Appendix C

Utilities Analysis Background Information

MUNDALL ENGINEERING & CONSULTING

P.O. Box 56
Lytton, B.C. V0K 1Z0
Bus. (800) - 313 - 9705
FAX (250) - 455 - 2276

P.O. Box 799
Sumas, WA 98295
Cellular (360)-319-1285
FAX (360)-599-3394
E-Mail dan@mundall.com

WATER RESOURCES WASTEWATER CIVIL AGRICULTURAL

December 6, 2018

Attn: Alan Kerley, General Manager
Lake Forest Park Water District
4029 NE 178th Street
Lake Forest Park, WA 98155

RE: **Impacts Resulting from Land Use Changes – LFP Town Center Site**

Dear Alan,

Further to email communication and telephone discussions with Lori McFarland and Adam Isaacson of Otak, we conducted a brief review of probable impacts resulting from several growth scenarios that are being considered for the Town Center site.

It is understood that Otak wishes to gain an idea of what type of infrastructure improvements the District might be required to make to accommodate the contemplated changes in land use. After considering their request, and the timeframe for the current study, it is agreed that a detailed examination of these impacts is not attainable presently, so a decision was made to prepare a qualitative assessment of the types of impacts that are expected and defer detailed hydraulic modeling to a later stage. In particular, analysis focused on the largest development "Alt. 3" which includes 1,500 multi-family residential units and some commercial upsizing.

Our review shows that while the contemplated land use scenarios might greatly increase customer count the District infrastructure and water rights are largely capable of supporting the demands. Additional extended period simulation hydraulic modeling is recommended to confirm these assumptions. Serious consideration should be given to water quality impacts and the possible need for another well to offset reliance on McKinnon DW#3 which has nuisance iron levels.

I hope you find this helpful and that Otak can proceed with a better understanding of possible impacts to LFPWD.

Best Regards,

Dan Mundall

Dan Mundall, MSCE, PE

DATE: / /

01/25/2020

Evaluation of Land Use Possibilities - Town Center Subarea Plan

Impacts to Water Supply

Lake Forest Park Water District

I. Introduction

Otak Consultants are assisting the City of Lake Forest Park in evaluating environmental impacts of various land use alternatives being considered for the Lake Forest Park Town Center. These alternatives may place increased demands on the provisioning of water for domestic and commercial use and also fire suppression needs. Therefore Otak have approached the municipal water provider - Lake Forest Park Water District (LFPWD) and asked for help in identifying the nature of impacts that might be expected with various land use scenarios being contemplated in their study.

"Lake Forest Park Water District strives to provide high quality water, sourced from our local aquifer, at the lowest reasonable cost, while investing in our infrastructure and maintaining the highest level of customer service."

In particular, the kinds of questions asked are:

- **Adequacy of Water Source & Supply** - Does the District have adequate source & supply water to provide for the land use scenarios?
- **Adequacy of Storage** - Will more water storage be required for peak usage and fire suppression needs?
- **Adequacy of Distribution System** - are new, bigger mains required?
- **Water Quality Impacts** – What impacts might be considered?
- **Other Considerations**

The design and operation of water systems such as LFPWD is primarily regulated by State law through the Washington State Department of Health – Drinking Water (WSDOH). These design standards are delineated in their Water System Design Manual and other publications. Additionally, LFPWD has adopted design and construction standards in its Comprehensive Water System Plan 2015 that establish more specific requirements unique to the District. Fire requirements for large buildings is estimated by Insurers Services Office (ISO) based on size and construction type and these are usually developed in cooperation with the building architect at a more advanced stage of the project.

II. Adequacy of Water Source and Supply System

LFPWD is unusual among Class A municipal water providers in King County because it supplies nearly all water from its own groundwater sources and it does not normally treat its water. The District has two well fields, McKinnon Creek and Horizon View with a total of 6 deep wells and 8 shallow artesian wells. District water rights were recently pooled with Washington Department of Ecology to allow withdrawal from any of the wells, subject to operational capacity.

There are some variations in water quality between wells. McKinnon Well #3 (and Well #4 which is not connected presently) has high iron content, so water from this source is blended in controlled amounts during periods of peak demand to avoid nuisance water complaints.

The District presently has total groundwater right allocation of 973GPM. Additionally the District recently signed a 50 year agreement with Seattle Public Utilities which provides up to 3,500GPM (duration up to one week) for emergency use from the Tolt pipeline. The current physical capacity of the SPU-Tolt intertie is limited to 2,100GPM but the District is able to construct another intertie under the same agreement if needed. There are special concerns with blending and this water is only available for emergency and fire suppression needs and not for routine domestic demand.

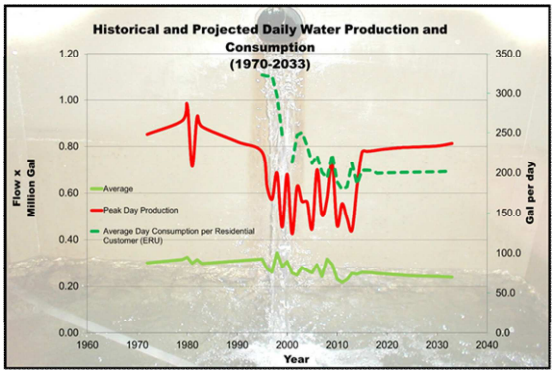
A cursory calculation of source water required for consumptive needs follows, considering the largest development scenario "**Alt 3 – Uniform Form and Height**":

Average Day Demand:

- Assume expected additional 1,500 Multi-Family Dwellings (MFD), ignore non-residential developments as the demands are small compared with residential
- Recorded SFD Average demand is about 200GPD in LFPWD.
- Assume 1MFD = 0.75(ERU) Single Family Dwelling (SFD) based on various sources
- ERU Avg. Day due to Alt 3 = 1500 x 0.75 = 1,125 count
- Average demand per MFD unit = 200GPD x 0.75 = 150GPD per unit
- Average demand proposed Alt 3 = 150 x 1500 = 225,000GPD
- **Average system demand = 225,000 + 254,000GPD = 479,000GPD – no issue with source capacity to supply average day for Scenario 3.**
- ERU system count = 1279 + 1,125 = 2,404

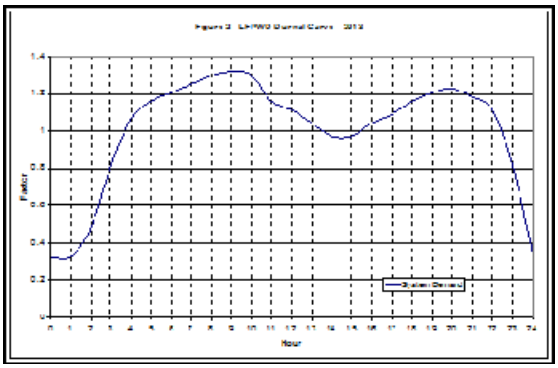
Maximum Day Demand:

- Assume peaking factor 1.25 for Max Day for MFD (based on Water Research Fdn. 2018)
- Est. Max. Day Demand Alt 3 = 1.25 x 150 x 1500 = 281,250GPD (195GPM)
- Current (2020) Max. Day System = 550GPM
- **Scenario Alt 3 Max. Day System = 550+195GPM = 745GPM < 973GPM water right.**
  Therefore water rights appear adequate to supply Max. Day Demand with the proposed alternative.



Peak Hour Demand:

Peak Hour periods are usually morning and evening. Various ways of estimating Peak Hour for a given system. Generally as the size of the system increases the peaking factor diminishes. In this instance we make a conservative calculation by adding the peak hour demand of Alt. 3 to the existing Peak Hour established in the District's Comprehensive Plan. For a simplified approach we will use a WSDOH formula for peak hour flow. (ref. Eq. 5-3, Table 5-1 of Water System Design Manual 2009)



PHD= (MDD/1440)[CN + F] + 18, assume C=1.6, F=225, MDD=150GPD/MFD, N=1500
PHD=360GPM + 784GPM (current system 2020) = 1,144GPM
Test for source water rights 1,144GPM > 973GPM so **additional equalizing storage may be necessary to meet peak hour demands of Alt 3 based on water rights. This should be further evaluated by hydraulic modeling.**

Fire Demand:

Capacity for fire suppression in commercial structures is the dominant demand in the LFPWD network. Fortunately the District has an emergency intertie agreement with Seattle Public Utilities (SPU) which offers ample capacity to support the District's existing fire suppression need of 3,500GPM for 3 hours. However there are limitations to this capacity:

1. Presently the District is completing design and permitting for a zone pressure reducing valve that will admit this water from the "Horizon View" 550HGL zone to the "Low Zone 292HGL. Without this zone intertie water is restricted from reaching the Low Zone in adequate quantity for commercial fire suppression needs.
2. There are sections of the transmission main which limit the capacity of the intertie to a maximum of 2,100GPM. In consideration of possible future increases in fire capacity the District has identified a location where an additional intertie with the SPU-Tolt system could be constructed to provide greater capacity and reliability. This intertie would be covered as an additional withdrawal point under the existing emergency intertie agreement with Seattle and would require about 1,600 feet of transmission main to the McKinnon Creek wellfield.

III. Adequacy of Storage

The District has a total of 4 reservoirs serving three pressure zones. Most of the distribution storage in the system was constructed in the 1960's. The addition of additional demand will place increased burden on the reservoirs and this should be examined for adequacy to meet various demand scenarios. LFPWD has additional source/supply capacity through an intertie with SPU-Tolt but this is only valid for emergency scenarios such as fire.

1. **Equalizing Storage** is required to accommodate times when peak capacity exceeds source capacity.
   <u>Adequacy due to Water Rights limitations</u>:
   Without hydraulic modeling we can conservatively estimate equalizing storage required due to water rights using Equation 9-1 in the WSDOH System Design Manual
   ES= (PHD – Qs)(150min)
   Given PHD = 1,144 and water rights capacity = 973GPM
   ES = (1,144 – 973Gal/min)(150min) = 25,650Gal
   It is likely that the existing "Low Zone" 292 Reservoir may accommodate this need. However this should be subjected to hydraulic modeling with the actual diurnal curve expected in the LFPWD network (see Diurnal curve graph on previous page).

   <u>Adequacy due to water quality considerations:</u>
   Water from McKinnon Deep well #3 contains high iron. If this well is blended at more than 25% there will be complaints from customers. Assuming this well is off and the District relied on other wells we have roughly 625GPM available for consumptive use:
   ES = (1,144 – 625al/min)(150min) = 77,850Gal
   Storage may still be adequate in the "Low Zone" 292 reservoir to cover this need although this should be hydraulically modeled to confirm adequacy.

2. **Standby Storage** is required in WSDOH design standards to allow for unexpected limitations in the source & supply system such as power outage or pump failure.

- WSDOH standby storage Eq. 9-3 in the Design Manual assumes the largest source is out of service and does not include emergency sources:
  Standby Storage SB(system with Alt 3) = 2 x 200 x 2404 – 1440(600) = 97,600Gal may be adequate with existing system storage although water quality issues must also be considered for this scenario. Note that this would require heavy dependence on McKinnon Well#3 which would be contributing about 1/3 of total supply. The increased iron level would certainly produce customer complaints.

IV. Adequacy of Distribution System

Water distribution networks in the size range of LFPWD are dominated in design by fire protection vs. peak consumptive use. Most of the transmission and distribution network between the Low Zone reservoir and the LFP Towne Center has already been upgraded to 12" main which is adequate for the anticipated future. However there are a few sections which have been identified in the District's Comprehensive Plan as needing upgrade:

1. Project #SS1 - Low Reservoir to McKinnon Creek transmission main 90 feet will be upgraded in 2019 as part of the District's ongoing McKinnon Creek Pumphouse project.
2. Project #D10 - Ballinger Way near north entrance to LFP Town Center to 175th Street – 520ft 12" ductile iron is identified in the Comprehensive plan but not funded yet.
3. Project #D5 – 175th Street between Ballinger and 47th Ave. NE 469ft 8" ductile iron. The District is seeking funding for this project at present.

If the proposed project will result in larger demand than 3,500GPM for 3 hours then additional hydraulic modeling should be carried out to assure adequate fire suppression capacity. Obviously this is something that will be dependent on proposed building design.

V. Water Quality Impacts

As identified in other sections of this memo, water quality needs to be considered in placing increased peak demands on the system. Depending on the size of development the District should consider developing a new well under existing water rights to replace the capacity offered by McKinnon DW#3 and DW#4 which does not have the nuisance iron problem otherwise there will likely be increased complaints during peak months of the year with increased reliance on McKinnon DW#3 as a result of the contemplated development.

VI. Other Considerations

1. Presently water is supplied to the LFP Towne Center at the Hydraulic Grade Line (HGL) of the "Low Zone" which is 292feet. This is reduced in pressure by two pressure reducing valve stations owned and operated by the Town Center. Consideration should be given to bypassing these PRV vaults for the proposed development.
2. With increased demands on the District's Low Zone 292HGL consideration should be made as to the adequacy of the Districts current infrastructure for seismic requirements and standby storage in the event of failure or servicing needs in the Low Zone reservoir.
3. Any of the proposed development scenarios will push the District's customer count past a threshold customer count for mandated security standards imposed by the Department of Homeland Security.

VII. Summary Conclusions and Recommendations

Impact to the LFPWD water system from the proposed land use scenarios was examined for the maximum impact scenario of 1,500 multi-family units presented in "Alt. 3". While the impact of the other scenarios may differ slightly these differences will be best considered with actual extended period simulation hydraulic modeling of the system.

A brief analysis of the District's system shows that:

1. Water Rights Capacity appears adequate to support the contemplated land uses in conjunction with existing intertie with SPU which provides for capacity for emergency fire suppression needs.
2. Some equalizing storage may be needed in the "Low Zone" HGL292ft although this would be most likely if fire suppression needs increased from the present 3,500GPM for 3hours. The additional demand due to the multi-family dwellings may not trigger the need for additional storage. Hydraulic modeling is needed to confirm this.
3. The existing transmission and distribution network appears to be mostly adequate although a few minor upgrades should be completed including a short section of 12" main on Ballinger in front of the Town Center and a short section of 8" main on 175th opposite the Town Center. One of these is being addressed with the McKinnon Creek pumping station currently under design.
4. Water quality needs to be considered to avoid increased reliance on McKinnon DW#3 and consequent increase in customer complaints.
5. Adequacy of the system should be considered in light of Federal Dept. Homeland Security requirements which are triggered once the District's customer count crosses the DHS threshold of 1,000 customers.

Dan Mundall, P.E.

From: Stephen Mundall <GIS@lfpwd.org>
Sent: Tuesday, November 13, 2018 12:24 PM
To: Alan Kerley; Dan Mundall
Subject: Fwd: Lake Forest Park Town Center
Attachments: Table from EIS Assumptions_Town Center Plan_November 9 2018 REV by Otak.pdf

-------- Forwarded Message --------
Subject: Lake Forest Park Town Center
Date: Fri, 9 Nov 2018 21:50:45 +0000
From: Adam Isaacson <Adam.Isaacson@otak.com>
To: Stephen Mundall <GIS@lfpwd.org>

Hey Stephen,

Today I received a summary of the different scenarios for upzoning of the Town Center site that are to be considered for our EIS report. I've included a table in the attachment. You will see 4 scenario columns (Existing, Alt 1 – No Action, Alt 2 – Varied Form and Height, and Alt 3 – Uniform Form and Height). Can you take a look and provide some feedback regarding what the implications of each of the scenarios would be on the LFPWD facilities – capacity, water rights, distribution, planned future improvements, etc.? Your feedback will assist me with the Analysis and Mitigation portion of the EIS. Thank you for your continued support and for your time.

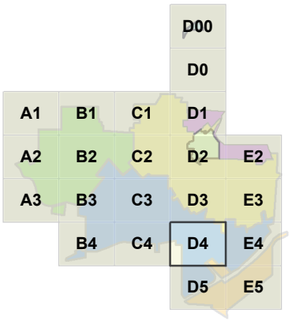
Regards,

Otak
Adam Isaacson | Civil Design Engineer, P.E.
11241 Willows Road NE, Suite 200 | Redmond, WA 98052
Direct: 425.739.7955 | Cell: 206.713.5613 | Main: 425.822.4446
www.otak.com

Land Use	Scenarios			
Non-Residential (SF)	**Existing**	**Alt 1 - No Action**	**Alt 2 – Varied Form and Height**	**Alt 3 –Uniform Form and Height**
Commercial	180,000	154,000	125,000	200,000
Medical/Dental	24,000	0	25,000	50,000
Bank	10,000	10,000	0	0
City Hall	20,000	20,000	32,000***	32,000***
New Civic/Community Space	0	0	20,000	20,000
Windemere Real Est. Office	16,000	16,000	16,000	16,000
Starbucks Coffee	2,500	2,500	2,500	2,500
Arco Gas Station	10 pumps	10 pumps	10 pumps	10 pumps
Lake Forest Bar and Grill	10,000	0	0	0
New Retail/Commercial Space	0	24,000	see above	see above
Housing (Units)				
Multi-family	0	Up to 700	Up to 1,200	Up to 1,500
Parking (Spaces)				
Town Center Commercial/Office, City Hall, and Other Owners	952	-93* -336** +64 for retail on street and off street NET = 587 commercial/ office demand @ 4/1000 GSF=906 would need +319 spaces in structure or surface	280 on street/surface 460 below grade/ structured commercial/ office demand @ 4/1000 GSF=842 740 above+100 below	360 on street/surface 600 below grade/ structured commercial/ office demand @ 4/1000 GSF= 1,154 960 above +200 below
Sound Transit Park and Ride Structure/Shared Structure	0	+300 Total = 300	+300 (shared) +100 retail/ City use Total = 400	+300 (shared) +200 retail/ City use Total = 500
Parking for New MF Housing Units (assumes a 1.05/unit ratio slightly above King County right sized parking model calculations); these would be located below grade or at grade in structure; also could be some surface				

* Displaced by new parking structure some to the south and all to the north of existing medical office building
** Displaced by new MF housing/retail – all in the northern area of Town Center site
*** Assumes 12,000 GSF expansion of City Hall; two levels at approx. 6,000 GSF each; assumes additional civic/community space which could be frontage to parking structure of 20,000 GSF and/or combination thereof

D4



EXISTING WATER NETWORK

Legend

- Water Meter
- Service Line
- Address Leader
- Line Valve & Number
- Line Valve Closed
- PRV
- Sample Station
- Leak Repair
- Air-Vac
- Blow-off

Fire Hydrants

- 700-1000GPM
- 1000-2000GPM
- 2000-2500GPM
- 2500GPM+

Pressure Zones

- High Zone
- Intermediate Zone
- Low Zone
- Beach Zone
- Property Parcel

Pipe Material

- Asbestos Cement
- Cast iron
- Ductile Iron
- Black iron
- HDPE
- PVC
- Steel

Contours

- 20 ft
- 100 ft

Boundaries

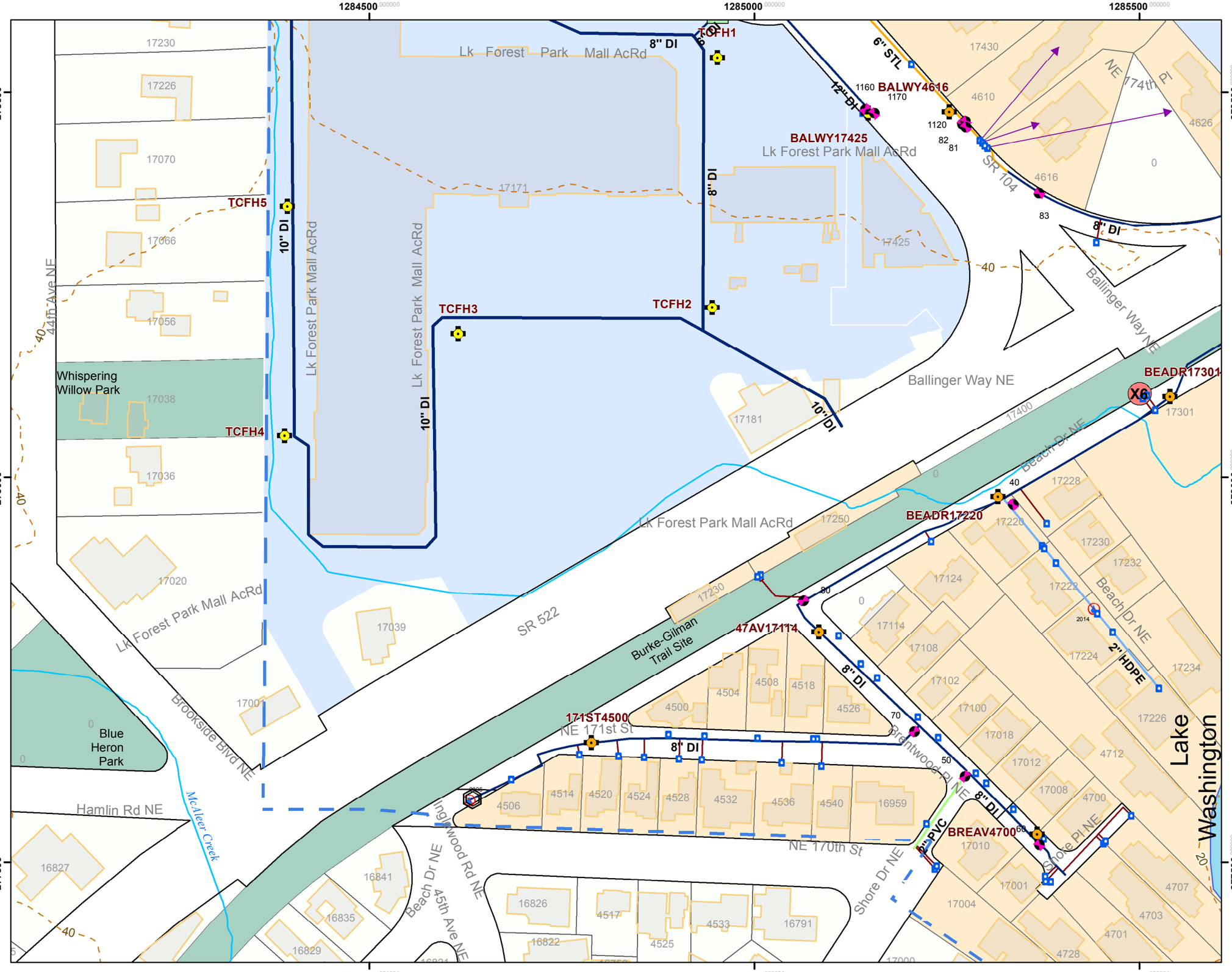
- LFPWD RSA
- Building
- Right of Way
- Water Course
- Water Body
- Wellfields
- Parks
- Lake Forest Park

LAKE FOREST PARK WATER DISTRICT

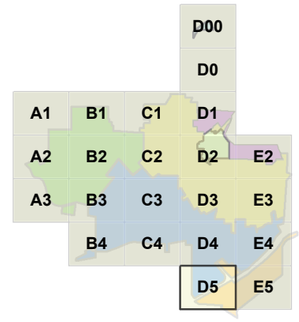
GOOD WATER, NATURALLY!

0 30 60 120 180 240 Feet

Mar. 2018	1 " = 120 ft



D5



EXISTING WATER NETWORK

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LAKE FOREST PARK WATER DISTRICT

GOOD WATER, NATURALLY!

0 30 60 120 180 240 Feet

Mar. 2018	1 " = 120 ft

SEWER FLOW CALCULATIONS 12/11/2018

Peaking Factor	3
Minutes per day	1440
Residential Occupancy per unit	2.4

Per 11/14/18 Mandi Roberts email

EXISTING CONDITIONS		**Sewer Flow***	
Non-Residential	**Square Feet**	**Gallons per day**	
Commercial	180000	105000	
Restaurant	30000		20 SF per patron
General Commercial	150000		Use 'Shopping centers'
Medical/Dental	24000	12000	Use 'Doctor's office in medical center'
Bank	10000	2000	Use 'Shopping centers'
City Hall	20000	2000	Use 'Community Colleges', assume 150 SF per person
New Civic/Community Space	0	0	
Windemere Real Est. Office	16000	1600	Use 'Community Colleges', assume 150 SF per person
Starbucks Coffee	2500	8333	15 SF per patron
Arco Gas Station (No. of pumps listed, not square feet)	10	120000	Use 'Service Station', 50 vehicles per hour per pump
Lake Forest Park Bar & Grill	10000	25000	20 SF per patron
New Retail/Commercial Space	0	0	
Housing			
Multi-Family	0	0	
Parking (Spaces)		**0**	No sewer flow generated
Town Center Commercial/Office, City Hall, and Other Owners	952	0	
Sound Transit Park & Ride Structure/Shared Parking	0	0	
TOTAL GPD		**275933**	**Average Day**
GPM		**192**	**Average Day**
Peak GPM		**575**	

***Based on per capita method outlined in WSDOE Orange Book 2008**

ALTERNATIVE 1 - NO ACTION		Sewer Flow*	
Non-Residential	**Square Feet**	**Gallons per day**	
Commercial	154000	145800	
Restaurant	50000		20 SF per patron
General Commercial	104000		Use 'Shopping centers'
Medical/Dental	0	0	Use 'Doctor's office in medical center'
Bank	10000	2000	Use 'Shopping centers'
City Hall	20000	2000	Use 'Community Colleges', assume 150 SF per person
New Civic/Community Space	0	0	
Windemere Real Est. Office	16000	1600	Use 'Community Colleges', assume 150 SF per person
Starbucks Coffee	2500	6250	20 SF per patron
Arco Gas Station (No. of pumps listed, not square feet)	10	120000	Use 'Service Station', 50 vehicles per hour per pump
Lake Forest Park Bar & Grill	0	0	20 SF per patron
New Retail/Commercial Space	24000	4800	Use 'Shopping centers'
Housing			
Multi-Family	700	168000	Use 'Dwellings', 2.4 people per unit
Parking (Spaces)		**0**	No sewer flow generated
Town Center Commercial/Office, City Hall, and Other Owners	587	0	
	906	0	
	319	0	
Sound Transit Park & Ride Structure/Shared Parking	300	0	
	TOTAL GPD	**450450**	**Average Day**
	GPM	**313**	**Average Day**
	Peak GPM	**938**	

***Based on per capita method outlined in WSDOE Orange Book 2008**

ALTERNATIVE 2 - VARIED FORM AND HEIGHT		Sewer Flow*	
Non-Residential	**Square Feet**	**Gallons per day**	
Commercial	125000	140000	
Restaurant	50000		20 SF per patron
General Commercial	75000		Use 'Shopping centers'
Medical/Dental	25000	12500	Use 'Doctor's office in medical center'
Bank	0	0	Use 'Shopping centers'
City Hall	32000	3200	Use 'Community Colleges', assume 150 SF per person
New Civic/Community Space	20000	200	Use 'Picnic Areas', assume 500 SF per person
Windemere Real Est. Office	16000	1600	Use 'Community Colleges', assume 150 SF per person
Starbucks Coffee	2500	6250	20 SF per patron
Arco Gas Station (No. of pumps listed, not square feet)	10	120000	Use 'Service Station', 50 vehicles per hour per pump
Lake Forest Park Bar & Grill	0	0	
New Retail/Commercial Space	0	0	
Housing			
Multi-Family	1200	288000	Use 'Dwellings', 2.4 people per unit
Parking (Spaces)		**0**	No sewer flow generated
Town Center Commercial/Office, City Hall, and Other Owners	280	0	
	460	0	
	842	0	
	740	0	
	100	0	
Sound Transit Park & Ride Structure/Shared Parking	400	0	
	TOTAL GPD	**571750**	**Average Day**
	GPM	**397**	**Average Day**
	Peak GPM	**1191**	

***Based on per capita method outlined in WSDOE Orange Book 2008**

ALTERNATIVE 3 - UNIFORM FORM AND HEIGHT		Sewer Flow*	
Non-Residential	**Square Feet**	**Gallons per day**	
Commercial	200000	155000	
Restaurant	50000		20 SF per patron
General Commercial	150000		Use 'Shopping centers'
Medical/Dental	50000	25000	Use 'Doctor's office in medical center'
Bank	0	0	
City Hall	32000	3200	Use 'Community Colleges', assume 150 SF per person
New Civic/Community Space	20000	200	Use 'Picnic Areas', assume 500 SF per person
Windemere Real Est. Office	16000	1600	Use 'Community Colleges', assume 150 SF per person
Starbucks Coffee	2500	6250	20 SF per patron
Arco Gas Station (No. of pumps listed, not square feet)	10	120000	Use 'Service Station', 50 vehicles per hour per pump
Lake Forest Park Bar & Grill	0	0	
New Retail/Commercial Space	0	0	
Housing			
Multi-Family	1500	360000	Use 'Dwellings', 2.4 people per unit
Parking (Spaces)		0	No sewer flow generated
Town Center Commercial/Office, City Hall, and Other Owners	360	0	
	600	0	
	1154	0	
	960	0	
	200	0	
Sound Transit Park & Ride Structure/Shared Parking	500	0	
	TOTAL GPD	**671250**	**Average Day**
	GPM	**466**	**Average Day**
	Peak GPM	**1398**	

***Based on per capita method outlined in WSDOE Orange Book 2008**

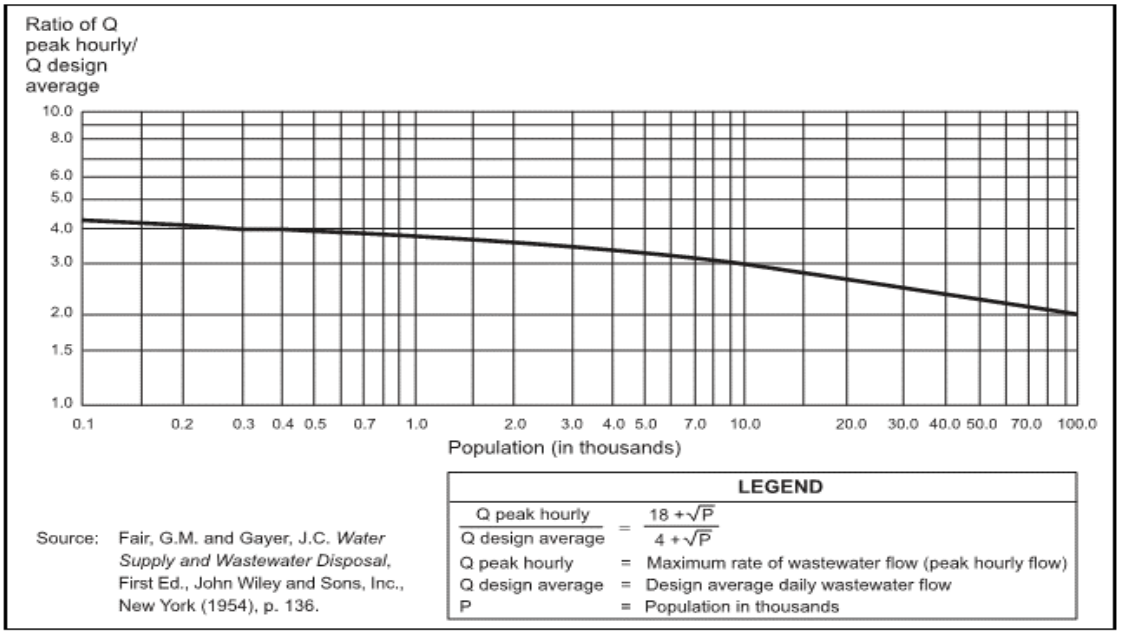

Figure C1-1. Ratio of Peak Hourly Flow to Design Average Flow

WSDOE Orange Book 2008

Table G2- 2. Design Basis for New Sewage Works

Discharge Facility	Design Units	Flow* (gpd)	BOD (lb/day)	SS (lb/day)	Flow Duration (hr)
Dwellings	per person	100	0.2	0.2	24
Schools with showers and cafeteria	per person	16	.04	.04	8
Schools without showers and with cafeteria	per person	10	.025	.025	8
Boarding schools	per person	75	0.2	0.2	16
Motels at 65 gal/person (rooms only)	per room	130	0.26	0.26	24
Trailer courts at 3 persons/trailer	per trailer	300	0.6	0.6	24
Restaurants	per seat	50	0.2	0.2	16

Discharge Facility	Design Units	Flow* (gpd)	BOD (lb/day)	SS (lb/day)	Flow Duration (hr)
Interstate or through-highway restaurants	per seat	180	0.7	0.7	16
Interstate rest areas	per person	5	0.01	0.01	24
Service stations	per vehicle serviced	10	0.01	0.01	16
Factories	per person per 8-hr shift	15-35	0.03-0.07	0.03-0.07	Operating period
Shopping centers	per 1,000 sq ft of ultimate floor space	200-300	0.01	0.01	12
Hospitals	per bed	300	0.6	0.6	24
Nursing homes	per bed	200	0.3	0.3	24
Homes for the aged	per bed	100	0.2	0.2	24
Doctor's office in medical center	per 1,000 sq ft	500	0.1	0.1	12
Laundromats, 9 to 12 machines	per machine	500	0.3	0.3	16
Community colleges	per student and faculty	15	0.03	0.03	12
Swimming pools	per swimmer	10	0.001	0.001	12
Theaters, drive-in type	per car	5	0.01	0.01	4
Theaters, auditorium type	per seat	5	0.01	0.01	12
Picnic areas	per person	5	0.01	0.01	12
Resort camps, day and night, with limited plumbing	per campsite	50	0.05	0.05	24
Luxury camps with flush toilets	per campsite	100	0.1	0.1	24

*Includes normal infiltration