transfer, transferee must execute and deliver to Erie an acknowledgment and assumption of the rights and obligations under this Agreement.

12. Covenant: The terms and conditions of this Agreement constitute a covenant that runs with the land.

13. Indemnity: User will indemnify Erie from any and all claims, demands, actions, suits, proceedings, costs, expenses, damages and liabilities, including attorneys' fees arising out of User's failure to comply with the terms of this Agreement and all Regulations.

14. Third parties: This Agreement is solely for the benefit of the Parties and creates no rights, obligations, entitlements, or benefits for any third party.

15. Severability: If any part of this Agreement is found invalid or unenforceable by any court, such invalidity or unenforceability will not affect the other parts of this Agreement if the rights and obligations of the parties contained therein are not materially prejudiced and if the intentions of the parties can continue to be effectuated.

16. No waiver: The failure of either party to insist upon the other party's compliance with its obligations under this Agreement in any one or more instances will not and does not release the non-complying party from its duties to comply with its obligations in all other instances.

17. Applicable law: This Agreement and the provisions contained herein will be construed, controlled, and interpreted according to the laws of the State of Colorado.

18. Authority to enter Agreement: Erie has approved this Agreement and has authorized its execution by the undersigned representatives. User warrants that the undersigned representative has authority to bind the User.

19. Recording: This Agreement shall be recorded in the Public Records of Boulder or Weld County, Colorado. The User shall bear the cost of such recording.

**THIS WRITTEN AGREEMENT** constitutes the entire agreement between the parties and has been entered into voluntarily and with independent advice and legal counsel and has been executed by the authorized representative of each party on the date written above.

_____

[USER]

_____
Town of Erie, Town Administrator

ATTEST:

_____
Town of Erie, Town Clerk

STATE OF COLORADO )
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ___ day of _____ , 2020, by _____.

Witness my hand and official seal.

My Commission Expires: _____.

(SEAL)

_____
Notary Public

Print Name: _____

My Commission Expires: _____

# EXHIBIT A

## Description of the Property

**EXHIBIT B**

**Operating Practice Restrictions**

The intent of this Exhibit is to identify and define practices for the use of reclaimed water for irrigation which protect human health and the environment.

1. The Town shall furnish the User with appropriate warning signs to be posted around the site to describe the nature of the water and its non-potability. The signs shall be posted in accordance with CDPHE and Town regulations.

2. The User will also take all reasonable precautions, including signs, labeling, and color-coding to clearly identify reclaimed water systems to prevent inadvertent human consumption. The signs, labeling, and color-coding shall be in accordance with CDPHE regulations.

3. No cross connections shall be made between the reclaimed irrigation water system and a potable water system.

4. The use of reclaimed water shall be consistent with all CDPHE and other applicable regulatory agency rules.

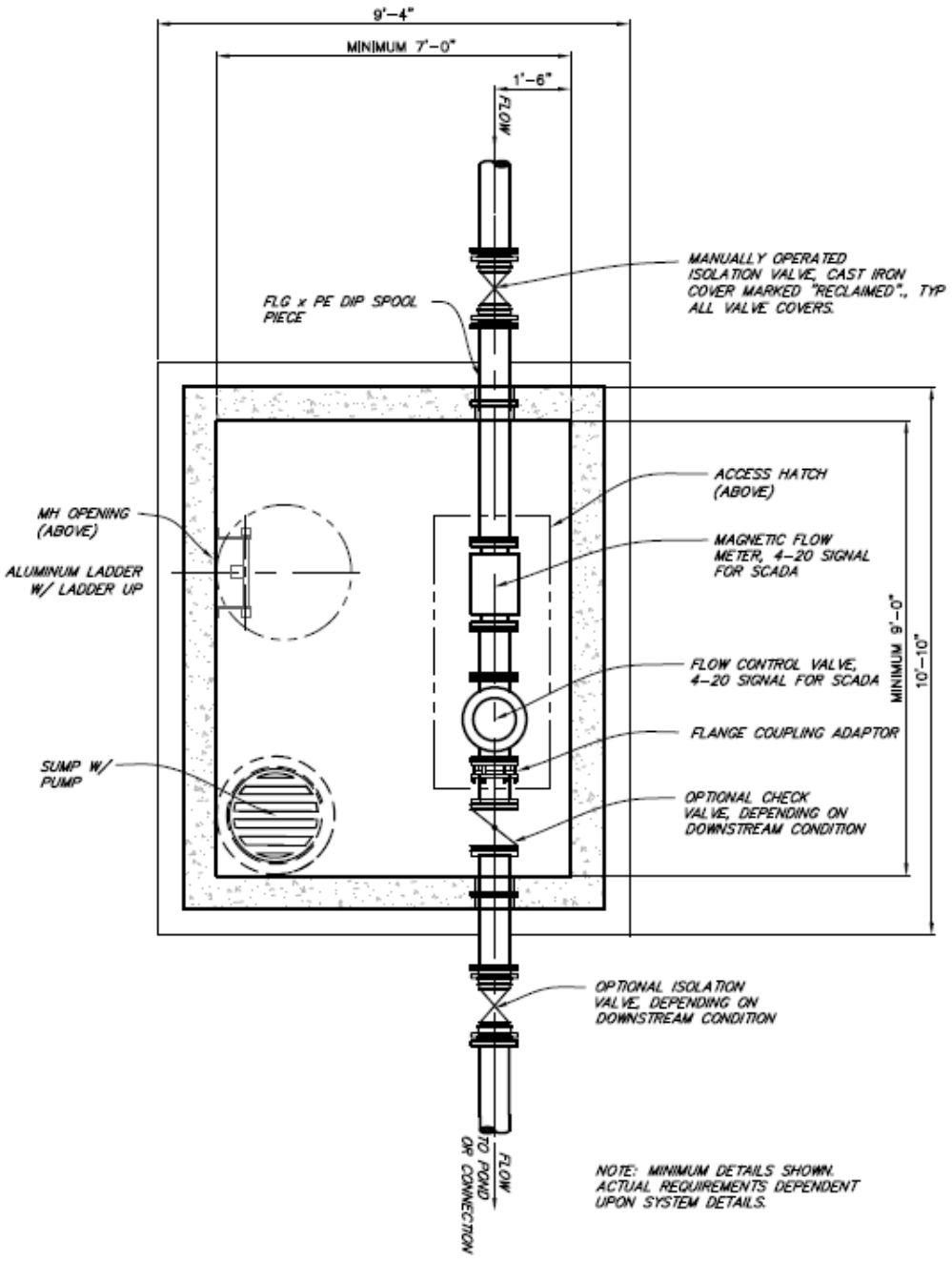
5. The User shall operate the irrigation system such that reclaimed water does not discharge off-site, either directly or through a stormwater drainage system.

6. The User shall use the reclaimed water and operate its irrigation system in accordance with all rules and regulations, as they exist now and as they may be amended or implemented in the future, of the Town, CDPHE, and any other regulatory entity.

7. The User shall have and maintain a reduced pressure back flow preventer at the point of service of the potable water system.

**EXHIBIT C**

**Typical Reclaimed Water Installation Detail**




TYPICAL RECLAIMED WATER INSTALLATION DETAIL

**EXHIBIT D**
**Consent and Subordination**

The undersigned hereby certifies that it is the holder of a mortgage, lien or other encumbrance upon certain land in {Boulder / Weld} County, Colorado, more particularly described as:

_____
_____
_____
_____
_____
_____
_____

In consideration of the sum of Ten and No/100 Dollars ($10.00) and other valuable consideration and by execution of this **Consent and Subordination** the undersigned consents to the **Agreement for the Delivery and Use of Reclaimed Water** ("Agreement") entered into by the Town of Erie as and _____, as "User," and agrees that its mortgage, lien, or other encumbrance, which is recorded in _____, of the Public Records of Boulder or Weld County, Colorado, shall be subordinate and subject to the terms, covenants, conditions and agreements set forth in said Agreement.

IN WITNESS WHEREOF, the undersigned has caused these presents to be Executed by its undersigned officer this _____ day of_____, 20_____.

Witnesses:

1) _____

Print Name: _____

2)_____

Print Name: _____

MORTGAGEE:

By: _____

Print Name: _____

Title: _____

# Appendix D – List of Salt Tolerant Plants

Deciduous trees with moderate to high salt tolerance:

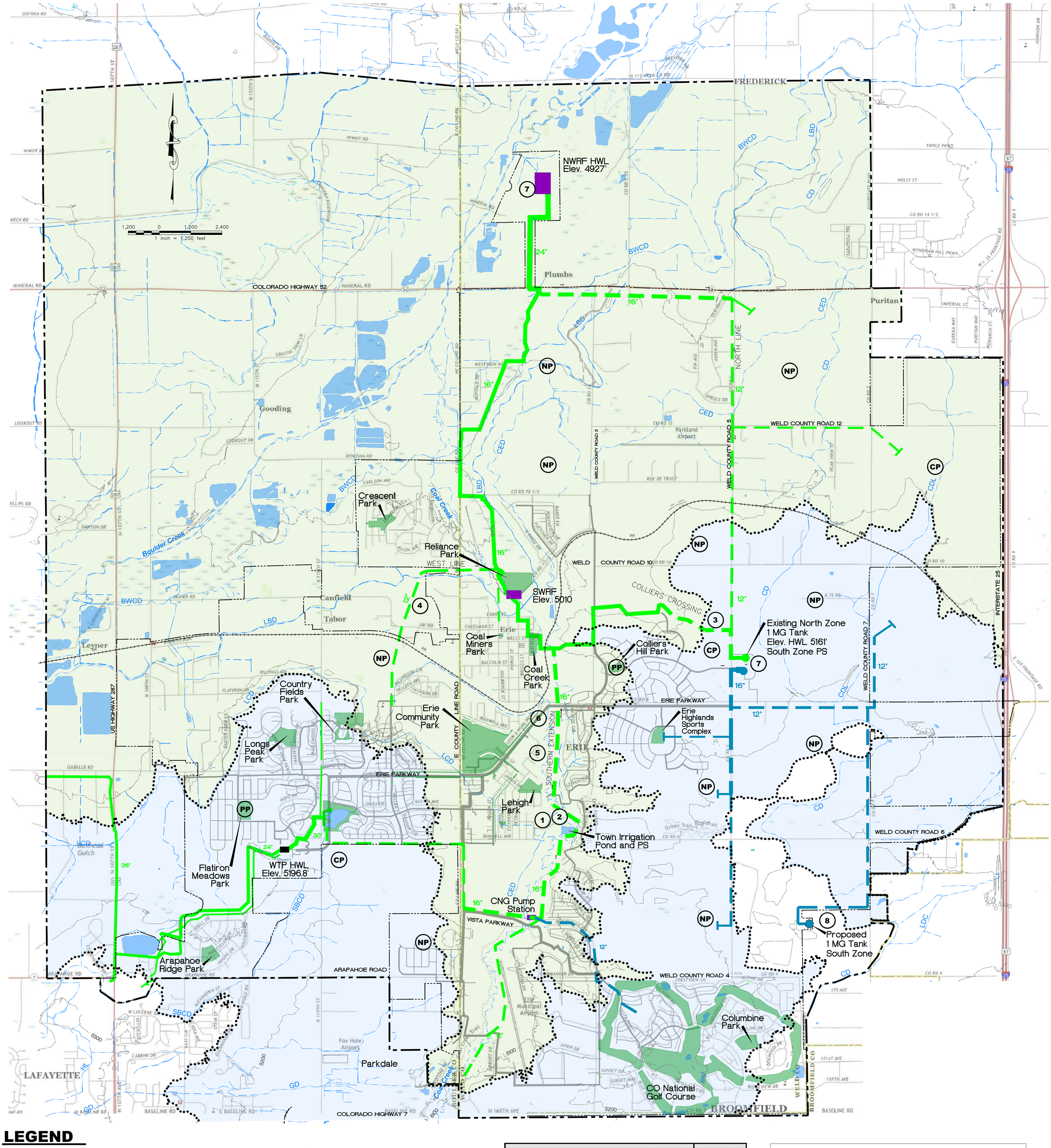
- *Aesculus hippocastanum* - Common horsechesnut
- *Crataegus crusgalli* – Thornless cockspur hawthorn
- *Gleditsia triacanthos* v. inermis – Honeylocust
- *Quercus robur* – English oak
- *Quercus rubra* – Red oak
- *Ptelea trifoliate* – Wafer ash
- *Acer negundo* – Boxelder
- *Acer ginnala* – Amur maple
- *Catalpa speciose* – Northern catalpa
- *Celtis occidentalis* – Hackberry

Deciduous shrubs with moderate to high salt tolerance

- *Caragana arborescens* – Siberian pea shrub
- *Cytisus scoparius* – Scotch broom
- *Hippophae rhamnoides* – Sea buckthorn
- *Rhamnus cathartica* – Common buckthorn
- *Spirarea x vanhoutei* – Van Houtte spirea
- *Symphoricarpos albus* – Common snowberry
- *Syringa vulgaris* – Common lilac
- *Artemisia frigida* – Fringed sage
- *Artemisia tridentate* – Sage brush
- *Chrysothamnus nauseosus* – Rubber rabbitbrush
- *Forsythia x intermedia* – Border forsythia
- *Philadelphus coronarius* – Mockorange
- *Rhus trilobata* – Three leaf sumac

Flowering perennials with moderate to high salt tolerance:

- Aquilegia micrantha – Mancos columbine
- Xylorhiza glabriuscula – Woody aster
- Psilostrophe bakeri – Baker's paperflower
- Stanleya pinnata – Prince's plume
- Fallugia paradoxia – Apache plume
- Oenothera caespitosa – Evening primrose




## LEGEND

- Park
- Pond
- WRF
- Existing Pipeline
- Proposed Pipeline
- North Zone
- South Zone
- Pressure Zone Boundary
- Planning Area Boundary
- (NP) Future Neighborhood Park
- (CP) Future Community Park
- (PP) Planned Park
- (1) Recommended Improvement

| Recommended Immediate Improvements | Size/Quantity | Estimated Cost |
|---|---|---|
| 1. Irrigation Pond Study | AF | $50,000 |
| 2. Irrigation Pond Improvements | AF | $500,000 |
| 3. Colliers Crossing Completion | 3,400 lf | $510,000 |
| 4. West Line Construction | 9,500 lf | $1,135,000 |
| 5. Reuse Line Extension | 5,100 lf | $765,000 |
| 6. Coal Creek Crossing | 150 lf | $105,000 |
| 7. Pump Stations Equipment | 950 gpm / 1900 gpm | $450,000 |
| **Construction Costs.** | | **$3,515,000** |
| Add 25% for contingencies, engineering, inspection, legal and administrative costs. | | $879,000 |
| **Subtotal - Project Budget** | | **$4,394,000** |

| Pressure Zone Boundaries | | | |
|---|---|---|---|
| Zone | Hydraulic Grade Line (ft above MSL) | Service Elevations (ft above MSL) | Service Pressures (psi) |
| 1 | **5,160** | **4,910-5,110** | **104-20** |
| 2 | **5,300** | **5,110-5,250** | **87-20** |

TOWN OF ERIE 1874

# NON-POTABLE WATER MASTER PLAN

MERRICK®

AUGUST 2020