Appendix J Water Management Plan

WATER MANAGEMENT PLAN

for

Prologis IPC II
San Joaquin County, CA

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February 13, 2025
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February 13, 2025

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LIST OF ABBREVIATIONS

ADD – Average Day Demand

AFY - Acre Feet Per Year

AXP – Post-Anoxic Zone

BBID - Byron Bethany Irrigation District

BOD – Biological Oxygen Demand

CEQA - California Environmental Quality Act

CFC – California Fire Code

CFS – Cubic Feet Per Second

City – City of Tracy

County – San Joaquin County

DDW – California State Water Resources Control Board Department of Drinking Water

EHD – San Joaquin County Environmental Health Department

EIR – Environmental Impact Report

GPD – Gallons per Day

GPM – Gallons per Minute

IPC I – International Park of Commerce Phase I

IPC II – International Park of Commerce Phase II

IX – Ion Exchange

LAFCo – San Joaquin County Local Area Formation Commission

NFPA – National Fire Protection Association

MBR – Membrane Bioreactor Zone

MDD – Maximum Day Demand

MG – Million Gallons

MGD – Million Gallons per Day

PA – Pre-Aeration Zone

PAX – Pre-Anoxic Zone

PW – San Joaquin County Public Works Department

RO – Reverse Osmosis

SF – Square Feet

TDS – Total Dissolved Solids

WMP – Water Management Plan

WSID – West Side Irrigation District (Now part of BBID)

1 EXECUTIVE SUMMARY

The purpose of this Water Management Plan (WMP) is to serve as the overall master plan for the water, wastewater, recycled water, and fire water systems for Prologis' International Park of Commerce II (further referred to as IPC II, or project). The primary goal of the WMP is to define each system for the California Environmental Quality Act (CEQA) consultant to append to their CEQA report. The WMP will document the principles, planning assumptions, criteria, and considerations behind major preliminary design considerations. Additionally, the WMP will summarize the calculations and initial assumptions being made to support the future development of the various basis of design reports that will be prepared for each facility.

The project site is not within the service area of the City of Tracy (City), nor does the City have adequate water supplies to serve the project's potable water demands. Therefore, a public water system is planned for the development. The potable water demands, and a portion of the non-potable water demands (i.e., fire suppression) will be met using groundwater drawn from the Tracy Groundwater Subbasin. The irrigation system will be supplied by treated wastewater (referred to as recycled water) generated onsite and supplemented during recycled water shortfalls by one of the following secondary sources:

- BBID – The site currently receives agricultural water supplies from BBID (Byron Bethany Irrigation District). The existing usage is approximately 1,500 acft a year and much larger than the proposed use of approximately 80 acft per year. The project is estimated to reduce the use of BBID water by approximately 1,400 AFY. The existing irrigation water is part of the historic West Side Irrigation District (WSID) which is now operated by BBID. The source of water supplies for WSID is a water intake from the Sacramento San Joaquin Delta off of Old River, just south of Cliffton Court, the forebay for the state and federal water projects. The project anticipates continuing to receive water from BBID for irrigation to make use of shortfalls in recycled water supplies during peak irrigation months. The BBID water will also help reduce Total Dissolved Solids (TDS) levels in the recycled water supplies.
- Stormwater – The stormwater generated by the site will pass through a series of water quality basins and then flow into detention basins. The storm system is defined in more detail in the storm water plan for the project written by Kier & Wright, updated December 2024. The storm basin adjacent to the water and wastewater facility sites for IPC II will be the source water for supplemental storm water deliveries to the recycled water storage tank. These deliveries are anticipated to only occur in the winter and will be used to help reduce Total Dissolved Solids (TDS) concentrations in the recycled water prior to use.
- Fire Water – A separate well will be drilled to support the fire water system for the project. The fire well is anticipated to be located within the water facilities site. The well will discharge into a storage tank before being pumped into the fire water distribution system. This water could be used to supplement the recycled water system if there are short falls in the ability for either BBID or the storm water system to supplement the recycled water system. The fire water is anticipated to have higher concentrations of TDS than the other sources, thus it is only being considered if the other sources are unavailable.
- Raw Well Water – The raw water wells will produce water that will go through a potable water treatment system prior to distribution. The raw water wells could also be used to serve the recycled water tank during peak irrigation time periods during recycled water shortfalls. The use of this water does not require water treatment. The well can be pumped directly into the

recycled water storage tank via a pipe that will run up the side of the tank and drop the water into the tank with an air gap. The well water that enters the recycled water tank will do so via a bypass line (bypassing the potable water treatment system) will be used to connect the potable wells directly to the recycled water system (via the drop inlet into the recycled water tank). This assumption will be verified during the detailed design phase when water quality testing can take place. The test well water quality indicates water from 400-450 below surface can be targeted to discharge satisfactory water quality with the lowest TDS concentrations.

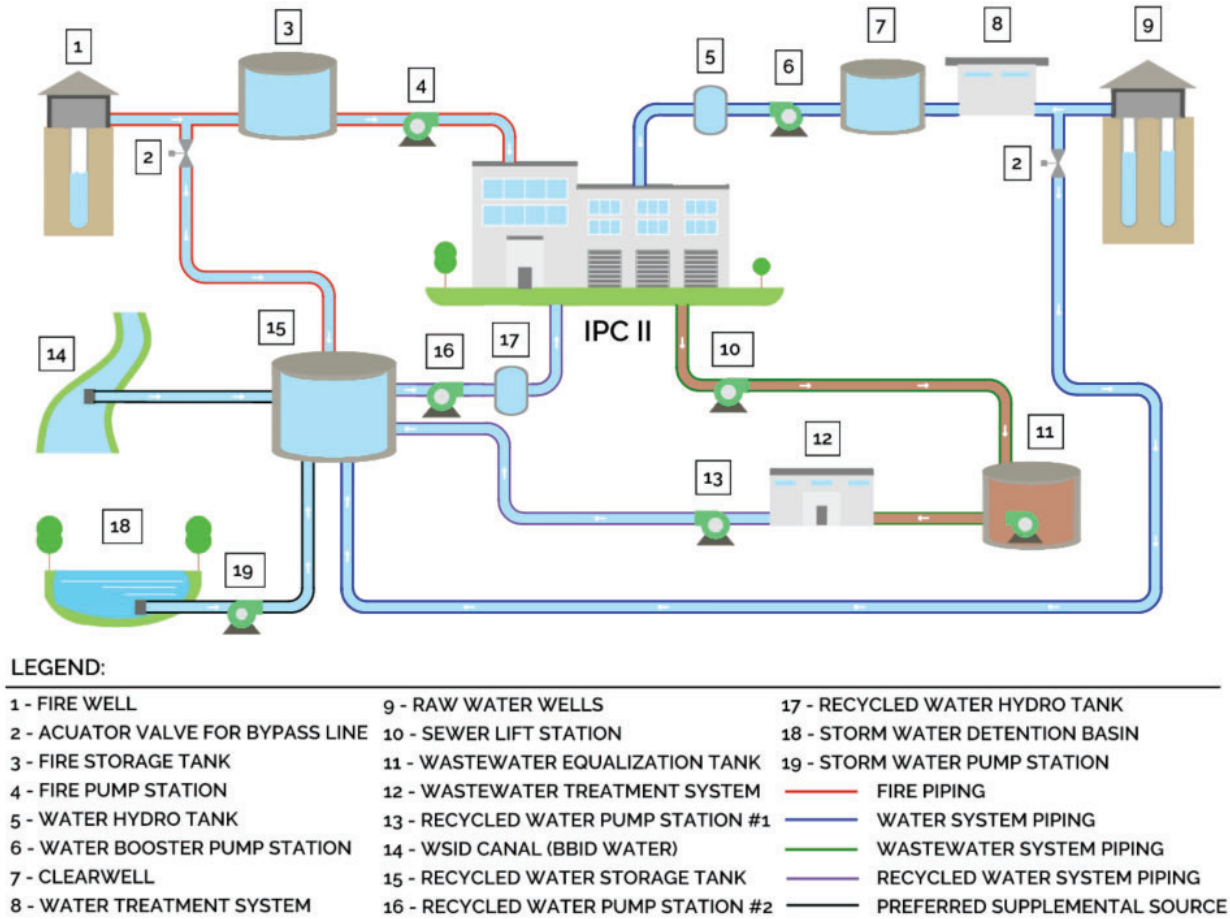
The raw water system will consist of two wells in a lead-backup operation. Raw water will pump directly through a potable water treatment system and subsequently into a post treatment clearwell and booster pump station to service the potable water distribution system. A hydropneumatic tank will also be included to maintain system pressures within the potable water system.

The fire suppression system will include a dedicated non-potable fire well and storage tank (treatment is not assumed to be necessary). The fire system will be completely separate from the potable water system.

Wastewater will be collected onsite and conveyed to an equalization basin prior to entering a packaged wastewater treatment plant. An equalization tank will be positioned before the plant headworks to facilitate a steady influent flowrate and will be sized to store one and a half days of wastewater generation.

The treated wastewater (recycled water) will be considered disinfected, tertiary treated recycled water (pursuant to the State Water Resources Control Board's, Regulations Related to Recycled Water, Title 22) and will serve the site's landscape irrigation demands. The recycled water system will consist of a storage tank, a booster pump station and distribution system. Refer to Figure 1 for the overall process flow diagram of all systems. Attachment 1 provides the general layout of the planned water systems.

FIGURE 1 – WATER MANAGEMENT PLAN OVERVIEW



2 INTRODUCTION

2.1 PROJECT DESCRIPTION

Prologis is proposing the IPC II development in the unincorporated area of San Joaquin County, California. The project is adjacent to the City of Tracy (City); however, it is not within City limits nor their service area sphere of influence. The site is bisected by W Schulte Road and bordered by the extension of Promontory Parkway to the north and Pavilion Parkway on the west, the LBA development and Owens Glass to the south (refer to Figure 2 for the project location). The project site is 282-acres and will consist of four parcels (APNs 209-240-037, 209-240-036, 209-250-010, and 209-250-037). The project will include the construction of warehouse and distribution buildings, totaling close to 5.4 million square feet. Refer to Table 1 for the general project information.

FIGURE 2 – PROJECT LOCATION

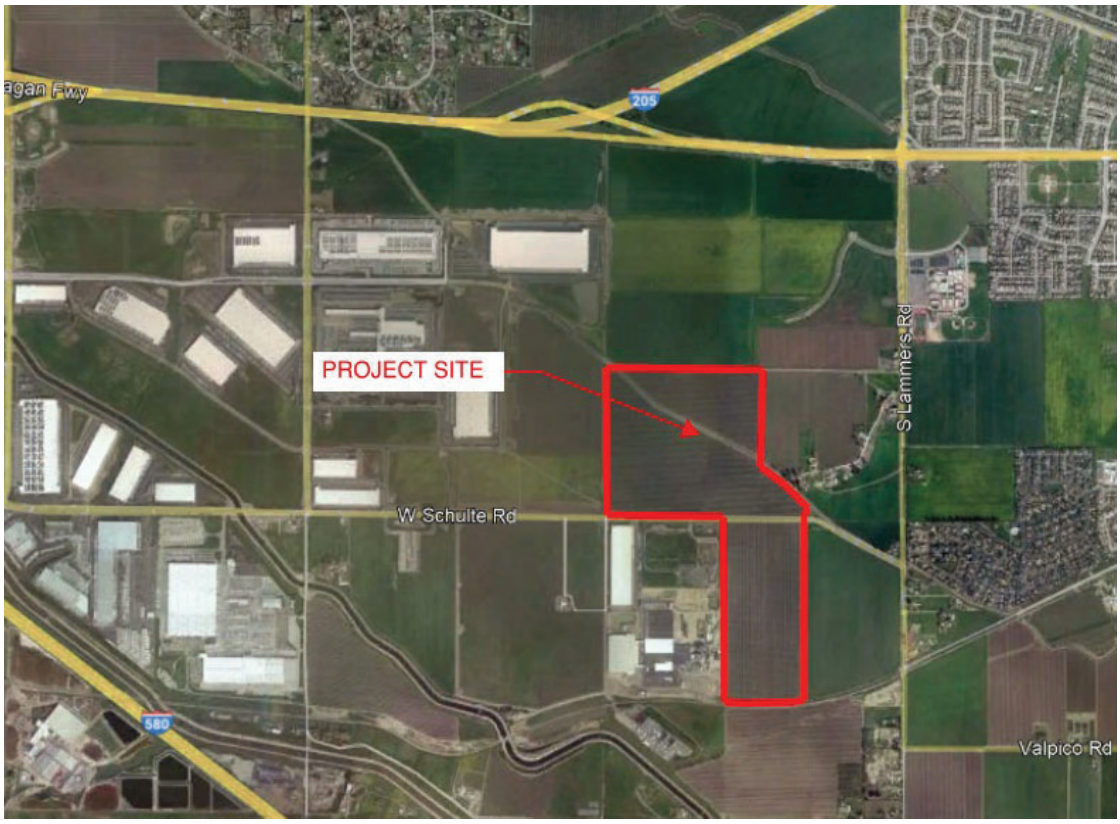


Table 1 – General Project Information		
DESCRIPTION	UNIT	VALUE
Land Area	AC	282
Development Area	AC	246
Irrigation Area (15% of Development Area)	AC	38.4
Building Square Footage (0.50 FAR)	SF	5,357,880
Warehouse Square Footage (95% of Building Sqft)	SF	5,089,986
Office Square Footage (5% of Building Sqft)	SF	267,894
Warehouse Employees Factor	Employee/SF	1,500
Office Employees Factor	Employee/SF	200
Employee Shifts	-	1
Total Employees	-	4,733

3 FIRE WATER SYSTEM

The fire suppression water system will deliver the required fire flow to the project in accordance with local, state, and federal fire protection regulations under the jurisdiction of the County Fire Warden and the Tracy Rural Fire District. The fire water system will consist of the fire well, the fire storage tank, booster pump station, and the fire distribution system. Additionally, the fire system may include a bypass line to allow the fire well to provide supplemental water to the recycled water tank.

3.1 FIRE FLOW REQUIREMENT

Section B105 of the 2019 California Fire Code (CFC) can be used to estimate the required fire flow rate and duration. The CFC fire flow guidelines consider the building construction type, building square footage, and whether the buildings will be sprinklered. The building with the largest square footage (assuming the same construction type), will govern the fire flow requirement. A fire flow of 8,000 gpm and flow duration of 4 hours was determined using Table B105.1(2), assuming a Type III-B ordinary construction type and referencing the square footage of the largest building (1.2 million sq.ft.). Since the buildings will be sprinklered, a 75 percent reduction is typically allowed according to Table B105.1(2), which would result in an effective fire flow requirement of 2,000 gpm for 4 hours. However, the Tracy Rural Fire District's ruling on a similar warehousing project (IPC I), allowed only a 50 percent reduction (rather than 75 percent). As a conservative planning measure, it is assumed a 50 percent reduction will be allowed for the project, resulting in a required fire flow rate of 4,000 gpm for 4 hours.

3.2 FIRE WELL

The fire well will draw water from the Tracy subbasin and will be designed to yield water from zones (or depths) so as not to interfere with the raw water wells serving the potable water system. This will occur through selective well screen placements based on test well logs and water quality sampling. The following fire well design assumptions were based on test hole data and may be altered when the well is drilled:

- Total Depth: 710 feet
- Sanitary Seal Depth: 250 feet
- Borehole diameter: 28 inches.
- Casing diameter: 18 inches
- Gravel pack annular spacing: 5 inches

The fire well will be designed to refill the fire suppression storage tank in 8 hours, in accordance with the National Fire Protection Association (NFPA), California Fire Code (CFC), and the Tracy Rural Fire District. Therefore, the fire well will be sized to yield approximately 2,000 gpm in order to refill the 1 MG fire storage tank within 8 hours.

3.2.1 RECYCLED WATER TANK CONNECTION

The fire well discharge line may include a branch line to divert fire water into the recycled water tank. Electrically actuated valving will be used to automatically divert fire water if the water level in the recycled water tank drops below a certain set point. The fire water is anticipated to have higher concentrations of TDS than the other supply sources, therefore, this will only be considered if the other water sources are unavailable to supplement the recycled water system.

3.3 FIRE STORAGE TANK

The fire storage tank will be an above ground tank made of either welded steel or prestressed concrete. Under the assumed fire flow requirement of 4,000 gpm for 4 hours, the fire storage tank is anticipated to have a usable capacity of approximately 1 MG. This volume would yield a tank approximately 76 feet in diameter and 30 feet tall.

3.4 FIRE PUMP STATION

The fire pump will pull water from the storage tank to provide the required fire flow of 4,000 gpm to the fire water distribution system. There is approximately 65 feet of elevation change across the project. The highest elevation is located in the southwest corner of the project and the lowest elevation is in the northeast corner of the project. The fire pump will provide between 50-80 psi of static pressure, and no less than 20 psi at each fire hydrant during a fire event, at each hydrant throughout the fire system.

3.5 FIRE DISTRIBUTION SYSTEM

The fire distribution system will consist of approximately 13,000 feet of pipeline. The fire system will provide service to the building connections and fire hydrants, including the fire hydrants located on W Schulte Road, Promontory Parkway, and Pavilion Parkway.

4 RAW WATER SYSTEM

The raw water system will feed the potable water system and connect directly to the potable water treatment system. The raw water system will consist of:

- Two (2) raw water wells
    - Bypass piping connecting the raw water wells to (1) the clearwell and (2) the recycled water tank.
- Transmission piping from the well sites to the potable water treatment system.

The wells will be located north of W Schulte Road nearby where the test holes were drilled; one will be located in the northwest corner of the property north of the WSID canal and the other will be located in the southeast corner of parcel on the north side of W Schulte Road. See Attachment 2 for the raw water system process flow diagram.

4.1 RAW WATER WELLS

Two (2) small wells will be constructed to provide a raw water supply in accordance with the State Division of Drinking Water (Waterboard) requirements, which require two water sources for the water system. The raw water wells will yield water from depths or zones that are separated from the fire well. Each well will have capacity to provide all potable demands, assuming one (1) well is out-of-service. The following well design assumptions are based on previous testing data (see Attachment 3) and may be altered when the well is drilled:

- Total Depth: 520 feet
- Sanitary Seal Depth: 250 feet
- Borehole diameter: 20 inches.
- Casing diameter: 10 inches
- Gravel pack annular spacing: 5 inches

The raw water wells will feed directly into the potable water treatment system and will be equipped with variable speed motors to match the maximum flow rate of the potable water treatment system. To minimize the size and operating expense of the water treatment system, a post-treatment storage tank will be constructed allowing treatment to occur 24 hours per day.

Therefore, the raw water wells will be designed to meet the maximum day potable water system demands over a 24-hour period, or approximately 55 gpm. Refer to Table 2 to review the potable water system demands.

4.1.1 RAW WATER BYPASS PIPING

A bypass line will be installed to allow raw water to be pumped directly to the post-treatment storage tank during emergencies. The bypass line will also include a branched line to fill the recycled water tank using an air gap during recycled water shortfalls. Electrically actuated valving will be used to automatically divert raw water if the water level in the recycled water tank drops below a certain set point.

4.2 RAW WATER TRANSMISSION SYSTEM

The raw water transmission system will consist of approximately 3,500 ft of piping to convey raw water from both well sites to the inlet of the potable water treatment system. The raw water wells will pump directly into the potable water treatment system, assuming the bypass line is not in use.

5 POTABLE WATER SYSTEM

The potable water system will consist of the water treatment system, clearwell, booster pump station, and potable water distribution system. The raw water produced from the raw water wells will pump directly into the potable water treatment system. Refer to Attachment 2 for the potable water system process flow diagram.

5.1 POTABLE WATER DEMANDS

Assuming a single 8-hour shift and 11 gpd/employee (110% of the wastewater generation rate), the average potable water demand (ADD) will be approximately 110 gpm (0.052 million gallons over an 8-hour period). A peaking factor of 1.5 and 6 were applied to the ADD to estimate a maximum day demand (MDD) of 165 gpm and peak hour demand (PHD) of 660 gpm. Table 2 below summarizes the potable water system demands.

Table 2 – Potable Water System Demands

DESCRIPTION	UNIT	VALUE
Water Unit Demand	gpd / employee	11
Employees	employees	4,733
Average Day Demand	gpd	52,063
Average Day Demand (24-hour day)	gpm	36
Average Day Demand (over 8-hour workday)	gpm	**110**
Maximum Day Demand Factor	-	1.5
Maximum Day Demand (24-hour day)	gpm	55
Maximum Day Demand (over 8-hour workday)	gpm	**165**
Peak Hour Demand Factor	-	**6**
Peak Hour Demand	gpm	**660**

5.2 WATER TREATMENT SYSTEM

The potable water treatment system will be sized based on the maximum day demand, assuming a 24 hour per day operation (refer to Table 2). Assuming interruptions during back washing of the treatment media (e.g., 1 to 2 hours/day), the treatment capacity will be approximately 55 - 65 gpm. Redundant treatment capacity will be included.

5.2.1 TREATMENT PROCESS

The raw water supplied from the raw water system will be treated for contaminants. At this time, the groundwater contaminants and concentrations are preliminary and based on data collected from three test wells. After the raw water wells are constructed and developed, the wells will be tested to determine the necessary treatment process. Preliminary water quality testing results show elevated concentrations of salts, but no contaminants that exceed state and federal drinking water standards (see Attachment 3). Some salts may exceed secondary limits as imposed for community water systems, but these standards may not apply to the project since it is classified as a non-community water system. Treatment is recommended due to the damage (staining) certain salts can cause to plumbing fixtures, appliances, and the exterior of buildings. Not all salts cause problems, thus only certain salts may be targeted in the treatment process (e.g., hardness salts consisting of calcium and magnesium, or staining salts such as iron, manganese).

The most appropriate treatment method will be determined after the final wells are constructed and water quality data has been evaluated.

Additional analysis will be performed once the raw water wells are tested to determine if blending can be included in the treatment process. Over time, new contaminants (i.e., chromium VI, PFOS) or more stringent regulations of existing contaminants (i.e., arsenic) can occur. In this event, the treatment system can be expanded to include additional treatment processes to address new regulations. The treatment system will also include a disinfection system to maintain disinfectant residuals in the distribution system as required by the EHD and DDW.

Various treatment technologies may be considered, including but not limited to filtration, adsorption, and ion exchange processes. Many of these potential treatment methods generate a concentrate or brine as a byproduct, which requires proper management and disposal. The specific brine disposal needs will depend on the final water quality data and selected potable water treatment process, but planning for brine management will likely be necessary.

5.2.2 BRINE MANAGEMENT

Brine processing and disposal is anticipated considering the likelihood of a brine waste product resulting from the potable water treatment system. The purpose of brine processing is to reduce the volume and weight of the waste product prior to disposal. This minimizes the frequency and amount of waste shipped, and disposal fees. Once the brine is adequately dewatered, it can be hauled away. The dewatered brine will be hauled off to an appropriate disposal facility, which will be determined based on the final composition of the dried solids. If the concentrations are below hazardous waste thresholds, the material will be suitable for disposal at a Class II or III landfill. However, if hazardous concentrations are present, the solids will be transported to a permitted Class I hazardous waste landfill. Prior to disposal, chemical analysis of the dried solids will be conducted to ensure proper characterization.

Water recovered from the brine can be returned to the potable water storage tank. The dewatered brine will be the only component of the water facilities which will be removed from the site.

5.3 CLEARWELL POST-TREATMENT STORAGE TANK

The treatment system will discharge treated water into an above ground clearwell. The clearwell will be sized equal to or greater than the MDD in accordance with Title 22, Section 64554(a) of the California Regulations Related to Drinking Water to allow treatment to occur continuously throughout the day. This will allow for diurnal fluctuations in water use at the project site. Additionally, the clearwell will help equalize the flow of the treated water prior to pumping. Mixers will be installed within the clearwell to promote water circulation and prevent stagnation. A disinfectant will be added to maintain a disinfection residuals in the distribution system.

5.4 POTABLE WATER BOOSTER PUMP STATION

The potable water booster pump station will deliver pressurized potable water from the equalization tank to the IPC II development. The booster pump station will consist of a building that will house the booster pumps, electrical controls, and the chemical storage and dosing equipment for the tank. Pumps will be sized to account for the large swing in daily flows, including peak flows possibly 4 times the MDD. The pump configuration and size will be determined during detailed design, with pressures expected to range from 50 to 70 psi to accommodate elevation changes and building height variations.

A hydropneumatic tank will be provided to maintain system pressures and account for minor flows (below the pump manufacturer's minimum flow requirement).

5.5 WATER DISTRIBUTION SYSTEM

The potable water distribution system will consist of approximately 6,700 feet of potable water piping to reach each of the proposed buildings.

6 WASTEWATER SYSTEM

The wastewater system will include a collection system, equalization tank, packaged wastewater treatment plant, and solids handling facilities. The proposed packaged wastewater treatment plant will produce effluent suitable for landscape irrigation use. The amount of wastewater available from the treatment plant will depend on how much indoor water is used by the project, and how much process water is lost during the wastewater treatment process. Some activities, such as water conservation, can impact both the amount of water available for landscape irrigation, but also the quality of the water (e.g., reducing indoor use can concentrate nitrogen). Hence, incorporating operational flexibility in the wastewater process to increase nitrogen removal, blending wastewater with surface and/or groundwater, etc., is recommended.

The expected wastewater flows are based on an assumed sewer generation rate (10 gpd/employee) estimated based on similar (existing) warehousing developments in the area, in which the actual sewer generation rate ranged from 5 to 7.5 gpd/employee. The estimated wastewater production (47,000 gpd) was calculated by multiplying the estimated number of employees by the assumed wastewater generation rate.

6.1 WASTEWATER COLLECTION

Wastewater will be collected onsite and flow by gravity to a central lift station and be pumped into an equalization tank. A private lift station is assumed to be required for the building north of the WSID canal due to its location and elevation difference relative to the central lift station.

The wastewater collection system will include redundancy and reliability features across all key components. The lift stations will be designed with two duty pumps each, sized to handle the design flow, ensuring continued operation if one pump fails. In addition, the system will incorporate backup power to maintain functionality during power outages. Gravity flow will be used wherever possible to minimize reliance on pumping.

6.2 EQUALIZATION TANK

The central lift station will pump all of the wastewater generated onsite to an underground, concrete equalization tank. The equalization tank will be used to manage fluctuations in the daily flow rate and as a short-term storage provision during emergencies. Additionally, equalization prior to treatment stabilizes the influent flow rate and allows more consistent operation.

The tank will be sized to hold at least one day of the project's estimated wastewater generation (pursuant to California Code of Regulations, Title 22, Section 60341(a)) and designed so it is self-cleaning (e.g., sloped bottom, channeled, etc.) to minimize solids accumulation.

6.3 PACKAGE TREATMENT SYSTEM

A packaged treatment plant will be used to produce disinfected, tertiary treated recycled water suitable for landscape irrigation. The system will be capable of producing primary effluent with one treatment train out of service in accordance with the reliability requirements under California Code of Regulations, Title 22, Articles 9 and 10.

The treatment process will incorporate an equalization tank, a screening zone, a pre-anoxic (PAX) zone, two pre-aeration (PA) zones, a post-anoxic (AXP) zone, and two membrane bioreactor (MBR) zones. BioWin wastewater process simulation software was used to evaluate and optimize the design based on the treatment constraints listed in Table 3.

Table 3 – Plant Effluent Quality Requirements

PARAMETER	EFFLUENT QUALITY REQUIREMENT
BOD	5 mg/L
TSS	5 mg/L
TN	10 mg/L
Ammonia	1 mg/L
Fecal Coliform	2.2 No./100mL
Turbidity	0.2 NTU
Bacteria Removal	99.999 percent

In the event of a failure, alarms will trigger and automatically actuated standby equipment will take over to maintain system operation. An emergency generator will power critical equipment during power outages, and the plant's control system will monitor key parameters such as flow, water

level and turbidity. These features, along with regular operator oversight and remote notifications, will promote continuous and reliable plant operation.

The plant effluent will flow into a post-treatment storage tank, sized as a long-term storage provision for extended periods in which wastewater generation rates exceed irrigation demands, such as during wet weather conditions when irrigation may drop to zero. The storage tank will be sized to store at least 20 days and may be as high as 50-80 days of undisturbed sewer flow without any discharge into the irrigation system. Actual size of the storage facility will be defined in the detailed design process. A disinfectant may take place during wet weather conditions in which storage is utilized for an extended period of time.

6.3.1 RAW WASTEWATER CHARACTERISTICS

The influent wastewater quality is assumed to be comparable to the typical composition of untreated domestic water. Source control programs, especially those involving wastewater streams associated with the typical characterization of industrial waste, are not anticipated for the site. Table 4 characterizes the typical levels of contaminant concentrations in categories of low strength, medium strength, and high strength. As a conservative planning measure, the project's wastewater influent is expected to fall in between "medium strength" and "high strength", on account there being less dilution from the blending of other wastewater generating sources (i.e., food preparation, laundry, bathing).

Table 4 - Typical Composition of Untreated Domestic Wastewater

CONTAMINANT	UNITS	LOW STRENGTH	MEDIUM STRENGTH	HIGH STRENGTH
Solids, total (TS)	mg/L	390	720	1220
Dissolved, total (TDS)	mg/L	270	500	860
Fixed	mg/L	160	300	520
Volatile	mg/L	110	200	340
Suspended solids, total (TSS)	mg/L	120	210	400
Fixed	mg/L	25	50	85
Volatile	mg/L	95	160	315
Settleable solids	mg/L	5	10	20
5-d, 20˚C (BOD_5, 20˚C)	mg/L	110	190	350
Total organic carbon (TOC)	mg/L	80	140	260
Chemical oxygen demand (COD)	mg/L	250	430	800
Nitrogen (total as N)	mg/L	20	40	70
Organic	mg/L	8	15	25
Free ammonia	mg/L	12	25	45
Nitrites	mg/L	0	0	0
Nitrates	mg/L	0	0	0
Phosphorus (total as P)	mg/L	4	7	12
Organic	mg/L	1	2	4
Inorganic	mg/L	3	5	10
Chlorides	mg/L	30	50	90
Sulfate	mg/L	20	30	50
Oil and grease	mg/L	50	90	100
Volatile organic compounds (VOCs)	mg/L	<100	100-400	>400

Table 4 - Typical Composition of Untreated Domestic Wastewater

CONTAMINANT	UNITS	LOW STRENGTH	MEDIUM STRENGTH	HIGH STRENGTH
Total coliform	No./100 mL	10^6-10^8	10^7-10^9	10^7-10^{10}
Fecal coliform	No./100 mL	10^3-10^5	10^4-10^6	10^5-10^8
Cryptosporidium oocysts	No./100 mL	10^{-1}-10^0	10^{-1}-10^1	10^{-1}-10^2
Giardia lamblia cysts	No./100 mL	10^{-1}-10^1	10^{-1}-10^2	10^{-1}-10^3

Source: Metcalf & Eddy. "Wastewater Engineering Treatment and Reuse." 4th ed. Boston: McGraw Hill, 2003, (p.186)

6.4 SOLIDS HANDLING FACILITIES

Solids handling facilities will be connected to the wastewater treatment plant to dewater the solids that emerge during treatment. The water separated from the solids during the dewatering process will be piped back to the plant headworks. It is estimated that 17 yd^3/yr of solids will be produced as a byproduct of treatment. This calculation accounts for an average day wastewater flow of 0.047 mgd and assumes solids production factors of 1.95lb/1000 gal and 75lb/ft^3 (see Table 5).

The solids generated from the wastewater treatment process are expected to be of non-hazardous composition and may potentially be used as a site fertilizer, pending further analysis and compliance with applicable regulations, such as EPA biosolids standards (40 CFR Part 503) and local requirements for land application.

Table 5 – Wastewater Treatment Solids Production Estimate

PARAMETER	EFFLUENT QUALITY REQUIREMENT	
Wastewater Generation Rate	gpd / employee	10
Employees (from Table 1)	employees	4,733
Recycled Water Production	gpd	47,330
Solids Production Rate (1.95lbs / 1000 gal)	tons / yr	16.84
Solids Production Rate (75lbs / ft^3)	yd^3 / yr	16.63
Disposal Cost ($7.30 / yd^3)	$ / yr	$121.44

7 RECYCLED WATER SYSTEM

The recycled water system will receive flow from the wastewater treatment plant. The recycled water system will include a storage tank, booster pump station, and distribution system (refer to Attachment 4 for the recycled water system process flow diagram). It is anticipated that the recycled water system will not produce adequate water supplies during the summer months when irrigation demands are at their greatest. The annual landscape irrigation demand for the project is conservatively estimated to be 73 AFY (refer to Table 6).

Table 6 – Recycled Water/Irrigation System		
DESCRIPTION	UNIT	VALUE
Irrigation Demand Factor	acre-ft / acre / yr	1.9
Acres of irrigated land (15% of net project acres)	Acres	38.4
Annual Irrigation Demand	AFY	73
Average Day Irrigation Demand	gpd	65,130
Irrigation Peaking Factor	-	2.6
Maximum Day Irrigation Demand	gpd	166,407

The treated wastewater is assumed to satisfy 53 of the 73 AFY of irrigation demands. Therefore, approximately 20 AFY of non-potable water will be needed to supplement the recycled water system during supply shortfalls. Per the California Code of Regulations, Title 22, Section 60315, any supplemental water source will be connected to the recycled water storage tank by an air gap. Sources of supplemental irrigation water supplies include:

Irrigation Water from BBID: The former West Side Irrigation District (WSID) serves the area of the project. The WSID service area has been reduced over the years because of the annexation of lands within the service area boundary into the City of Tracy. The Byron Bethany Irrigation District (BBID) has taken over operations of the remaining WSID service area.

The source of water for the WSID service area is an intake from the Delta north of the project. The land owner uses this water to serve the almond orchards that occupy the site currently. The project plans to continue to use this irrigation water, although at a significantly lower volume. BBID has stated that the orchards use is about 1,500 AFY, and the project will reduce this down to roughly 20 AFY.

The service from BBID to the project area post development will be from a connection point in the northwest corner of the project site. This irrigation water will be pumped from the connection point to the recycled water tank to supplement the water supplies for the irrigation system. The water from BBID will have an added benefit of reducing the concentration of TDS, nitrates, and other constituents of concern in the recycled water.

- Stormwater: collected onsite and pumped from a storm water pond or detention basin into the recycled water storage tank. Storm water will be used in the winter months to supplement the recycled water volumes in the tank. The stormwater is not necessarily needed to support irrigation demands but will be used primarily to dilute TDS and nitrate concentrations in the recycled water. The storm water will be taken from the storm water basin located between the water and wastewater facilities sites which are both located west of the WSID canal and north the building that parallels W Schulte Road on the north side of the Road.
- Raw Water: via the bypass line off the raw water transmission main from the raw water wells. The raw water wells will have a connection to the recycled water tank so that they can be used to supplement the recycled water demands during the summer months if for some reason the water from BBID is not available.

- Fire System: via a branched line off the fire well discharge. This option is considered to be the least desirable method to supplement the recycled water system because it is anticipated to be the lowest quality of the potential options.

7.1 RECYCLED WATER STORAGE TANK

Treated wastewater will be pumped into an above ground recycled water storage tank. The tank will be dedicated to storing treated wastewater to supply the project's irrigation demands. The tank will be sized as a long-term storage provision for storing at least 20 days of wastewater production without release (per the California Code of Regulations, Title 22, Article 10). The final sizing will be based on the water balance results per the Central Valley Regional Water Quality Control Board requirements.

The tank volume will be monitored by floats and pressure sensors that will trigger the addition of supplemental supplies as needed. In general, the tank will tend to fill during non-irrigation season (winter) and drain during the irrigation season (summer).

7.2 RECYCLED WATER BOOSTER PUMP STATION

The recycled water booster pump station will pump recycled water from the storage tank through the recycled water distribution system. The pump station will be designed to maintain distribution system pressures between 60 and 80 psi.

The booster pump station will consist of a site building that houses the booster pumps and the electrical controls. The station size and configuration will be designed to meet peak irrigation deliveries once the irrigation system zones and schedule is finalized.

8 OPERATIONS AND MAINTENANCE

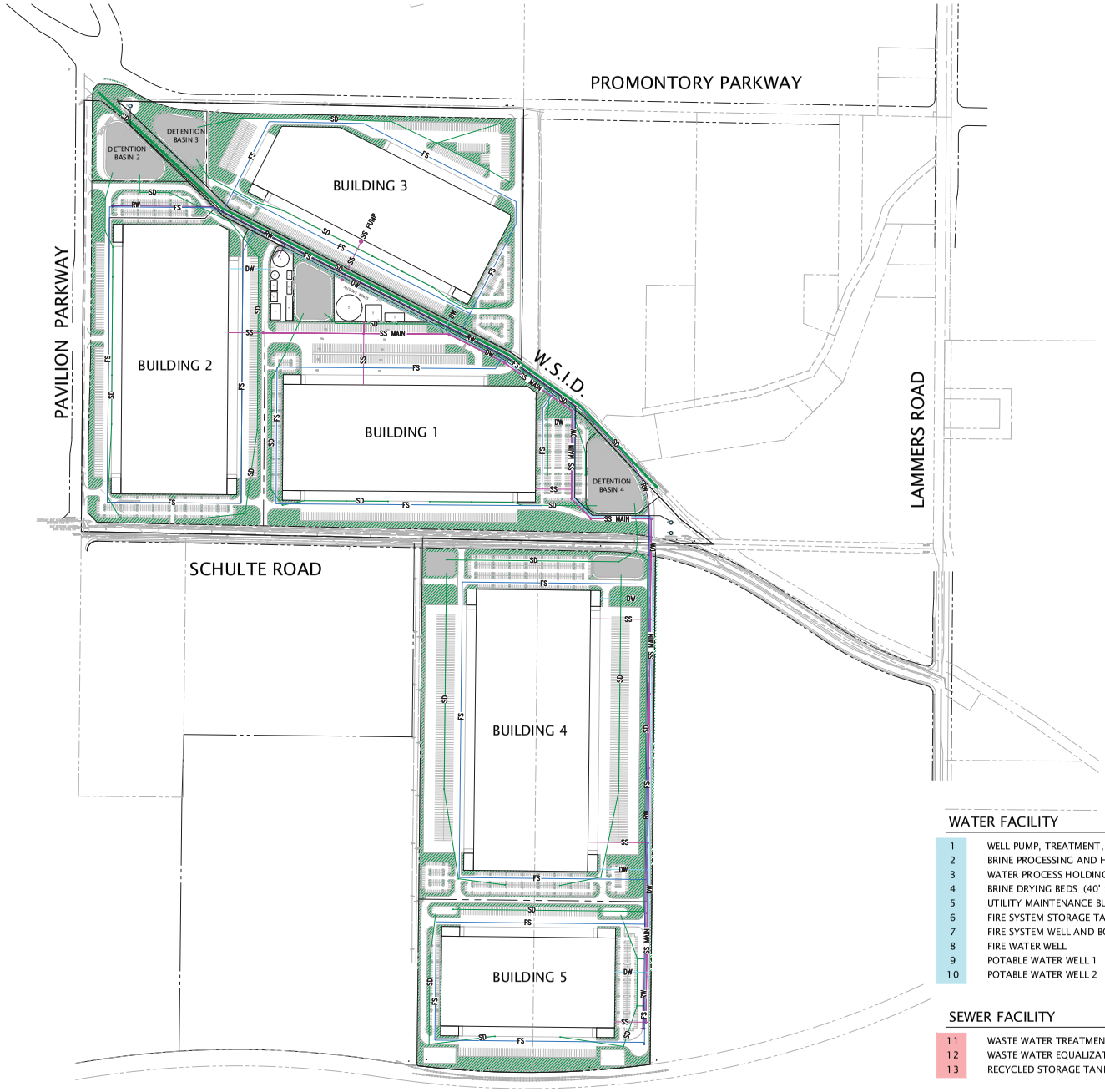
8.1 CAL WATER SERVICES OR SIMILAR OPERATOR

The raw water, potable water, fire water, recycled water, and sewer systems will be designed and constructed by Prologis or an entity that Prologis creates. Prologis will select and operator for the wet utilities that has the appropriate licenses to operate these types of facilities. The operator is anticipated to either contract with the Community Service District (CSD) that Prologis creates or to turn the facilities over to an operator like California Water Services Company (Cal Water Services) to become the potential operator of the systems. Cal Water Services operates under the Public Utilities Commission (PUC). All of the facilities would be transferred to Cal Water Services for them to own and operate. The site will be monitored and maintained to assure that the operational conditions are in compliance with operational parameters set for the project by the San Joaquin Environmental Health Department (EHD) and the Regional Water Quality Control Board (RWQCB). Cal Water is expected to perform ongoing monitoring, sampling, and analysis for all water systems according to the necessary codes.

8.2 FIRE SYSTEM OPERATOR

If the water system operator that Prologis selects above cannot operate the fire system a second operator for the fire system will be selected. As with the water system operator, the fire system operator will contract directly with the CSD formed to manage the project.

Attachment 1 – Conceptual Overall Utility Plan



LEGEND

- SS — SANITARY SEWER MAIN LINE
- SS — SANITARY SEWER LINE
- SD — STORM DRAIN LINE
- FS — FIRE SERVICE
- DW — DOMESTIC WATER LINE
- RW — RECYCLE WATER LINE
- GROUNDWATER WELL
- RECYCLED WATER USE AREAS

WATER FACILITY

1	WELL PUMP, TREATMENT, PNEUMATICS, DISINFECTION & CONTROL (30' x 50')
2	BRINE PROCESSING AND HOLDING BUILDING (30' x 80')
3	WATER PROCESS HOLDING TANK (50' DIA.)
4	BRINE DRYING BEDS (40' x 150')
5	UTILITY MAINTENANCE BUILDING AND EQUIPMENT STORAGE
6	FIRE SYSTEM STORAGE TANK 1.2 MG (100' DIA.)
7	FIRE SYSTEM WELL AND BOOSTER PUMPS (40' x 60')
8	FIRE WATER WELL
9	POTABLE WATER WELL 1
10	POTABLE WATER WELL 2

SEWER FACILITY

11	WASTE WATER TREATMENT AND SLUDGE DRYING
12	WASTE WATER EQUALIZATION
13	RECYCLED STORAGE TANK

REGISTERED PROFESSIONAL ENGINEER
MICHAEL F. BASSILIOS
No. 71814
Exp. 12-31-23
CIVIL
STATE OF CALIFORNIA

KIER+WRIGHT
2850 Collier Canyon Road
Livermore, California 94551
Phone (925) 245-8788
www.kierwright.com

SYMBOL	DATE	REVISIONS DESCRIPTION	APPROVED

DESIGNED BY: C.L.P.
DRAWN BY: R.S.
CHECKED BY: M.B.
SCALE: AS SHOWN

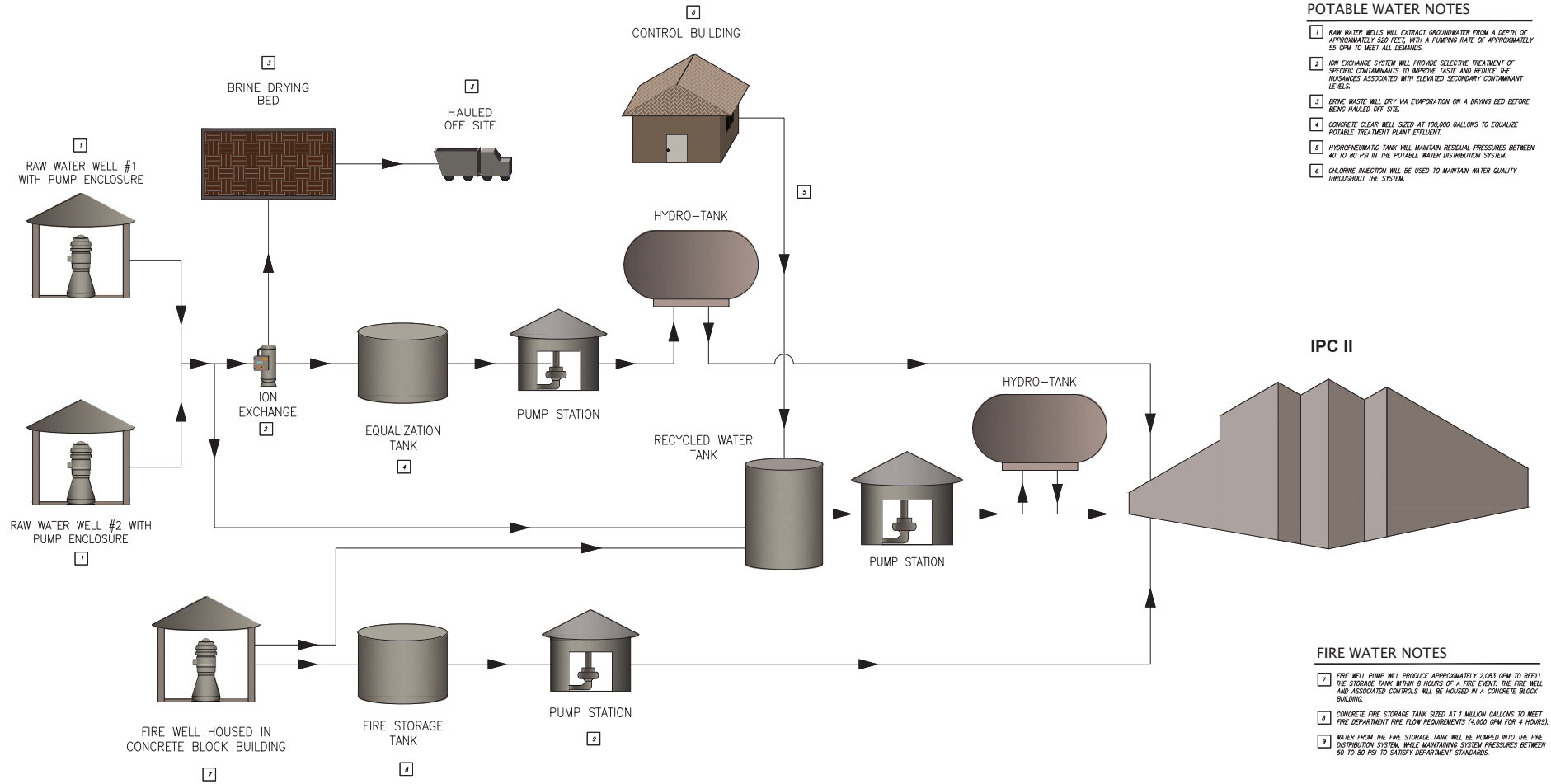
ATTACHMENT 1
INTERNATIONAL PARK OF COMMERCE
PHASE II
CONCEPTUAL OVERALL UTILITY PLAN

SHEET

OF 22 SHEETS

Z:\2009\A09500-466\DWG\WATER\Recycled Water Exhibit\Recycled Water Exhibit Updated.dwg 8-24-23 01:40:13 PM khalcombe

Attachment 2 – Raw, Potable, & Fire Water Systems Process Flow Diagram



POTABLE WATER NOTES

1. RAW WATER WELLS WILL EXTRACT GROUNDWATER FROM A DEPTH OF APPROXIMATELY 520 FEET, WITH A PUMPING RATE OF APPROXIMATELY 55 GPM TO MEET ALL DEMANDS.
2. ION EXCHANGE SYSTEM WILL PROVIDE SELECTIVE TREATMENT OF SPECIFIC CONTAMINANTS TO IMPROVE TASTE AND REDUCE THE NUISANCES ASSOCIATED WITH ELEVATED SECONDARY CONTAMINANT LEVELS.
3. BRINE WASTE WILL DRY VIA EVAPORATION ON A DRYING BED BEFORE BEING HAULED OFF SITE.
4. CONCRETE CLEAR WELL SIZED AT 100,000 GALLONS TO EQUALIZE POTABLE TREATMENT PLANT EFFLUENT.
5. HYDROPNEUMATIC TANK WILL MAINTAIN RESIDUAL PRESSURES BETWEEN 40 TO 80 PSI IN THE POTABLE WATER DISTRIBUTION SYSTEM.
6. CHLORINE INJECTION WILL BE USED TO MAINTAIN WATER QUALITY THROUGHOUT THE SYSTEM.

FIRE WATER NOTES

7. FIRE WELL PUMP WILL PRODUCE APPROXIMATELY 2,083 GPM TO REFILL THE STORAGE TANK WITHIN 8 HOURS OF A FIRE EVENT. THE FIRE WELL AND ASSOCIATED CONTROLS WILL BE HOUSED IN A CONCRETE BLOCK BUILDING.
8. CONCRETE FIRE STORAGE TANK SIZED AT 1 MILLION GALLONS TO MEET FIRE DEPARTMENT FIRE FLOW REQUIREMENTS (4,000 GPM FOR 4 HOURS).
9. WATER FROM THE FIRE STORAGE TANK WILL BE PUMPED INTO THE FIRE DISTRIBUTION SYSTEM, WHILE MAINTAINING SYSTEM PRESSURES BETWEEN 50 TO 80 PSI TO SATISFY DEPARTMENT STANDARDS.

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ATTACHMENT 2
RAW , POTABLE , & FIRE WATER SYSTEMS
PROCESS FLOW DIAGRAM

CITY OF TRACY CALIFORNIA

PROJECT #:
DATE: MARCH 2023
DRN: KDH/CHC
CKD: JM
SCALE: NTS

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Attachment 3 – Test Well Locations & Water Quality Results

IPC II Test Well Locations

Test Hole 1 Results for IPC II - APN #209-25-010 - Location Northside of W Schulte Rd & SE Corner of Property							
Contaminant	**Test Hole #1 SE Corner of AS2 elevation 296-316**	**Test Hole #1 SE Corner of AS2 elevation 358-368**	**Test Hole #1/ SE Corner of AS2 Elevation 451**	**Test Hole #1-SE corner of AS2 (elevation 538)**	**Test Hole #1-SE corner of AS2 (elevation 590)**	**Existing Well #3-SW Corner of C2**	**Maximum Contaminant Level**
1,2,3-Trichloropropane (ug/L)	ND	ND	ND	ND	ND	ND	0.005
Arsenic (ug/L)	ND	ND	ND	ND	ND	4.6	10
Calcium (mg/L)	95	82	63	73	73	150	NA
Chromium (ug/L) (3)	17	43	ND	ND	ND	34	50
DBCP	ND	ND	ND	ND	ND	ND	0.2
Atrazine	ND	ND	ND	ND	ND	ND	3
EPA 537.1 (2) (ug/L)	ND	ND	ND	ND	ND	ND	Contaminant Specific
Gross Alpha (pCi/L)	3.67 ± 1.19	3.75 ± 1.11	4.39 ± 1.13	2.76 ± 1.51	3.51 ± 1.24	6.29 ± 2.30	15
Hardness as CaCO3 (mg/L)	390	330	270	300	310	710	NA (5)
Hexavalent Chromium (ug/L) (4)	14	3.5	ND	3.8	1.7	14	None - MCL Pending
Iron (mg/L) (7)	0.15	4.5	1.5	0.41	0.68	0.38	0.3 (6) (7)
Magnesium (mg/L)	37	32	27	29	30	81	NA
Manganese (mg/L) (7)	ND	0.08	0.074	0.027	0.03	ND	0.05 (6) (7)
Nitrate-N (mg/L)	3	1.9	0.86	1.3	1.5	6.5	10
TDS, Total Dissolved Solids (mg/L) (7)	880	740	760	830	920	2300	1000 upper limit (7)

Potential Well Designation	**N/A**	**N/A**	**Potable**	**Fire (1)**	**Fire (1)**	**N/A**

Footnotes:

(*)"ND" means Not Detected.

(*)"NA" means Not Applicable.

(1) Combine the two elevations to create the fire well.

(2)List of contaminants: 11-Chloroeicosafluoro-3-oxaundecanesulfonic acid, 4,8-Dioxa-3H-perfluorononanoic acid (ADONA), 9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid Hexafluoropropylene oxide dimer acid (HFPO-DA), NEtFOSAA, NMeFOSAA, Perfluoro-1-butanesulfonic acid (PFBS), Perfluoro-1-hexanesulfonic acid (PFHxS), Perfluoro-1-octanesulfonic acid (PFOS), Perfluoro-n-decanoic acid (PFDA), Perfluoro-n-heptanoic acid (PFHpA), Perfluoro-n-hexanoic acid (PFHxA), Perfluoro-n-nonanoic acid (PFNA), Perfluoro-n-octanoic acid (PFOA), Perfluorododecanoic acid (PFDoA), Perfluorotetradecanoic acid (PFTeDA), Perfluorotridecanoic acid (PFTrDA), Perfluoroundecanoic acid (PFUnA)

(3) Chromium: EPA (Federal Government) has an acceptable limit for Chromium set a 100 ppb, but California is 50 ppb.

(4) Hexavalent Chromium VI is under reveiw by the State. A new standard is anticiapted in the next year or two.

(5) Hardness is not a health concern, however, it may present issues with plubming fixture staining, water heaters, etc.

(6) Iron and Manganese exceed the maximum consumer acceptance contaminant levels for secondary drinking water standards. However, secondary standards are not enforceable for non-community, non-transient water systems. Treatment may be preferred due to nuisances such as stained laundry and plumbing fixtures.

(7) Iron, Manganese and TDS do not require treatment, however treatment is recommended as these secondary contaminants are a nuisance.

Test Hole 2 Results for IPC II - APN #209-25-010 - Location NW Corner of Property Adjacent o Promotory Parkway, Pavillion Parkway and WSID Canal				
Contaminant	**Test Hole #2 NW Corner of AS1 Elevation 492**	**Test Hole #2 NW Corner of AS1 Elevation 538**	**Test Hole #2 NW Corner of AS1 Elevation 670**	**Maximum Contaminant Level**
1,2,3-Trichloropropane (ug/L)	ND	ND	ND	0.005
Arsenic (ug/L)	ND	ND	ND	10
Atrazine (ug/L)	ND	ND	ND	3
Calcium (mg/L)	73	83	140	NA
Chromium (ug/L) (2)	10	ND	ND	50
DBCP	ND	ND	ND	0.2
EPA 537.1 (1) (ug/L)	ND	ND	ND	Contaminant Specific
Gross Alpha (pCi/L)		1.16 ± 0.952		15
Hardness as CaCO3 (mg/L)	320	350	510	NA (4)
Hexavalent Chromium (ug/L) (3)	5.1	1.7	0.16	None - MCL Pending
Iron (mg/L) (6)	0.91	0.23	0.38	0.3 (5) (6)
Magnesium (mg/L)	33	34	40	NA
Manganese (mg/L) (6)	0.036	0.042	0.022	0.05 (5) (6)
Nitrate-N (mg/L)	ND	ND	ND	10
TDS, Total Dissolved Solids (mg/L) (6)	830	1100	1700	1000 upper limit (6)

Potential Well Designation			

Footnotes:

(*)"ND" means Not Detected.

(*)"NA" means Not Applicable.

(1)List of contaminants: 11-Chloroeicosafluoro-3-oxaundecanesulfonic acid, 4,8-Dioxa-3H-perfluorononanoic acid (ADONA), 9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid
Hexafluoropropylene oxide dimer acid (HFPO-DA), NEtFOSAA, NMeFOSAA, Perfluoro-1-butanesulfonic acid (PFBS), Perfluoro-1-hexanesulfonic acid (PFHxS), Perfluoro-1-octanesulfonic acid (PFOS), Perfluoro-n-decanoic acid (PFDA), Perfluoro-n-heptanoic acid (PFHpA), Perfluoro-n-hexanoic acid (PFHxA), Perfluoro-n-nonanoic acid (PFNA), Perfluoro-n-octanoic acid (PFOA), Perfluorododecanoic acid (PFDoA), Perfluorotetradecanoic acid (PFTeDA), Perfluorotridecanoic acid (PFTrDA), Perfluoroundecanoic acid (PFUnA)

(2) Chromium: EPA (Federal Government) has an acceptable limit for Chromium set a 100 ppb, but California is 50 ppb.

(3) Hexavalent Chromium VI is under reveiw by the State. A new standard is anticiapted in the next year or two.
(4) Hardness is not a health concern, however, it may present issues with plubming fixture staining, water heaters, etc.
(5) Iron and Manganese exceed the maximum consumer acceptance contaminant levels for secondary drinking water standards. However, secondary standards are not enforceable for non-community, non-transient water systems. Treatment may be preferred due to nuisances such as stained laundry and

(6) Iron, Manganese and TDS do not require treatment, however treatment is recommended as these secondary contaminants are a nuisance.

Test Hole 3 Results for IPC II - APN #209-25-010 - Location Northside of W Schulte Rd Adjacent to Canal about mid property line								
Contaminant	Test Hole #3 WTP Site elevation 730(6/11)	Test Hole #3 WTP Site elevation 675(6/15)	Test Hole #3 WTP Site elevation 590(6/20)	'Test Hole #3 WTP Site elevation 519(6/27)	Test Hole #3 WTP Site elevation 440(6/28)	Test Hole #3 WTP Site elevation 356(7/05)	Test Hole #3 WTP Site elevation 300(7/07)	Maximum Contaminant Level
1,2,3-Trichloropropane (ug/L)	ND		ND	ND	ND	ND	ND	0.005
Arsenic (ug/L)	2.2		ND	ND	ND	ND	ND	10
Calcium (mg/L)	35		110	80	78	82	82	NA
Chromium (ug/L) (3)	ND		ND	ND	11	15	ND	50
DBCP	ND		ND	ND	ND	ND	ND	0.2
Alachlor(ug/L)	ND		ND	ND	ND	ND	ND	2
Atrazine(ug/L)	ND		ND	ND	ND	ND	ND	3
Simazine(ug/L)	ND		ND	ND	ND	ND	ND	4
EPA 537.1 (2) (ug/L)	ND		ND	Not Analyzed	ND	ND	ND	Contaminant Specific
Gross Alpha (pCi/L)	0.754 ± 0.899	3.90 ± 1.30	Not Sampled	0.594 ± 11.86	Not Sampled	1.57 ± 0.730	3.74 ± 1.27	15
Hardness as CaCO3 (mg/L)	140		440	350	330	350	370	NA (5)
Hexavalent Chromium (ug/L) (4)	ND		ND	0.21	1.1	10	2.7	None - MCL Pending
Iron (mg/L) (7)	0.21		0.49	0.16	0.25	0.07	0.32	0.3 (6) (7)
Magnesium (mg/L)	12		42	36	34	35	39	NA
Manganese (mg/L) (7)	0.017		0.027	0.015	0.03	ND	0.024	0.05 (6) (7)
Nitrate-N (mg/L)	0.66		1.6	2.3	1.9	1.9	2.6	10
TDS, Total Dissolved Solids (mg/L) (7)	880		1300	890	850	800	910	1000 upper limit (7)

Potential Well Designation							

Footnotes:

(*)"ND" means Not Detected.

(*)"NA" means Not Applicable.

(1) Combine the two elevations to create the fire well.

(2)List of contaminants: 11-Chloroeicosafluoro-3-oxaundecanesulfonic acid, 4,8-Dioxa-3H-perfluorononanoic acid (ADONA), 9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid Hexafluoropropylene oxide dimer acid (HFPO-DA), NEtFOSAA, NMeFOSAA, Perfluoro-1-butanesulfonic acid (PFBS), Perfluoro-1-hexanesulfonic acid (PFHxS), Perfluoro-1-octanesulfonic acid (PFOS), Perfluoro-n-decanoic acid (PFDA), Perfluoro-n-heptanoic acid (PFHpA), Perfluoro-n-hexanoic acid (PFHxA), Perfluoro-n-nonanoic acid (PFNA), Perfluoro-n-octanoic acid (PFOA), Perfluorododecanoic acid (PFDoA), Perfluorotetradecanoic acid (PFTeDA), Perfluorotridecanoic acid (PFTrDA), Perfluoroundecanoic acid (PFUnA)

(3) Chromium: EPA (Federal Government) has an acceptable limit for Chromium set a 100 ppb, but California is 50 ppb.

(4) Hexavalent Chromium VI is under reveiw by the State. A new standard is anticiapted in the next year or two.

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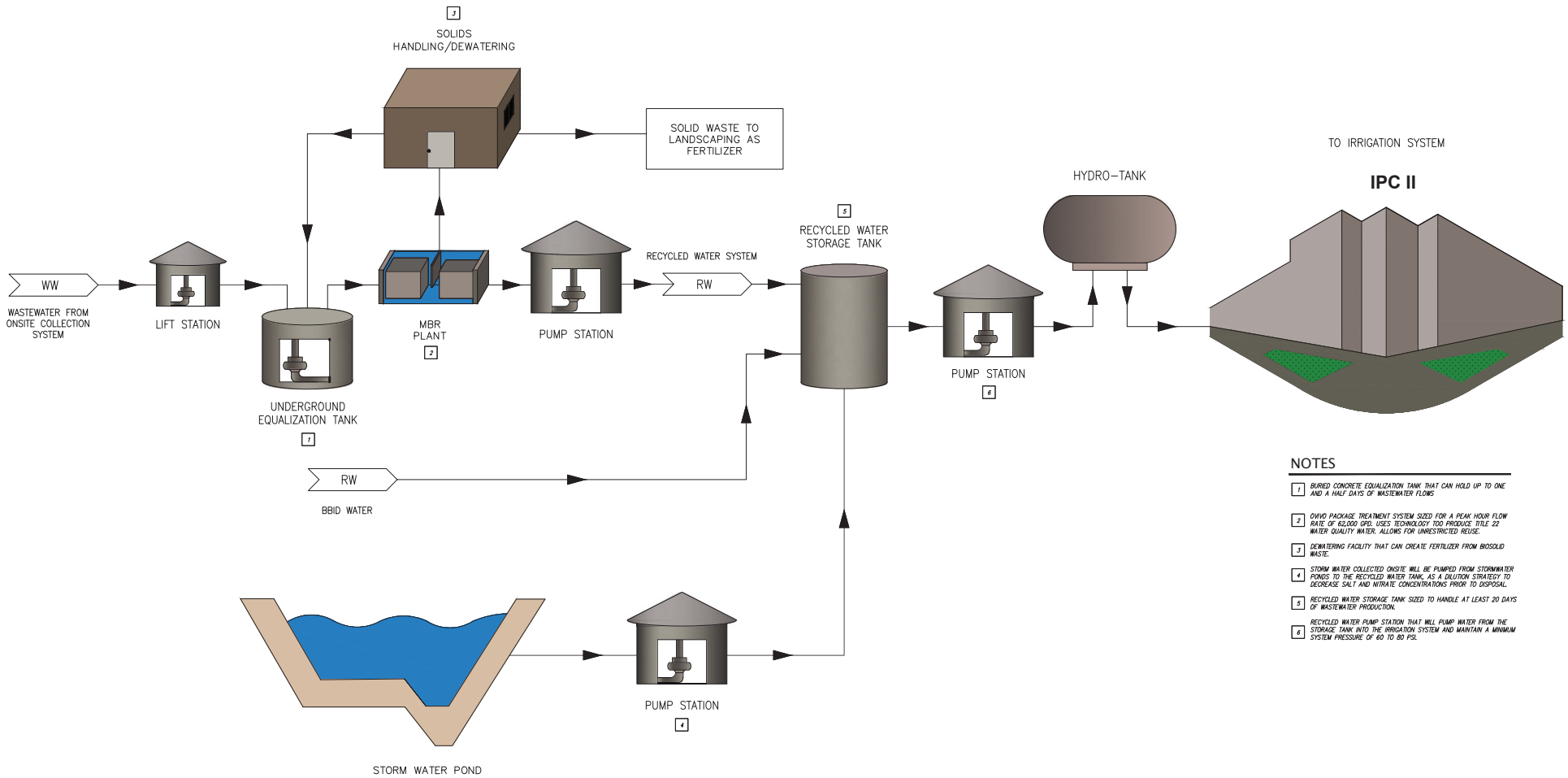
(7) Iron, Manganese and TDS do not require treatment, however treatment is recommended as these secondary contaminants are a nuisance.

Attachment 4 – Wastewater and Recycled Water Systems Process Flow Diagram



NOTES

1. BURIED CONCRETE EQUALIZATION TANK THAT CAN HOLD UP TO ONE AND A HALF DAYS OF WASTEWATER FLOWS
2. OVIVO PACKAGE TREATMENT SYSTEM SIZED FOR A PEAK HOUR FLOW RATE OF 62,000 GPD. USES TECHNOLOGY TOO PRODUCE TITLE 22 WATER QUALITY WATER. ALLOWS FOR UNRESTRICTED REUSE.
3. DEWATERING FACILITY THAT CAN CREATE FERTILIZER FROM BIOSOLID WASTE.
4. STORM WATER COLLECTED ONSITE WILL BE PUMPED FROM STORMWATER PONDS TO THE RECYCLED WATER TANK, AS A DILUTION STRATEGY TO DECREASE SALT AND NITRATE CONCENTRATIONS PRIOR TO DISPOSAL.
5. RECYCLED WATER STORAGE TANK SIZED TO HANDLE AT LEAST 20 DAYS OF WASTEWATER PRODUCTION.
6. RECYCLED WATER PUMP STATION THAT WILL PUMP WATER FROM THE STORAGE TANK INTO THE IRRIGATION SYSTEM AND MAINTAIN A MINIMUM SYSTEM PRESSURE OF 60 TO 80 PSI.

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2850 Collier Canyon Road
Livermore, CA 94551
Phone: (925) 245-8788
www.kierwright.com

ATTACHMENT 4
WASTEWATER AND RECYCLED WATER SYSTEMS
PROCESS FLOW DIAGRAM

CITY OF TRACY
CALIFORNIA

PROJECT #:
DATE: MARCH 2023
DRN: KDH/CHC
CKD: JM
SCALE: NTS

\\Kierwright.local\Global\Z\2009\A09500-466\DWG\WATER\Process Flow Diagram\Process Flow Diagram – All Systems Details UPDATED.dwg 12-27-24 12:47:40 PM cystong