GURU NANAK SIKH TEMPLE

WATER USAGE ANALYSIS REPORT

Located At:

2948 Rockville Rd, Fairfield, Ca

APN: 0150-260-040

Prepared For:

Guru Nanak Sikh Temple

Prepared By:

EX Wastewater Design

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INTRODUCTION:

The property owner, Guru Nanak Sikh Temple, plans to construct a new prayer hall building to accommodate increased visitation of up to a peak 600 people on Sundays. On Wednesdays, a small congregation of a maximum 60 people meets onsite. Additionally, 3 special events occurring on specific Sundays throughout the year will bring in an additional 300-400 people per event. The intent of the this report is to document how and in what quantities City water is currently used on the property as well as estimate water usage for the proposed development specified in Rezoning Petition Z-17-01 and Use Permit U-17-05.

The property is located at 2948 Rockville Road in Fairfield, CA (APN 0150-260-040). The subject 7.8 acre parcel is currently developed with existing buildings including: a main building housing the library, prayer hall, and kitchen, a 3 bedroom residence, and a Sikh Youth Academy building (no plumbing). Other existing structures on the property include: a permanent shade structure, a pre-engineered large metal storage building, a metal storage container, a cement spectator viewing area with roof, and a water storage tank. All potable water used for the residence and existing Temple is currently supplied with City of Fairfield water service. However, toilets in the kitchen facility building are currently supplied with well water. All onsite irrigation water is supplied by an existing water well located near the Temple Prayer Hall.

As requested by Solano County Planning staff, the following information estimates current and future water usage during a peak 24 hour period (Sundays), and during a typical month. In addition, estimated daily average water use is also presented. The findings in this report will demonstrate that not only is the current water usage under the City of Fairfield maximum allotment, but also that the proposed development specified in the submitted Use/Rezoning application will require less than the allotted maximum average of 2,500 gallons per day and maximum 50,000 gallons of water per month.

CURRENT WATER USAGE:

In order to determine the existing water usage on the property as accurately as possible a variety of data was evaluated. This included historical monthly water readings, field collected water readings, estimated water use based on current plumbing fixtures and water use activities, as well as a wastewater use analysis for comparison. This data has been summarized below and is available for review in Appendix 1.

Historical Water Data:

The "two-year water history" graph located in Appendix 1 and supplied by City of Fairfield Water staff, shows that water usage between November 2015 and November 2016 gradually rose from approximately 1000 gallons/month to approximately 1750 gallons/month. Following a large water leak in December 2016, water usage returned to the previous years norm, but then rose sharply to approximately 3000-4000 gallons/month to date. As this number appeared extremely high based on information provided by property representatives and previous site visits, it was determined that there was likely a large water leak somewhere on the property.

Field Collected Water Data and Leak Detection/Repair Summary:

In order to isolate and determine the magnitude of the leak, Temple staff was directed to record City water meter readings on a daily basis beginning on Friday August 25th. Daily water readings showed average water usage of 2500-3500 gallons per day. On Monday August 28th, we met with City of Fairfield staff, Vinay Pal, and conducted a leak isolation test of both the City portion of the water main to the property and the Temple portion of the main from the property connection valve to another main valve near the buildings. No leaks were detected.

The next step involved hiring a third party leak detection company (American Leak Detection – see invoice Appendix 1) to isolate the location of the water leak. Following a pressure test of the facility and residence plumbing, it was determined on Friday September 1st that there were two constantly leaking toilets and one showerhead in the residence. Additionally, an irrigation line coming from the City water supply at the main house was also located. On Saturday September 2nd, the two leaking toilets were repaired and the irrigation line was re-plumbed to well water.

Following the repairs, water readings on Sunday September 3rd, Monday September 4th (following peak Sunday – 350 estimated visitors), and Tuesday September 5th, showed huge reductions in daily water usage. **The daily water usage reading, which included the peak Sunday visitation, showed a 24 hour water usage of approximately 750 gallons. The following 24 hours period and most recent readings, shows that approximately 550 gallons were used.** Following repair of the leaking showerhead, it is expected that water use should decrease further. Additional readings will be taken daily for at least another week to document water savings. A water reading summary table can be found in Appendix 1.

Estimated Current Water Usage:

According to Temple staff the Temple currently receives approximately 250-500 visitors on Sundays. An average of 350 visitors on Sundays was used for purposes of this estimation. Visitors come and go throughout the day as the submitted traffic study demonstrates. Sunday meals are served "buffet" style and utensils and plates are single service and therefore water usage is likely lower than estimates used below.

The following excel spreadsheet below summarizes the location, type, and number of water fixtures in each building currently on the property. Typical residential water usage calculations were based on data supplied by online tools provided by "EPA Water Sense" and "East Bay Municipal Utility District". Water usage in the kitchen and prayer hall building was estimated using Solano County Code Chapter 6.4 Table 4 – Projected Daily Sewage Flow or otherwise high estimations of frequency of use of each fixture.

Water Usage - Existing Conditions - Peak Sunday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*
Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	350	210
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	50	31.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well water	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well water	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well water	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	350	1050
Handwash Faucet (kitchen/other staff)	1.8 GPM	20 gallons/day/person	10	200
			GPD	**1491.25**
			Total GPD	**1781.85**

Water Usage - Existing Conditions - Peak Wednesday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*
Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	65	39
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	10	6.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well water	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well water	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well water	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	60	180
Handwash Faucet (kitchen/other staff)	1.8 GPM	7.5 gallons/day/person	4	80
			GPD	**305.25**
			Total GPD	**595.85**

Water Usage - Existing Conditions - Peak Non-Event Day

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*

Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	20	12
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	2	1.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well water	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well water	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well water	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	10	30
Handwash Faucet (kitchen/other staff)	1.8 GPM	20 gallons/day/person	2	40
			GPD	**83.25**
			Total GPD	**373.85**

Average Daily Water Use (Gallons)	**606.7**	(Peak Weekly Water Usage/7 days)
Peak Weekly Water Usage (Gallons)	**4247.0**	(Peak Sunday+Peak Wednesday+(Peak Non-Event * 5 days))
Peak Monthly Water Usage (Gallons)	**18403.5**	(Weekly Water Usage*52 weeks)/12 months

The water usage spreadsheet above indicates that current water usage during a peak Sunday is approximately 1,782 gallons assuming an average 350 visitors. The current estimated monthly water usage is estimated as 18,404 gallons.

Please note, this monthly average assumes a peak Sunday visitation of 350 people. Per Temple representatives, Temple visitation sometimes reaches closer to 500 people on Sundays. Additionally, this data assumes there are no major plumbing leaks, note the toilets in the kitchen facility were put on well water earlier this year, and some landscape irrigation was using City water as recently as last week. This likely explains why historic averages of 1,000 -1,500 gallons per day may have been more typical.

PROPOSED WATER USAGE:

The primary consumption of water following new development and increased visitation will be from the existing residence and increased visitors using the new Prayer Hall building and kitchen/dining facilities. The only noticeable difference in daily water consumption will be from peak Sunday visitation. Based on information provided to Solano County staff for the proposed Use/Rezoning permits, it is assumed that a maximum of 600 visitors will attend worship services on Sundays. Visitors will continue to come and go throughout the day as the submitted traffic study demonstrates. Any special events that are anticipated to receive more than 600 visitors will require that portable toilet and handwash facilities be provided, as well as catered and or potluck style meals.

Please also note, any fixtures that remain in the kitchen/dining hall after development and those fixtures in the existing home that do not meet current low-flow requirements, will be replaced with low-flow fixtures as part of the development. Additionally, the washing machine and dishwasher in the existing residence will be upgraded. These changes should result in significant monthly/yearly water savings.

The excel spreadsheet below summarizes the location, type, and number of water fixtures proposed in each building on the property. Typical residential water usage calculations were again based on data supplied by online tools provided by "EPA Water Sense" and "East Bay Municipal Utility District" (Appendix 2), and the values used reflect the installation of low-flow water devices. Water usage in the kitchen and prayer hall building was estimated using Solano County Code Chapter 6.4 Table 4 – Projected Daily Sewage Flow or otherwise high estimations of frequency of use of each fixture.

Estimated Future Water Usage & Fixture Inventory

Water Usage - Proposed Conditions - Peak Sunday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/Day*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	600	450
Mens Restroom Toilet (6)	1.28 GPF	1 flush	350	448
Mens Urinal (5)	0.5 GPF	1 flush	500	250
Womens Restrooom Toilet (8)	1.28 GPF	1 flush	400	512
			GPD	**1660**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	100	43.75
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	610	1830
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff)	1.5 GPM	7.5 gallons per staff/day	10	75
			GPD	**1948.75**
			Total GPD	**3831.55**

Water Usage - Proposed Conditions - Peak Wednesday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/Day*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	65	48.75
Mens Restroom Toilet (6)	1.28 GPF	1 flush	30	38.4
Mens Urinal (5)	0.5 GPF	1 flush	35	17.5

Womens Restrooom Toilet (8)	1.28 GPF	1 flush	40	51.2
			GPD	**155.85**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	20	8.75
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	65	195
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff)	1.5 GPM	7.5 gallons per staff/day	4	30
			GPD	**233.75**
			Total GPD	**612.4**

Water Usage - Proposed Conditions - Non-Event Day

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/Day*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	22	16.5
Mens Restroom Toilet (6)	1.28 GPF	1 flush	5	6.4
Mens Urinal (5)	0.5 GPF	1 flush	10	5
Womens Restrooom Toilet (8)	1.28 GPF	1 flush	10	12.8
			GPD	**40.7**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	2	0.875
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	10	30
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff)	1.5 GPM	7.5 gallons per staff/day	2	15
			GPD	**45.875**
			Total GPD	**309.375**

Average Daily Water Usage (Gallons)	**855.8**	(Peak Weekly Water Usage/7 days)
Peak Weekly Water Usage (Gallons)	**5990.8**	(Peak Sunday+Peak Wednesday+(Peak Non-Event * 5 days))
Peak Monthly Water Usage (Gallons)	**25960.2**	(Weekly Water Usage*52 weeks)/12 months

The water usage spreadsheet above indicates that current water usage during a peak Sunday is approximately 3,832 gallons assuming a peak 600 visitors. The monthly water usage average is estimated as 25,960 gallons. The estimated water use based on proposed development and visitation falls well below the maximum average of 2,500 gallons per day and maximum 50,000 gallons per month City of Fairfield allotment.

As a means for comparison, and to represent a worst case scenario, the Table below summarizes water use estimation using wastewater guideline analysis. The wastewater values represented below typically provide a large safety factor. The estimated peak Sunday wastewater generated is expected to be 4,850 gallons per day and 37,200 gallons per month.

Guru Nanak Sikh Temple - Water Use Estimation Using Wastewater Guidelines

Proposed Weekly Wasteflow Calculations

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly Visitation (includes meal service)							
Peak Visitors/Day	600	10	10	60	10	10	10
Wastewater GPD (assume 7 GPD/person)	4200	70	70	420	70	70	70
Extra Staff/Employees							
Average Staff/Day	10	2	2	4	2	4	4
Wastewater GPD (assume 20 GPD/person)	200	40	40	80	40	80	80
Existing Residence							
Residence (# bedrooms)	3	3	3	3	3	3	3
Wastewater GPD (assume 150 GPD/bedroom)	450	450	450	450	450	450	450
Total Wasteflow Per Day (GPD)							
Total (Visitors +Staff +Residence)	4850	560	560	950	560	600	600

Peak Wasteflow (Sunday) : 4850 Gallons

Daily Average: 1240 Gallons ((Total Weekly Flow/7 days)
Monthly Average: 37200 Gallons (Daily Average Gallons * 30 days)

WATER USAGE SUMMARY:

In summary, the water usage for the proposed development and increased visitation at the Guru Nanak Sikh Temple is estimated to be approximately 3,800 gallons on a peak Sunday and on average approximately 26,000 gallons per month. The estimated water use falls well below the City of Fairfield monthly allotment of 50,000 gallons. Additionally, due to the recent repairs of major water plumbing leaks, removal of landscape irrigation from City of Water supply, and future upgrades of all plumbing fixtures to "low-flow" technology, it can be expected that the Guru Nanak Sikh Temple will do a far better job at minimizing water usage than in past years.

The Guru Nanak Sikh Temple plans to implement the following water use monitoring measures to ensure compliance with water use limits and be a responsible water user in the community.

1. Water bills will be reviewed monthly to identify out of the normal water use.
2. The facility will have all plumbing on the property leak tested on a monthly and then quarterly basis.
3. Wastewater flows to the leachfield will be recorded (via flowmeters) and monitored monthly as a further precaution to detect leaks and mitigate out of the normal water usage.
4. The wastewater system has also been designed with water reuse in mind and will utilize advance wastewater treatment and drip system components to irrigate future vine and tree crops on the property.

APPENDIX 1

- City of Fairfield Two-Year Water History
- Field Collected City of Fairfield Water Meter Readings
- Estimated Current Water Usage & Fixture Inventory
- Estimated Future Water Usage & Fixture Inventory
- Water Use Estimation Using Wastewater Guidelines
- American Leak Detection Invoice
- Summary of Proposed Activities at Guru Nanak Sikh Temple

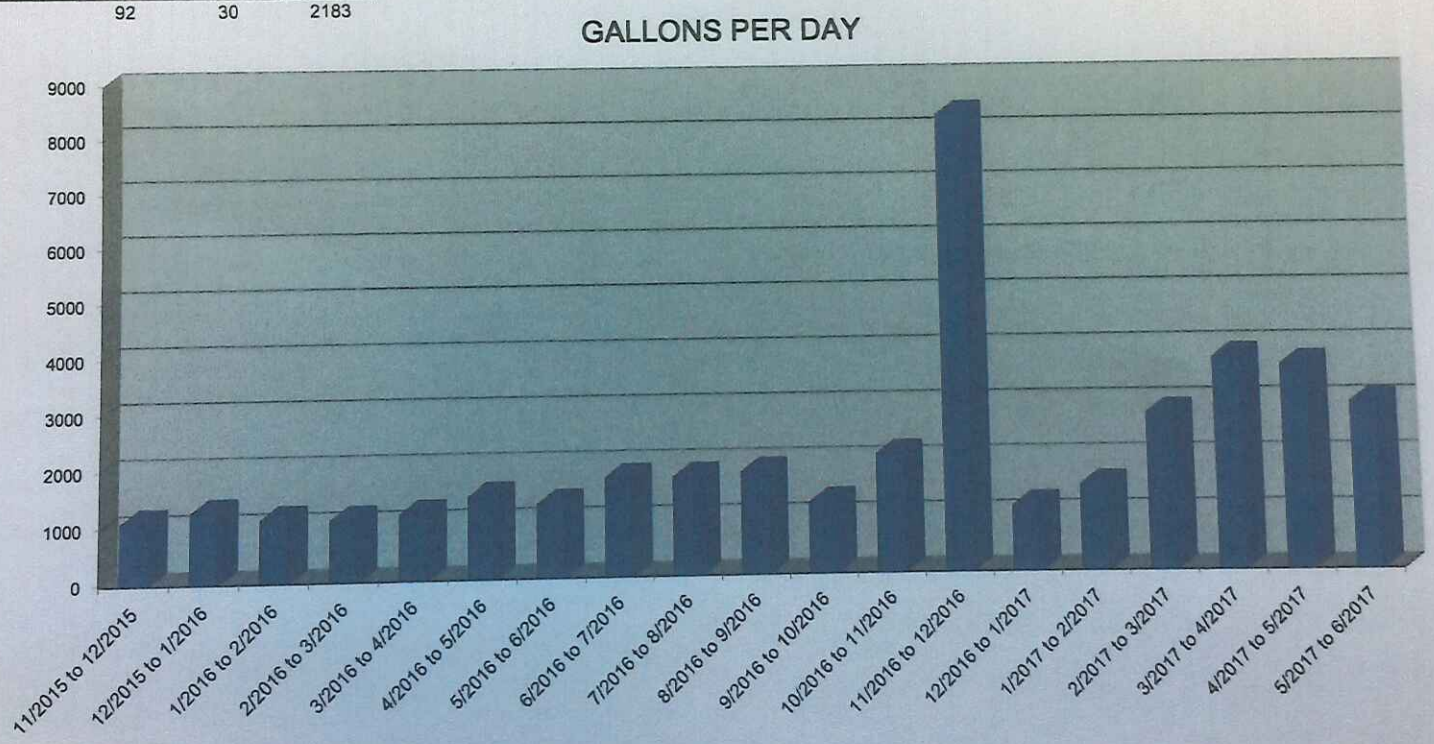
Two-year Water History

Read Date	Reading	HCF in Period	Days in Period	Gallons per Day
11/5/2015	1180			
12/3/2015	1221	41	28	1095
1/7/2016	1280	59	35	1261
2/4/2016	1322	42	28	1122
3/3/2016	1363	41	28	1095
4/7/2016	1418	55	35	1175
5/5/2016	1473	55	28	1469
6/2/2016	1522	49	28	1309
7/6/2016	1602	80	34	1760
8/4/2016	1670	68	29	1754
9/7/2016	1753	83	34	1826
10/6/2016	1802	49	29	1264
11/3/2016	1881	79	28	2110
12/8/2016	2270	389	35	8313
1/4/2017	2312	42	27	1164
2/2/2017	2371	59	29	1522
3/2/2017	2476	105	28	2805
4/6/2017	2654	178	35	3804
5/4/2017	2791	137	28	3660
6/8/2017	2930	139	35	2971
7/6/2017	3085	155	28	4141
Averages		92	30	2183

Customer Name: Fairfield Sikh Temple

Address: 2948 Rockville Road, Fairfield, CA

Meter Number: 0



Field Collected City Water Meter Readings

Date	Time Recorded	Meter Reading (cu. Ft.)	Gallons Elapsed (cu. Ft*7.48 gal)	Est. Gal/Day	Notes
Friday, August 25	5:00 PM	335199.3			
Saturday, August 26	7:00 AM	335460	1950.0	3342.8	
Sunday, August 27	9:00 AM	335891.9	3230.6	2981.5	
Monday, August 28	9:00 AM	336353.6	3453.5	3453.5	City of Fairfield water line leak tested (no leak)
Tuesday, August 29	10:00 AM	336713.8	2694.3	2586.5	
Wednesday, August 30	10:00 AM	337049.7	2512.5	2512.5	
Thursday, August 31	9:00 AM	337401.9	2634.5	2749	
Friday, September 1	10:00 AM	337752.6	2623.2	2518.3	Third party leak detection investigation **
Saturday, September 2	11:00 AM	338136.8	2873.8	2758.8	Two leaking toilets replaced around 3 PM
Sunday, September 3	10:00 AM	338283.5	1097.3	1145	Approx. 300-400 visitors for Sunday services
Monday, September 4	9:00 AM	338379.6	718.8	749.3	Major water use change following leak repair
Tuesday, September 5	9:00 AM	338453.2	550.5	550.5	Decrease in water usage on no services Monday

Average Daily Water Use Prior to Toilet(s) Leak Repairs = 2,500 Gallons/Day = 75,000 Gallons/Month

Average Daily Water Use After Toilet(s) Leak Repairs = 650 Gallons/Day = 19,500 Gallons/Month (note only two days of records following leak repairs)

** Water lines on the property were pressure tested. No leaks were found. However, it was determined that two toilets and a showerhead in the Residence had large constantly running leaks. Toilets were replaced in the afternoon on Saturday September 3rd. Immediate water savings were noted the following day.

Estimated Current Water Usage & Fixture Inventory

Water Usage - Existing Conditions - Peak Sunday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*
Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	350	210
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	50	31.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well wate	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well wate	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well wate	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	350	1050
Handwash Faucet (kitchen/other staff)	1.8 GPM	20 gallons/day/person	10	200
			GPD	**1491.25**
			Total GPD	**1781.85**

Water Usage - Existing Conditions - Peak Wednesday

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*
Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	65	39
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	10	6.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well wate	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well wate	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well wate	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	60	180
Handwash Faucet (kitchen/other staff)	1.8 GPM	7.5 gallons/day/person	4	80
			GPD	**305.25**
			Total GPD	**595.85**

Water Usage - Existing Conditions - Peak Non-Event Day

RESIDENCE

Fixture Type	*Flow Rate*	*Est. Gallons/person/day*	*Occupants*	*Est. Total Gallons/day*
Bathroom Facuet (3)	2.2 GPM	11.2	5	56
Bathroom Toilet (3)	1.6 gpf	8.2	5	41
Bathroom Shower (3)	2.5 GPM	18	5	90
Kitchen Faucet (1)	2.2 GPM	11	5	55
Dishwasher (1)	8.6 gal/use	1 Load per Day	5	8.6
Washing Machine (1)	40 gal/use	1 Load per Day	5	40
			GPD	**290.6**

DINING/KITCHEN/PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/day*
Handwash Faucet (12)	1.2 GPM	0.5 minutes/use	20	12
Footwash-Showerhead (2)	2.5 GPM	0.25 minutes/use	2	1.25
Mens Restroom Toilet (1)	1.6 GPF	Currently using well wate	N/A	0
Mens Urinal (2)	0.5 GPF	Currently using well wate	N/A	0
Womens Restrooom Toilet (3)	1.6 GPF	Currently using well wate	N/A	0
3 - compartment sink (2)	2.5 GPM	3 gallons/meal/person	10	30
Handwash Faucet (kitchen/other staff)	1.8 GPM	20 gallons/day/person	2	40
			GPD	**83.25**
			Total GPD	**373.85**

Average Daily Water Use (Gallons)	**606.7**	(Peak Weekly Water Usage/7 days)
Peak Weekly Water Usage (Gallons)	**4247.0**	(Peak Sunday+Peak Wednesday+(Peak Non-Event * 5 days))
Peak Monthly Water Usage (Gallons)	**18403.5**	(Weekly Water Usage*52 weeks)/12 months

References:

1. **Solano County Code Ch. 6.4 Sewage Standards - Table 4: Projected Daily Sewage Flow**
2. **EPA WaterSense: Water-Efficient Single-Family New Home Specification Supporting Statement - Table 2. Expected Daily Per Capita Indoor Water Savings from WaterSense Labeled New Homes (May 14, 2008)**
3. **East Bay Municipal District : Save Like a Pro - Typical 1990's Plumbing & Appliances Vs. Efficient Plumbing and Appliances**
4. **Field Collected Fixture & Activity Data**

Estimated Future Water Usage & Fixture Inventory

Water Usage - Proposed Conditions - Peak Sunday

RESIDENCE

Fixture Type	*Flow Rate*	*Est.*	*Occupants*	*Est. Total*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	600	450
Mens Restroom Toilet (6)	1.28 GPF	1 flush	350	448
Mens Urinal (5)	0.5 GPF	1 flush	500	250
Womens Restrooom Toilet (8)	1.28 GPF	1 flush	400	512
			GPD	**1660**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	100	43.75
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	610	1830
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff	1.5 GPM	7.5 gallons per staff/day	10	75
			GPD	**1948.75**
			Total GPD	**3831.55**

Water Usage - Proposed Conditions - Peak Wednesday

RESIDENCE

Fixture Type	*Flow Rate*	*Gallons/person/day*	*Occupants*	*Gallons/Day*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	65	48.75
Mens Restroom Toilet (6)	1.28 GPF	1 flush	30	38.4
Mens Urinal (5)	0.5 GPF	1 flush	35	17.5
Womens Restrooom Toilet (8)	1.28 GPF	1 flush	40	51.2
			GPD	**155.85**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	20	8.75
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	65	195
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff	1.5 GPM	7.5 gallons per staff/day	4	30
			GPD	**233.75**
			Total GPD	**612.4**

Water Usage - Proposed Conditions - Non-Event Day

RESIDENCE

Fixture Type	*Flow Rate*	*Gallons/person/day*	*Occupants*	*Gallons/Day*
Bathroom Facuet (3)	1.2 GPM	10.6	5	53
Bathroom Toilet (3)	1.28 GPF	6.5	5	32.5
Bathroom Shower (3)	1.75 GPM	14	5	70
Kitchen Faucet (1)	1.5 GPM	7.5	5	37.5
Dishwasher (1)	5.8 gal/use	5.8	1 Load per Day	5.8
Washing Machine (1)	24 gal/use	24	1 Load per Day	24
			GPD	**222.8**

PRAYER HALL

Fixture Type	*Flow rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Handwash Faucet (7)	1.0 GPM	0.75 minutes	22	16.5
Mens Restroom Toilet (6)	1.28 GPF	1 flush	5	6.4
Mens Urinal (5)	0.5 GPF	1 flush	10	5
Womens Restrooom Toilet (8)	1.28 GPF	1 flush	10	12.8
			GPD	**40.7**

KITCHEN/DINING FACILITY

Fixture Type	*Flow Rate*	*Est. Use per Visitor/Staff*	*# Visitors/Staff*	*Est. Total Gallons/Day*
Footwash-Showerhead (2)	1.75 GPM	0.25 minutes	2	0.875
3 - compartment sink (2)	Adjustable (Est. 1.8 GPM)	3 gallons/meal/person	10	30
2-compartment sink (1)	Adjustable (Est. 1.8 GPM)	Included Above	Included Above	0
Handwash Faucet (kitchen/other staff	1.5 GPM	7.5 gallons per staff/day	2	15
			GPD	**45.875**
			Total GPD	**309.375**

Average Daily Water Usage (Gallons)	**855.8**	(Peak Weekly Water Usage/7 days)
Peak Weekly Water Usage (Gallons)	**5990.8**	(Peak Sunday+Peak Wednesday+(Peak Non-Event * 5 days))
Peak Monthly Water Usage (Gallons)	**25960.2**	(Weekly Water Usage*52 weeks)/12 months

References:

1. **Solano County Code Ch. 6.4 Sewage Standards - Table 4: Projected Daily Sewage Flow**
2. **EPA WaterSense: Water-Efficient Single-Family New Home Specification Supporting Statement - Table 2. Expected Daily Per Capita Indoor Water Savings from WaterSense Labeled New Homes (May 14, 2008)**
3. **East Bay Municipal District : Save Like a Pro - Typical 1990's Plumbing & Appliances Vs. Efficient Plumbing and Appliances**
4. **Field Collected Fixture & Activity Data**

Guru Nanak Sikh Temple - Water Use Estimation Using Wastewater Guidelines

Proposed Weekly Wasteflow Calculations

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly Visitation (includes meal service)							
Peak Visitors/Day	600	10	10	60	10	10	10
Wastewater GPD (assume 7 GPD/person)	4200	70	70	420	70	70	70
Extra Staff/Employees							
Average Staff/Day	10	2	2	4	2	4	4
Wastewater GPD (assume 20 GPD/person)	200	40	40	80	40	80	80
Existing Residence							
Residence (# bedrooms)	3	3	3	3	3	3	3
Wastewater GPD (assume 150 GPD/bedroom)	450	450	450	450	450	450	450
Total Wasteflow Per Day (GPD)							
Total (Visitors + Staff + Residence)	4850	560	560	950	560	600	600

Peak Wasteflow (Sunday) : 4850 Gallons

Daily Average: **1240** **Gallons** ((Total Weekly Flow/7 days)

Monthly Average: **37200** **Gallons** (Daily Average Gallons * 30 days)

**** Typical wastewater guidelines use water usage estimated rates with a safety factor built in so estimations above most likely represent higher than average usage.**

WasteFlow Rates obtained from Solano County Code Chapter 6.4 - Sewage Standards Table 4. Projected Daily Sewage Flow

AMERICAN LEAK DETECTION
THE ORIGINAL LEAK SPECIALISTS

Form Information

Form Name:	**Plumbing**
Submitter Name:	Daniel Cunha
Submission Date:	Sep 1, 2017 10:38:53 AM PDT
Reference Number:	12369p 20170901-1865597644

Customer Information

Customer Name:	Guru Nanak Sikh Temple
Address:	2948 Rockville Rd, Fairfield, CA 94534, United States Sep 1, 2017 10:31:01 AM PDT [View Map]
Job Type:	Commercial
Leak Detection Type:	High water bill
Job Estimate:	$445/2hrs + $165/hr thereafter + $120/tank of tracer gas

Plumbing Tests

Concern:	High water bill.
Meter Movement:	Yes
Line(s) that held pressure:	Main Line; Hot Line; Cold Line.
Leak Detected On:	Two running toilets in the back of the house.
Leak Location:	Hallway Bathroom and Master bathroom.

Notes

Notes:	The main line is approximately 500 feet long, and the well water connects to the city water. All lines were checked for all buildings on the property, and the unidentified valves were discerned and the customer was informed thusly.

Payment Information

Results:	The results of the inspection were shown to and discussed with the customer.
Additional Applicable Charges:	1 Additional Hour: $165
Total Charge:	$610
Payment:	Paid in Full by Credit Card. THANK YOU FOR CALLING AMERICAN LEAK DETECTION.

Summary of Proposed Activities at Guru Nanak Sikh Temple Property

Existing & Proposed Activities at Guru Nanak Sikh Temple

	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
Weekly Visitation (includes meal service)														
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Peak Visitors/Day	300-400	600	10	10	10	10	60	60	10	10	10	10	10	10
Extra Staff/Employees														
Average Staff/Day	10		2		2		4		2		4		4	
Existing Residence														
Residence (# bedrooms)	3		3		3		3		3		3		3	

Proposed Additional Activities:

- Special Events (no more than three events per year) to occur on Sundays following usual Prayer services. They typically during the months of (April & November) During these special event days, portable toilet and hand wash facilities will be provided in addition to catered or potluck style meals.
- If any other special events occur, and it is anticipated that more than 600 visitors will be visiting the Temple during the same day, portable toilet and hand wash facilities will provided in addition to catered or potluck style meals.
- The Sikh Youth Academy operates only on Sundays. Students attending are included in the typical weekly visitation listed in the table above. There is no plumbing in the Sikh Youth Academy building.
- Small Prayer gatherings occur on Wednesdays between 5pm to 8pm. Typical attendance is 50 people.

Additional Information:

- Typical Sunday Prayer services involves members arriving around 10-11am and leaving around 1-3pm.
- An existing Residence consisting of three bedrooms also exists on the property. Typically 4-5 occupants live in the Residence.
- All domestic drinking water and plumbing on the property, except for the toilets in the existing restrooms in the kitchen facility is provided by City of Fairfield. Once the new Prayer Hall is constructed, the bathrooms in the kitchen building will be removed.
- The property also has an existing water well which is used for all irrigation and fire protection on the property. Water is stored in the existing metal water tank.

APPENDIX 2

- EPA WaterSense: Water-Efficient Single-Family New Home Specification Supporting Statement
- East Bay Municipal District : Save Like a Pro – Typical Vs. Efficient Plumbing Estimates

Water-Efficient Single-Family New Home Specification Supporting Statement

I. Introduction

The WaterSense® Program is developing criteria for water-efficient new homes. The intent of the Water-Efficient Single-Family New Home Specification (Specification) is to reduce indoor and outdoor water usage in new residential homes and encourage community infrastructure savings. The Specification is applicable to newly constructed single-family homes and townhomes, three stories or less in size.

II. Current Status of Water Use in Residential New Homes

The environmental impact of the residential sector is significant. There are more than 120 million homes in the United States and about 1.5 million new homes are constructed each year. On average for all homes, 70 percent of household water is used indoors and 30 percent is used outdoors; however, these percentages can easily flip during summer months in arid climates. Outdoor water use, especially for irrigation, can strongly affect a municipality's peak water use, upon which the sizing of water supply facilities is based. Table 1 presents the average indoor water consumption data for an existing American home.[1]

Table 1. Typical Indoor Household Water Use

Type of Use	Daily Use (gallons/person)	Approximate % of Total Indoor Use
Toilets	18.5	26.7
Clothes Washers	15.0	21.7
Showers	11.6	16.8
Faucets	10.9	15.7
Leaks	9.5	13.7
Other	1.6	2.2
Baths	1.2	1.7
Dishwashers	1.0	1.4
Total	**69.3**	**100.0**

Water use inside the home has been addressed nationally through two mechanisms. The Energy Policy Act of 1992 (EPAct) established the maximum flush volume of toilets typically installed in residential settings at 1.6 gallons per flush (gpf), and the maximum flow rate for bathroom sink faucets, kitchen faucets, and showerheads at 2.5 gallons per minute (gpm) at 80 pounds per square inch (psi) static pressure. In 1998, the Department of Energy adopted a maximum flow rate standard of 2.2 gpm at 60 psi for all faucets.[2] However, new standards have not been issued to mandate the more efficient plumbing products being manufactured today.

[1] AWWA Research Foundation, 1998. Residential End Uses of Water.
[2] 63 *Federal Register* 13307; March 18, 1998.

Table 2. Expected Daily Per Capita Indoor Water Savings from WaterSense Labeled New Homes

Indoor Features	Standard Water Use	Standard Use (gal/day/capita)	WaterSense Criteria	Expected Use (gal/day/capita)	Expected Water Savings (gal/day/capita)
Toilets	1.6 gpf	8.16[24]	1.28 gpf	6.53	1.63 (20%)
Bathroom faucets	2.2 gpm	11.21[25]	1.5 gpm[26]	10.64	0.57 (5%)
Showerheads	2.5 gpm	10.33[27]	2.5 gpm	10.33	0 (0%)
Hot water delivery systems	~10 gallons per day per household wasted[28]	3.85[29]	Assume 10% water savings for insulation and between 15 – 20% water savings for improved design.[30]	2.89	0.96 (25%)
Dishwashers	8.6 gallons per load[31] (6 gallons per cycle)[32]	1.04	5.8 gallons per load (4 gallons per cycle)[33]	0.69	0.35 (33%)
Clothes washers	39.6 gallons per load[34] (12 gallons per cycle per cubic foot)	15.35	24 gallons per load[35] (6 gallons per cycle per cubic foot)	8.44	6.91 (45%)
Total Indoor		49.89		39.52	10.42 (21% savings)

[24] Assumes 5.1 flushes/day/person per Mayer. P, DeOreo, W. et al 2000 and 2003.
[25] Assumes flow of 1.2 gpm and average use of 9.34 minutes/person/day per Mayer , P., DeOreo, W. et al 2000 and 2003.
[26] Assumes flow of 0.97 gpm and average use of 10.97 minutes/person/day per Mayer , P., DeOreo, W. et al 2000 and 2003.
[27] Assumes flow of 2.13 gpm, average use of 8.36 min/shower/person, and 0.58 showers/person/day per Mayer P., DeOreo W. et al 2000 and 2003.
[28] Klein, Gary. *Hot Water Distribution Considerations for BMPs.* Presentation made on August 21, 2006 to the California Urban Water Conservation Council.
[29] Assumes 2.6 persons per household per U.S. Department of Housing and Urban Development 2005 .
[30] Acker, L., Klein, G. *Benefits of Demand-Controlled Pumping.* Home Energy. September/October 2006.
[31] Assumes 8.64 gallons/load and 0.12 loads/person per Mayer , P., DeOreo, W. et al 2000, 2003, and 2004.
[32] ENERGY STAR Frequently Asked Questions on Dishwashers. <energystar.custhelp.com/cgi-bin/energystar.cfg/php/enduser/std_adp.php?p_faqid=2539&o_created...>accessed 2/15/08.
[33] Ibid.
[34] Assumes 39.36 gallons/load and 0.39 loads/person per Mayer , P., DeOreo, W. et al 2000, 2003, and 2004.
[35] Assumes 24.15 gallons/load and 0.35 loads/person per Mayer , P., DeOreo, W. et al 2000, 2003, and 2004.