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A Lift Station Pump Characteristics and Operating Criteria

A.1 SUMMARY DATA FOR LIFT STATIONS 2 THROUGH 12

A.2 INFORMATION RECEIVED AT START-UP OF EACH STATION

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LS-02	
Serial #	06-0101-C
Make	Smith & Loveless
Model	Duo-Duct

LS-02	2015	2025	2035
Force main Size	8"		
Suction pipe Size	6"		
Wet Well Diameter	8'		
Wet Well Depth	21'		
Basin Inflow (gpm)	605	935	1295
Upstream LS Inflow (gpm)	LS-13 = 100	LS-13 = 100	LS-13 = 100 LS-16 = 400
Total Inflow (gpm)	705	1035	1795
Total Head (ft)	33'		
Pump HP	15		
Pump RPM	1760		
Impeller Size	8"		
X-Peller (Y/N)	Y		
Pump Flow (gpm)	460		
Measured Flow			
Pump Efficiency			
Improvement (Y/N)	Y		
Improvement Cost	$0		
Improved Flow Rate	N/A		
Improved Efficiency	N/A		

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Pump ststion (wet well, pumps and pumping controls to be upgraded prior to 2025.

LS-03	
Serial #	06-0101-C
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	6"	6"	6"
Suction pipe Size	4"	4"	4"
Wet Well Diameter	8'	8'	8'
Wet Well Depth	15' 6"	15' 6"	15' 6"
Basin Inflow	50	55	60
Upstream LS Inflow (gpm)	---	---	---
Total Inflow (gpm)	50	55	60
Total Head (ft)	46'	46'	46'
Pump HP	7.5	7.5	7.5
Pump RPM	1760	1760	1760
Impeller Size	7 3/8"	7 3/8"	7 3/8"
X-Peller (Y/N)	N	N	N
Pump Curve Flow (gpm)	200	200	200
Measured Flow			
Pump Efficiency			
Improvement (Y/N)	N	N	N
Improvement Cost	$0	$0	$0
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

LS-04	
Serial #	06-0105-C
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	8"		
Suction pipe Size	6"		
Wet Well Diameter	12'		
Wet Well Depth	21'		
Basin Inflow	35	60	85
Upstream LS Inflow	LS-5 = 450 LS-12 = 250	LS-5 = 450 LS-12 = 250	LS-5 = 450 LS-12 = 475
Total Inflow (gpm)	735	760	1010
Total Head (ft)	37		
Pump HP	15		
Pump RPM	1760		
Impeller Size	7 7/8"		
X-Peller (Y/N)	Y		
Pump Curve Flow (gpm)	400		
Measured Flow			
Pump Efficiency			
Improvement (Y/N)	Y		
Improvement Cost			
Improved Flow Rate			
Improved Efficiency			

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Pump ststion (wet well, pumps and pumping controls to be upgraded prior to 2025.

LS-05	
Serial #	06-0108-T
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	8"	8"	8"
Suction pipe Size	6"	6"	6"
Wet Well Diameter	12'	12'	12'
Wet Well Depth	24'	24'	24'
Basin Inflow (gpm)	180	295	420
Upstream LS Inflow (gpm)	LS-6 = 500	---	---
Total Inflow (gpm)	680	295	420
Total Head (ft)	30.5'	30.5'	30.5'
Pump Curve Flow	520	520	520
Pump HP	15	15	15
Pump RPM	1760	1760	1760
Impeller Size	8"	8"	8"
X-Peller (Y/N)	Y	Y	Y
Pump Curve Flow (gpm)	520	520	520
Measured Flow (gpm)			
Pump Efficiency			
Improvement (Y/N)	N	N	N
Improvement Cost	$0	$0	$0
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

LS-06	
Serial #	06-0108-T
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	8"	8"	8"
Suction pipe Size	6"	6"	6"
Wet Well Diameter	12'	12'	12'
Wet Well Depth	26'	26'	26'
Basin Inflow	330	225	240
Upstream LS Inflow	0	0	0
Total Inflow (gpm)	330	225	240
Total Head (ft)	50.7'	50.7'	50.7'
Pump Curve Flow	500	500	500
Pump HP	15	15	15
Pump RPM	1760	1760	1760
Impeller Size	8 5/8"	8 5/8"	8 5/8"
X-Peller (Y/N)	Y	Y	Y
Pump Efficiency			
Improvement (Y/N)	N	N	N
Improvement Cost	$0	$0	$0
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Current pump station configuration acceptable for 20-year planning horizon.

LS-07	
Serial #	06-0110-Z
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	6"		
Suction pipe Size	6"		
Wet Well Diameter	12'		
Wet Well Depth	26'		
Basin Inflow	190	215	235
Upstream LS Inflow	---	1640	1660
Total Inflow (gpm)	190	1855	1895
Total Head (ft)	74'		
Pump Curve Flow	176		
Pump HP	10		
Pump RPM	1760		
Impeller Size	8 3/4"		
X-Peller (Y/N)	Y		
Pump Efficiency			
Improvement (Y/N)	N		
Improvement Cost	---		
Improved Flow Rate	N/A		
Improved Efficiency	N/A		

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Pump ststion (wet well, pumps and pumping controls to be upgraded prior to 2025.

LS-08	
Serial #	06-0112-C
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	6"	6"	6"
Suction pipe Size	6"	6"	6"
Wet Well Diameter	12'	12'	12'
Wet Well Depth	18'	18'	18'
Basin Inflow	135	200	270
Upstream LS Inflow	---	---	---
Total Inflow (gpm)	135	200	270
Total Head (ft)	79	79	79
Pump Curve Flow	225	225	225
Pump HP	10	10	15
Pump RPM	1760	1760	1760
Impeller Size	9"	9"	9"
X-Peller (Y/N)	Y	Y	Y
Pump Efficiency			
Improvement (Y/N)	N	N	N
Improvement Cost	$0	$0	$25,000
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Prior to 2035 add two 15-hp motors with X-peller pumps.

LS-09	
Serial #	06-0114-C
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	6"	6"	6"
Suction pipe Size	6"	6"	6"
Wet Well Diameter	12'	12'	12'
Wet Well Depth	21'	21'	21'
Basin Inflow	110	110	115
Upstream LS Inflow	---	---	---
Total Inflow (gpm)	110	110	115
Total Head (ft)	79'	79'	79'
Pump Curve Flow	225	225	225
Pump HP	10	10	10
Pump RPM	1760	1760	1760
Impeller Size	9 1/8"	9 1/8"	9 1/8"
X-Peller (Y/N)	Y	Y	Y
Pump Efficiency			
Improvement (Y/N)	N	N	N
Improvement Cost	$0	$0	$0
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Current pump station configuration acceptable for 20-year planning horizon.

LS-012	
Serial #	06-0118-V
Make	Smith & Loveless
Model	Duo-Duct

LS Item	2015	2025	2035
Force main Size	4"	8"	8"
Suction pipe Size	6"	6"	6"
Wet Well Diameter	12'	12'	12'
Wet Well Depth	27'	27'	27'
Basin Inflow	110	240	475
Upstream LS Inflow	---	---	---
Total Inflow (gpm)	110	240	475
Total Head (ft)	33'	33'	33'
Pump Curve Flow	250	250	500
Pump HP	5	5	15
Pump RPM	1760	1760	1760
Impeller Size	9 1/4"	9 1/4"	9 1/4"
X-Peller (Y/N)	N	N	N
Pump Efficiency			
Improvement (Y/N)	N	Y	N
Improvement Cost	$0	$25,000	$25,000
Improved Flow Rate	N/A	N/A	N/A
Improved Efficiency	N/A	N/A	N/A

1. Lift station data provided by manufacturer based on installed information, system analysis and data confirmation required before performing any improvements.

2. Prior to 2015 add increased force main across SR-531.

3. Prior to 2035 add two 15-hp motors with X-peller pumps.

L/S #2

PUMP STATION ENGINEERING ORDER
CUSTOM SERIES

LOCATION Arlington, WA — STATION SERIAL NO. 06-0103-C
OWNER City of Arlington — ENGINEER

1. Station Size Duo-Duct (Dia.) 8'-0" Height 8'-6" Sump Pump Part No. 8L1
2. Suction Piping/Base Beams Pump 1 6"x6" Pump 2 6"x6"
   Pump 3 _____ Pump 4 _____
3. Suction (Gate) Valve Pump 1 6" Pump 2 6" Pump 3 _____ Pump 4 _____
4. Pump Discharge (Gate) Valve Pump 1 6" Pump 2 6"
   Pump 3 _____ Pump 4 _____
5. Common Discharge Outlet (P.E.) (Stl.) Size 8"
6. Entrance Tube 36" Dia. x 13'-6" Long
7. Main Conduit Size 1-1/2" Aux. Conduit 2) 1/2" (Describe) Telemetry
   Blower Part No. 7L277
8. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts
   3 Wire
9. 110V Single Phase Current available No 5 KVA Trans. Req'd
   YES V to 120 VAC
10. Depth of Bury Ground Elevation to Base Pad 21 ' - 0 "
    Base Reinforcing Package (No).

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	460 @ 33'	460 @ 33'		
Pump Model	4B2G	4B2G		
Impeller Diameter	7-1/8"	7-1/8"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mech. Seal-Filter Ass'y (Size)	1-7/8"	1-7/8"		
Pump Serial Number				

MOTOR DATA (INVENTORY CODE)

Horsepower	15	15		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC) or Wound Rotor (WR)	SC	SC		
Special Modifications				
Across-The-Line (AL) or Part Winding (PW) Start	AL	AL		

CONTROL PANEL DATA TYPE NEMA 1 U.L. Listed — WIRING DIAGRAM NO. C06-0103-30

MOTOR CONTROL EQUIPMENT		PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps	40	4L258CF	4L258CF		
Magnetic Starter - Nema Size	2	4L330CC	4L330CC		
O.L. Coil No. FH					

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFOMER
Trip Rating-Amps	15	20	15	15	15

L/S #2

Serial No. 06-0103-C

PUMP STATION ENGINEERING ORDER (PAGE 2 OF 2)

S&L BUBBLER CONTROL SYSTEM PRESSURE SWITCH SETTINGS	LOW LEVEL	HIGH LEVEL	LOW WATER ALARM	HIGH WATE ALARM
P. S. S&L Part No.	4L200B	4L200D	4L200B	4L200A
High Level Actuation (Feet)	4.0	4.5	3.0	5.0
Low Level Actuation (Feet)	2.5	2.0	1.5	3.0

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator	Plastic "Level-Set" Indicator Tube
	Magnesium Anodes (4 provided)
	Spare Volute Gaskets
Nema 3 Wire 1 Phase Duplex Receptacle	
S&L Damtite Seal (Spare)	Touch-Up Kit (Paint-Brushes)
Dehumidifier	Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. Provide 1/4" plugged taps on suction and discharge pipes.

2. Provide a NEMA 1 U.L. Listed control panel.

3. Provide a total of four anodes.

4. Provide a Norton safety climb device with strap.

5. Provide elapsed time meters (one per pump).

6. Provide low and high water alarms for remote indication. Include terminal strips for alarms for future customer furnished telemetry.

7. Provide emergency generator power interlock.

8. Provide connection for wet well blower furnished by others.

SALES ENGINEERING		Maintenance Manual Qty.	COMPANION JOB SERIAL NOS.
PREPARED BY	DATE	Rep 1	
		Job File	
CME	6-16-88	Contractor 6	

Form No. 04-06-82 (Rev. 11/83)

#3

PUMP STATION ENGINEERING ORDER
CUSTOM SERIES

LOCATION Arlington, WA STATION SERIAL NO. 06-0101-C
OWNER Pape & Sons Construction, Inc. ENGINEER CH2M Hill

1. Station Size Du-O-Duct (Dia.) 8'-0" Height 8'-6" Sump Pump Part No. 8L9
2. Suction Piping (P.E.) (Stl.) Pump 1 4"x6" Pump 2 4"x6"
   Pump 3 _____ Pump 4 _____
3. Suction (Gate) Valve Pump 1 4" Pump 2 4" Pump 3 _____ Pump 4 _____
4. Pump Discharge (Gate) Valve Pump 1 4" Pump 2 4"
   Pump 3 _____ Pump 4 _____
5. Common Discharge Outlet (P.E.) (Stl.) Size 6"
6. Entrance Tube 36" Dia. x 8'-6" Long
7. Main Conduit Size 1-1/2" Aux. Conduit 2)1/2" (Describe) Alarm, Telemetry
   Blower Part No. 7L277
8. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts
   3 Wire
9. 110V Single Phase Current available No 3 KVA Trans. Req'd Yes
   460 V to 120 VAC
10. Depth of Bury Ground Elevation to Base Pad 15 ' - 6 "
    Base Reinforcing Package (No).

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	200 @ 46'	200 @ 46'		
Pump Model	4B2G	4B2G		
Impeller Diameter	7-3/8"	7-3/8"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mech. Seal-Filter Ass'y (Size)	1-7/8"	1-7/8"		
Pump Serial Number				

MOTOR DATA (INVENTORY CODE)

Horsepower	7-1/2	7-1/2		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC) or Wound Rotor (WR)	SC	SC		
Special Modifications				
Across-The-Line (AL) or Part Winding (PW) Start	AL	AL		

CONTROL PANEL DATA TYPE NEMA 1 (U.L. LISTED WIRING DIAGRAM NO. A06-0101-30, C06-0101-30

MOTOR CONTROL EQUIPMENT

		PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps	20	4L258CB	4L258CB		
Magnetic Starter - Nema Size	1	4L330BB	4L330BB		
O.L. Coil No. FH					

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFOMER
Trip Rating-Amps	15	20	15	15	

L/S #3

Serial No. 06-0101-C

PUMP STATION ENGINEERING ORDER (PAGE 2 OF 2)

S&L BUBBLER CONTROL SYSTEM PRESSURE SWITCH SETTINGS	LOW LEVEL	HIGH LEVEL	ALARM	HI-WATER ALARM L&R
P. S. S&L Part No.	4L200D	4L200D		4L200D
High Level Actuation (Feet)	4.0	4.5		5.0
Low Level Actuation (Feet)	2.5	2.0		3.0

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator	Plastic "Level-Set" Indicator Tube
Air Compressors	Magnesium Anodes (4 provided)
S&L Air Flow Indicator	Spare Volute Gaskets
Nema 3 Wire 1 Phase Duplex Receptacle	Spare Pump Filter Cone
S&L Damtite Seal (Spare)	Touch-Up Kit (Paint-Brushes)
Dehumidifier	Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. Provide U.L. listed control panel.
2. Provide 1/4" taps for suction and discharge.
3. Provide a total of 4 anodes with 15 ft. copper leads.
4. Provide elapsed time meters (one per pump).
5. Provide terminal strip for alarm for future telemetry.
6. Provide high water alarm for local and remote indication. Indicating devices are not by S&L.

SALES ENGINEERING		Maintenance Manual Qty.	COMPANION JOB SERIAL NOS.
PREPARED BY	DATE	Rep 1	
CME	11-20-86	Job File 0	
		Contractor 5	

From No. 04-06-82 (Rev. 11/83)

L/S
#4

PUMP STATION ENGINEERING ORDER
DUO-DUCT

LOCATION Arlington, WA — STATION SERIAL NO. 06-0105-C
OWNER Wilder Construction Co. — ENGINEER Cascade Surveying & Eng

1. Station Size Duo-Duct (Dia.) 8' Inside Height 8'-6" Sump Pump Part No. 8L47
2. Suction Piping/Base Beams Pump 1 8"x8" Pump 2 8"x8"
   Pump 3 _____ Pump 4 _____
3. Suction (Gate) Valve Pump 1 6" Pump 2 6" Pump 3 _____ Pump 4 _____
4. Pump Discharge (Gate) Valve Pump 1 6" Pump 2 6"
   Pump 3 _____ Pump 4 _____
5. Common Discharge Outlet (P.E.) (Stl.) Size 8"
6. Entrance Tube 36" Dia. x 13'-6" Long
7. Main Conduit Size 1-1/2" Aux. Conduit 1/2 (Describe) Alarms
   Blower Part No. 7L277
8. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts
   3 Wire
9. 110V Single Phase Current (not) available 5 KVA Trans. Req'd
   460 V to 120 VAC
10. Depth of Bury Ground Elevation to Base Pad 21 ' - 0 "
    Base Reinforcing Package (No).

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	400 @ 37'	400 @ 37'		
Pump Model	4B2G	4B2G		
Impeller Diameter	7-1/4"	7-1/4"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mech. Seal-Filter Ass'y (Size)	1-7/8"	1-7/8"		
Pump Serial Number				

MOTOR DATA (INVENTORY CODE)

Horsepower	15	15		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC) or Wound Rotor (WR)	SC	SC		
Special Modifications				
Across-The-Line (AL) or Part Winding (PW) Start	AL	AL		

CONTROL PANEL DATA TYPE NEMA 1 (UL) WIRING DIAGRAM NO. C06-0105-30

MOTOR CONTROL EQUIPMENT		PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps	40	4L258CF	4L258CF		
Magnetic Starter - Nema Size	2	4L330CC	4L330CC		
O.L. Coil No. FH					

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFORMER
Trip Rating-Amps	15	20	15	15	15

L/S # 4

Serial No. 06-0105-C

PUMP STATION ENGINEERING ORDER (PAGE 2 OF 2)

S&L BUBBLER CONTROL SYSTEM PRESSURE SWITCH SETTINGS	LOW LEVEL	HIGH LEVEL	LOW WATER REMOTE ALARM	HIGH WATER REMOTE ALARM
P. S. S&L Part No.	4L200D	4L200D	4L200	4L200
High Level Actuation (Feet)	4.0	4.5	3.5	5.0
Low Level Actuation (Feet)	2.5	3.0	1.5	3.0

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator

Nema 3 Wire 1 Phase Duplex Receptacle
S&L Damtite Seal (Spare)
Dehumidifier

Plastic "Level-Set" Indicator Tube
Magnesium Anodes (2 provided)
Spare Volute Gaskets

Touch-Up Kit (Paint-Brushes)
Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. Provide a total of four anodes.
2. Provide running time meter for each pump.
3. Provide generator interlock connection to lockout the high level pump.
4. Provide a complete Norton safety climb system.
5. Provide a U.L. labeled control panel.
6. Provide 1/4" taps and plugs in the suction and discharge lines of each pump.
7. Provide terminal strip in panel to provide connection points for high and low water ala
8. Provide breaker and connection for wet well blower (blower by others).

SALES ENGINEERING		Maintenance Manual Qty.	COMPANION JOB SERIAL NOS.
PREPARED BY	DATE	Rep 1	
Chuck Miller	10-3-89	Job File 0	
		Contractor 5	

Form No. 04-06-82 (Rev. 11/83)

L/S #5

PUMP STATION ENGINEERING ORDER
DUO-DUCT

LOCATION Arlington, WA STATION SERIAL NO. 06-0107-C
OWNER Selland Construction ENGINEER Cascade Surveying & Engineering

1. Station Size Duo-Duct (Dia.) 8'-0" Height 8'-6" Sump Pump Part No. 8L47
2. Suction Piping/Base Beams Pump 1 8"x8" Pump 2 8"x8"
   Pump 3 _____ Pump 4 _____
3. Suction (Gate) Valve Pump 1 6" Pump 2 6" Pump 3 _____ Pump 4 _____
4. Pump Discharge (Gate) Valve Pump 1 6" Pump 2 6"
   Pump 3 _____ Pump 4 _____
5. Common Discharge Outlet (P.E.) (Stl) Size 8"
6. Entrance Tube 36" Dia. x 16'-5" Long
7. Main Conduit Size 1-1/2" Aux. Conduit 2)1/2" (Describe) Alarms WW blower
   Blower Part No. 7L277
8. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts
   3 Wire
9. 110V Single Phase Current (not) available 5 KVA Trans. Req'd
   460 V to 120 VAC
10. Depth of Bury Ground Elevation to Base Pad 24 ' - 0 "
    Base Reinforcing Package (No).

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	520 @ 30.5'	520 @ 30.5'		
Pump Model	4B2G	4B2G		
Impeller Diameter	7-1/8"	7-1/8"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mech. Seal-Filter Ass'y (Size)	1-7/8"	1-7/8"		
Pump Serial Number				

MOTOR DATA (INVENTORY CODE)

Horsepower	15	15		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC) or Wound Rotor (WR)	SC	SC		
Special Modifications				
Across-The-Line (AL) or Part Winding (PW) Start	AL	AL		

CONTROL PANEL DATA TYPE NEMA 1 U.L. Listed WIRING DIAGRAM NO. C06-0107-30

MOTOR CONTROL EQUIPMENT		PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps	40	4L258CF	4L258CF		
Magnetic Starter - Nema Size	2	4L330CC	4L330CC		
O.L. Coil No.	FH				

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFOMER
Trip Rating-Amps	15	20	15	15	15

4/5 T 5

Serial No. 06-0107-C

PUMP STATION ENGINEERING ORDER (PAGE 2 OF 2)

S&L BUBBLER CONTROL SYSTEM PRESSURE SWITCH SETTINGS	LOW LEVEL	HIGH LEVEL	LOW WATER (L&R) ALARM	HIGH WATER (L&R) ALARM
P. S. S&L Part No.	4L200B	4L200D	4L200A	4L200D
High Level Actuation (Feet)	5.5	6.5	3.5	7.0
Low Level Actuation (Feet)	3.5	4.0	2.0	5.5

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator	Plastic "Level-Set" Indicator Tube
	Magnesium Anodes (4 provided)
	Spare Volute Gaskets
Nema 3 Wire 1 Phase Duplex Receptacle	Spare Pump Filter Cone
S&L Damtite Seal (Spare)	Touch-Up Kit (Paint-Brushes)
Dehumidifier	Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. Provide elapsed time meters (one per pump).
2. Provide high and low water alarms for local and remote indication. All indicating devices are by others.
3. Provide conduit and terminal strips for future telemetry system by others.
4. Provide NEMA 1 U.L. listed control panel.
5. Provide circuit breaker in the control panel and terminal points for wet well blower furnished by others.
6. Provide Norton safety climb device.
7. Provide 1/4" taps and plugs on the suction and discharge piping.
8. Provide a total of four anodes.
9. Provide an emergency generator connection for power interlock to allow only one pump to run under generator power.
10. Provide deep bury package.
11. Provide a high head sump pump.

SALES ENGINEERING		Maintenance Manual Qty.	COMPANION JOB SERIAL NOS.
PREPARED BY	DATE	Rep 1	
C. Eppler	6-8-90	Job File 1	
		Contractor 6	

Form No. 04-06-82 (Rev. 11/83)

L/S #6

SMITH & LOVELESS, INC.
UNDERGROUND PUMP STATION ENGINEERING ORDER

LOCATION Arlington, WA STATION SERIAL NO. 06-0108-T

PURCHASER Aurora Engineering ENGINEER Cascade Surveying & Engrg.

1. Station Type Duo-Duct Size 8'-0" Height 8'-6" Sump Pump No. 8L47
2. Suction Piping/Base Piping Pump 1 8"x8" Pump 2 8"x8" Pump 3 __ Pump 4
3. Suction Valve Pump 1 6" Pump 2 6" Pump 3 ____ Pump 4 ___
4. Pump Discharge Valve Pump 1 6" Pump 2 6" Pump 3 ____ Pump 4 ___
5. Common Discharge Outlet (P.E.) (Stl.) Size 6" 6" [redacted]
6. Entrance Tube 36" Dia. x 18'-6" Length
7. Main Conduit Size 1 1/2" Aux. Conduit 1) 1/2",3/4" (Describe) alarm and float switches
8. Blower Part No. 7L277
9. Electrical Service System Data: 3 Phase 60 Cycle 230 Volts 4 Wire
10. 120V Single Phase Current Available (Yes)
11. Separate 120 V Control Circuit Required (Yes)
12. 120 V Single Phase Transformer Required (Yes), 5 KVA
13. Depth of Bury: Ground Elevation to Base Pad 26' - 1-5/8"
14. Base Reinforcing Package Required (Yes)

PUMP & MOTOR DATA				
PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	500 @ 50.7'	500 @ 50.7'		
Pump Model	4B2G	4B2G		
Impeller Diameter	8'-3/8"	8'-3/8"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mechanical Seal Assembly (Size)	1-7/8"	1-7/8"		
Pump Serial Number				
MOTOR DATA (INVENTORY CODE)				
Horsepower	15	15		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC)	SC	SC		
Special Modifications				
Across-The-Line (AL)	AL	AL		

CONTROL PANEL DATA TYPE NEMA 1 WIRING DIAGRAM NO. C06-0108-30

MOTOR CONTROL EQUIPMENT	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker/Trip Rating/Amps 40	4L258CF	4L258CF		
Magnetic Starter - Nema Size 2	4L330CC	4L330CC		
O.L. Coil No. FH				

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFOMER
Trip Rating-Amps	15	20	15	15	

Form No. 04-06-82 (11/91)

L/S #6 Serial No. 06-0108-T

UNDERGROUND PUMP STATION ENGINEERING ORDER

FLOAT SWITCH CONTROL SYSTEM	PUMPS	LOW	HIGH	LOW WATER	HIGH LEV
FLOAT SWITCH SETTINGS	OFF	LEVEL	LEVEL	ALARM	ALARM
F.S. S&L Part No.	4L291A	4L291A	4L291A	4L291B	4L291A
High Level Actuation (Feet)		3.5'	4.0'	1.0'	4.5'
Low Level Actuation (Feet)	1.5'				

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator
Air Compressors
S&L Air Flow Indicator
GFCI 3 Wire 1 Ph. Duplex Conv. Receptacle
S&L Mechanical Seal (Spare)
Dehumidifier
Plastic "Level-Set" Indicator Tube
Magnesium Anodes (2 provided)
Spare Volute Gaskets
Spare Pump Filter Cone
Touch-Up Kit (Paint-Brushes)
Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. 8" suction tubes shall be located 180° from standard location and shall be extended 18" to 24" and spread to accommodate entry into a 12'-0" dia. wet well.
2. Provide a UL listed station control panel.
3. Deep bury package.
4. Elapsed time meters.
5. Generator interlock.
6. Total of four (4) magnesium 17 lb. anode packs to ship loose.
7. Provide a "Norton" Saf-T-Climb device with personnel strap.
8. Provide additional set of alarm contacts for remote indicating device and for future telemetry system by others.
9. Separate breaker in UL panel for wet well ventilator.
10. 1/4" tapped and plugged holes in both suction and discharge piping.

SALES ENGINEERING PREPARED BY	DATE	Maintenance Manual Qty.	COMPANION JOB SERIAL NOS.
		Rep 1	
		Job File 1	
C.Smith	5-27-92	Contractor 5	

LS #7

SMITH & LOVELESS, INC.
UNDERGROUND PUMP STATION ENGINEERING ORDER
DUO-DUCT®

LOCATION Arlington, WA STATION SERIAL NO. 06-0110-Z

PURCHASER Dobbs Engineers ENGINEER Dobbs Engineers

1. Station Type Duo-Duct Size 8'-0" Height 8'-6" Sump Pump No. 8L43
2. Suction Piping/Base Piping Pump 1 6"x6" Pump 2 6"x6" Pump 3 ___ Pump 4 ___
3. Suction Valve Pump 1 6" Pump 2 6" Pump 3 ___ Pump 4 ___
4. Pump Discharge Valve Pump 1 6" Pump 2 6" Pump 3 ___ Pump 4 ___
5. Common Discharge Outlet (P.E.) (D.I.) Size 6"
6. Entrance Tube 36" Dia. x 18'-6" Length
7. Main Conduit Size 1-1/4" Aux. Conduit 3/4" (Describe) Alarm
8. Blower Part No. ___
9. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts ___ Wire
10. 120V Single Phase Current Available (Yes)
11. Separate 120 V Control Circuit Required (Yes)
12. 120 V Single Phase Transformer Required (No), ___ KVA
13. Depth of Bury: Ground Elevation to Base Pad 26 ' - 3 "
14. Base Reinforcing Package Required (Yes)

PUMP & MOTOR DATA				
PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	176 @ 74'	176 @ 74'		
Pump Model	4B2G	4B2G		
Impeller Diameter	8-3/4"	8-3/4"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mechanical Seal Assembly (Size)	1-7/8"	1-7/8"		
Pump Serial Number				
MOTOR DATA (INVENTORY CODE)				
Horsepower	10	10		
R.P.M.	1760	1760		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC)	SC	SC		
Special Modifications				
Across-The-Line (AL) or Part Winding	AL	AL		

CONTROL PANEL DATA TYPE UL Listed Panel WIRING DIAGRAM NO. C06-0110-30

MOTOR CONTROL EQUIPMENT	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps 30	4L258CD	4L258CD		
Magnetic Starter - Nema Size 1	4L330BB	4L330BB		
O.L. Coil No. FH				

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFORMER
Trip Rating-Amps	15	20	15	15	

Form No. 04-06-82 (11/91)

L/S

SMITH & LOVELESS, INC.
UNDERGROUND PUMP STATION ENGINEERING ORDER

LOCATION Arlington, WA STATION SERIAL NO. 06-0112-C

PURCHASER Mona Lisa Partners ENGINEER Datum Pacific

1. Station Type Duo-Duct® Size 8'-0" Height 8'-6" Sump Pump No. 8L43
2. Suction Piping (P.E.) (Stl.) Pump 1 6" Pump 2 6" Pump 3 __ Pump 4__
3. Suction Valve Pump 1 6" Pump 2 6" Pump 3 ___ Pump 4 ____
4. Pump Discharge Valve Pump 1 6" Pump 2 6" Pump 3 ____ Pump 4 ____
5. Common Discharge Outlet (P.E.) (Stl.) Size 6"
6. Entrance Tube 36" Dia. x 8'-6" Length
7. Main Conduit Size 3/4" Aux. Conduit 2x1/2", 3/4" (Describe) ____
8. Blower Part No. 7L277
9. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts 4 Wire
10. 120V Single Phase Current Available (Yes)
11. Separate 120 V Control Circuit Required (Yes)
12. 120 V Single Phase Transformer Required (No), ____ KVA
13. Depth of Bury: Ground Elevation to Base Pad 18 ' - 0 "
14. Base Reinforcing Package Required (No)

PUMP & MOTOR DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
PUMP DATA				
Design Characteristics (GPM @ TDH)	225 @ 76'	225 @ 76'		
Pump Model	4B2G	4B2G		
Impeller Diameter	9"	9"		
Rotation (CW) (CCW)	CW	CCW		
S&L Mechanical Seal Assembly (Size)	1-7/8"	1-7/8"		
Pump Serial Number				
MOTOR DATA (INVENTORY CODE)	10	10		
Horsepower	1760	1760		
R.P.M.	3/60/460	3/60/460		
Phase/Cycle/Volts				
Motor Serial No. (Code Ltr.)	SC	SC		
Squirrel Cage (SC) or Wound Rotor (WR)				
Special Modifications				
Across-The-Line (AL) Start	AL	AL		

CONTROL PANEL DATA TYPE ____ WIRING DIAGRAM NO. B06-0112-30

MOTOR CONTROL EQUIPMENT	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps 30	4L258CD	4L258CD		
Magnetic Starter - Nema Size 1	4L330BB	4L330BB		
O.L. Coil No. FH				

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFORMER
Trip Rating-Amps	15	20	15	15	

L/S #4

SMITH & LOVELESS, INC.
UNDERGROUND PUMP STATION ENGINEERING ORDER

LOCATION Arlington, WA STATION SERIAL NO. 06-0114-C

PURCHASER Plats Plus, Inc. ENGINEER Ostegard & Robinson

1. Station Type Duo-Duct® Size 8'-0" Height 8'-6" Sump Pump No. 8L47
2. Suction Piping (Stl.) Pump 1 6 Pump 2 6 Pump 3 ___ Pump 4 ___
3. Suction Valve Pump 1 6 Pump 2 6 Pump 3 ___ Pump 4 ___
4. Pump Discharge Valve Pump 1 6 Pump 2 6 Pump 3 ___ Pump 4 ___
5. Common Discharge Outlet (Stl.) Size 6"
6. Entrance Tube 2" Dia. X 13'-6" Length
7. Main Conduit Size 2" Aux. Conduit 2)3/4" (Describe) Remote pane, float switches
8. Blower Part No. 7L277
9. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts 4 Wire
10. 120V Single Phase Current Available (Yes)
11. Separate 120 V Control Circuit Required (Yes)
12. 120 V Single Phase Transformer Required (No), ___ KVA
13. Depth of Bury: Ground Elevation to Base Pad 20 ' - 10 "
14. Base Reinforcing Package Required (No)

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Design Characteristics (GPM @ TDH)	225 @ 79'	225 @ 79'		
Pump Model	4B2G	4B2G		
Impeller Diameter	9-1/8"	9-1/8"		
Rotation (CW) (CCW)	CCW	CW		
S&L Mechanical Seal Assembly (Size)	1-7/8"	1-7/8"		
Pump Serial Number				

MOTOR DATA (INVENTORY CODE)				
Horsepower	10	10		
R.P.M.	1800	1800		
Phase/Cycle/Volts	3/60/460	3/60/460		
Motor Serial No. (Code Ltr.)				
Squirrel Cage (SC) or Wound Rotor (WR)	SC	SC		
Special Modifications				
Across-The-Line (AL) Start	AL	AL		

CONTROL PANEL DATA TYPE U.L. NEMA 1 WIRING DIAGRAM NO. B06-0114-30

MOTOR CONTROL EQUIPMENT	PUMP 1	PUMP 2	PUMP 3	PUMP 4
Circuit Breaker - Trip Rating - Amps 30	4L258CD	4L258CD		
Magnetic Starter - Nema Size 1	4L330BB	4L330BB		
O.L. Coil No. FH				

AUXILIARY CIRCUIT BREAKERS	LIGHTS	BLOWER DEHUMIDIFIER	SUMP PUMP	AIR COMPRESSORS & CONTROL	TRANSFORMER
Trip Rating-Amps	15	20	15	15	

L/S #9

Serial No. 06-0114-C

UNDERGROUND PUMP STATION ENGINEERING ORDER (PAGE 2 OF 3)

S&L BUBBLER CONTROL SYSTEM PRESSURE SWITCH SETTINGS	LOW LEVEL	SECOND LEVEL	HIGH LEVEL	HIGH LEVEL ALARM	LOW LEVEL ALARM
P. S. S&L Part No.	4L291A	4L291A	4L291A	4L291B	4L291A
High Level Actuation (Feet)		2.0'	4.0'	4.5'	
Low Level Actuation (Feet)	1.5'				1.0'

OTHER CONTROL & AUXILIARY APPARATUS:

(The following equipment is standard equipment on all Smith & Loveless Pump Stations. It is listed here for the engineers and customers information only. Any deviations shall be listed in space provided below).

Automatic Alternator
Air Compressors
S&L Air Flow Indicator
GFCI 3 Wire 1 Ph. Duplex Conv. Receptacle
S&L Mechanical Seal (Spare)
Dehumidifier
Plastic "Level-Set" Indicator Tube
Magnesium Anodes (2 provided)
Spare Volute Gaskets
Spare Pump Filter Cone
Touch-Up Kit (Paint-Brushes)
Blower Timer

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

1. Provide a generator interlock.
2. Provide ¼" tap on suction and discharge.
3. Provide an auto lid switch.
4. Provide pump control with gem float switches and relays in lieu of standard controls.
5. Mount run-time meters for each pump and an H-O-A switch for each pump in a U.L. listed NEMA 1 enclosure that is to be remote of the station. There is still a [illegible] panel inside station.
6. Provide two additional anodes (four total.)
7. Main station panel is to be U.L. labeled.
8. Provide a redundant pump cut-off on a low water alarm condition.
9. Provide a terminal strip for customer to use with future telemetry.
10. Provide a Saf-T-Climb fan prevention system.

SALES ENGINEERING		MAINTENANCE MANUAL QTY.		COMPANION JOB SERIAL NO
PREPARED BY	DATE	Preliminary Copies		
		M.C. Copy	1	
		Start-Up Copy	1	
		Equipment Copies	1	
		Rep Copy	1	
		Customer	4	
A. McCullough	1-29-97	Total O&M's	8	

4/5 12

SMITH & LOVELESS, INC.
UNDERGROUND PUMP STATION ENGINEERING ORDER

LOCATION: ARLINGTON , WA STATION SERIAL # : 06-0118-V
PURCHASER: COLACURCIO BROS. CONST. ENGINEER: HIGA BURKHOLDER

1. Station Type Duo-Duct Size 8'-0" Height 8'-6" Sump Pump # 8L47
2. Suction Piping (P.E. Stl.) Pump 1 6" Pump 2 6"
3. Suction Valve Pump 1 6" Pump 2 6"
4. Pump Discharge Valve Pump 1 6" Pump 2 6"
5. Common Discharge Outlet (P.E. Stl.) Size 8"
6. Entrance Tube 36" Diameter x 18'-6" Length
7. Main Conduit Size 2" Aux. Conduit 1) ½", 1)3/4"
8. Blower Part # 7L277
9. Electrical Service System Data: 3 Phase 60 Cycle 460 Volts ___ Wire
10. 120V Single Phase Current Available (NO)
11. Separate 120 V Control Circuit Required (Yes)
12. 120 V Single Phase Transformer Required (Yes), By Others KVA
13. Depth of Bury: Ground Elevation to Base Pad 26' - 9-3/4"
14. Base Reinforcing Package Required (NO)

PUMP & MOTOR DATA

PUMP DATA	PUMP 1	PUMP 2
Design Characteristics (GPM @TDH)	250 @ 33	250 @ 33
Pump Model	4B2G	4B2G
Impeller Diameter	9 1/4"	9 1/4"
Rotation (CW) (CCW)	CW	CCW
S&L Mechanical Seal Assy. (Size)	1-7/8"	1-7/8"
Pump Serial Number		

MOTOR DATA (INVENTORY CODE)		
Horsepower	5	5
R.P.M.	1170	1170
Phase / Cycle / Volts	3/60/460	3/60/460
Motor Serial # (Code Ltr.)		
Squirrel Cage (SC)	SC	SC
Special Modifications		
Across-The-Line (AL) Start	AL	AL

CONTROL PANEL DATA TYPE UL Listed NEMA 1 WIRING DIAGRAM #

MOTOR CONTROL EQUIPMENT	PUMP 1	PUMP 2
Circuit Breaker – Trip Rating –		

Auxiliary Circuit Breakers	Lights	Blower Dehumidifier	Sump Pump	Control
Trip Rating – Amps	15	20	15	15

B HYDRAULIC MODEL RESULTS

B.1 BRIEF DESCRIPTION OF MODEL RESULTS

B.2 CD CONTAINING GOOGLE EARTH KMZ FILE

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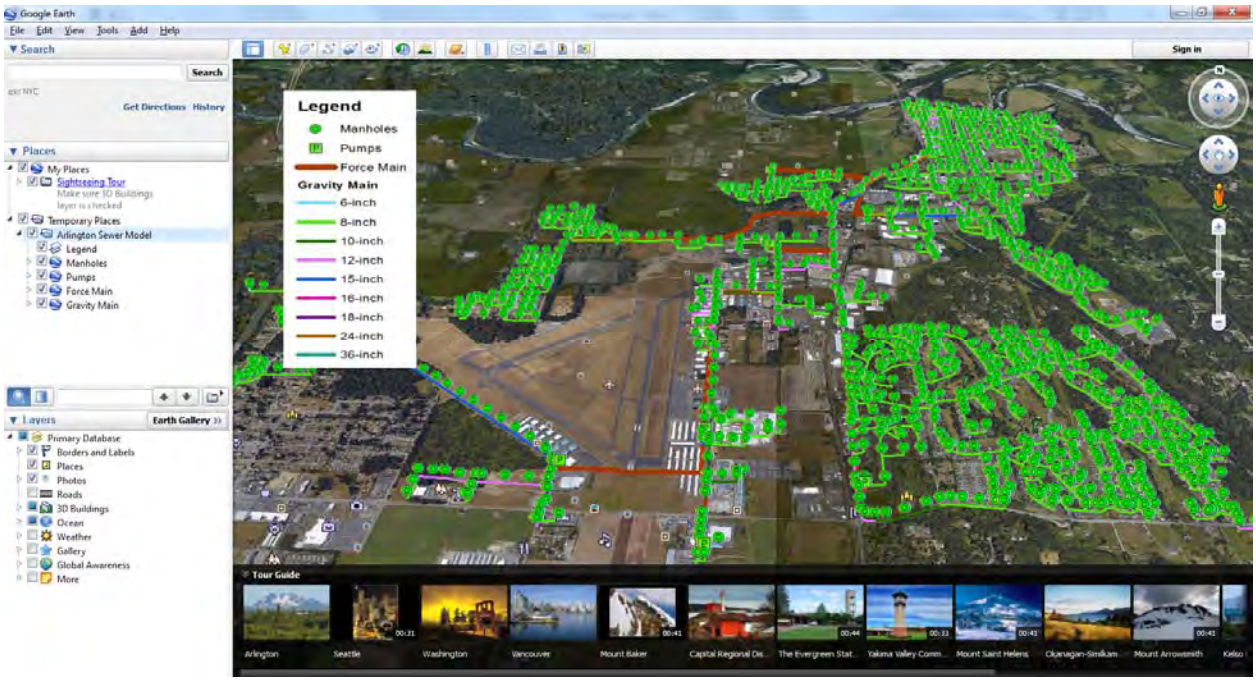
Results of Hydraulic Analyses

Model results have been captured in a Google Earth KMZ file. A copy of the file is included in the CD containing the City of Arlington Comprehensive Wastewater Plan, and is also available from the Wastewater Department upon request.

A screenshot of the file structure is provided below.



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C LIFT STATION CAPITAL IMPROVEMENTS

C.1 LIFT STATION COST ESTIMATES FOR 8 PROJECTS

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City of Arlington Lift Station 2 Replacement Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$90,000
Mobilization / Demobilization	$75,000
Salvage and Demolition	$15,000
2 Site Work	$70,000
Grading & Site Prep	$30,000
Dewatering System	$15,000
Trench Safety and Shoring	$15,000
Miscellaneous Site work	$10,000
3 Structural	$215,000
Building	$140,000
Driveway/Sidewalk	$15,000
Wet Well Repair/Replace	$60,000
4 Lift Station Pumps, Motors, Cans	$200,000
S&L Duo-Duct Pump Station	$200,000
5 Mechanical	$150,000
Temporary bypass system	$50,000
Facility Piping & Fittings	$60,000
Miscellaneous Mechanical	$40,000
6 Electrical	$160,000
Controls / Telemetry / Instrumentation	$80,000
Engine Generator	$60,000
Miscellaneous Electrical	$20,000

Subtotal Construction Costs **$885,000**

City of Arlington Lift Station 4 Replacement Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$68,000
Mobilization / Demobilization	$60,000
Salvage and Demolition	$8,000
2 Site Work	$52,000
Grading & Site Prep	$15,000
Dewatering System	$10,000
Trench Safety and Shoring	$15,000
Miscellaneous Site work	$12,000
3 Structural	$195,000
Building	$120,000
Driveway/Sidewalk	$15,000
Wet Well Repair/Replace	$60,000
4 Lift Station Pumps, Motors, Cans	$75,000
Smith & Loveless Duo-Duct Package Pump Station	$75,000
5 Mechanical	$91,000
Temporary bypass system	$50,000
Facility Piping & Fittings	$30,000
Miscellaneous Mechanical	$11,000
6 Electrical	$130,000
Controls / Telemetry / Instrumentation	$60,000
Engine Generator	$55,000
Miscellaneous Electrical	$15,000

Subtotal Construction Costs **$611,000**

City of Arlington Lift Station 7 Replacement Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$18,000
Mobilization / Demobilization	$10,000
Salvage and Demolition	$8,000
2 Site Work	$40,000
Grading & Site Prep	$10,000
Dewatering System	$10,000
Trench Safety and Shoring	$10,000
Miscellaneous Site work	$10,000
3 Structural	$100,000
Building	$50,000
Driveway/Sidewalk	$10,000
Wet Well Repair/Replace	$40,000
4 Lift Station Pumps, Motors, Cans	$30,000
Smith & Loveless Duo-Duct Package Pump Station	$30,000
5 Mechanical	$17,000
Temporary bypass system	$10,000
Facility Piping & Fittings	$5,000
Miscellaneous Mechanical	$2,000
6 Electrical	$8,000
Controls / Telemetry / Instrumentation	$6,000
Engine Generator	$0
Miscellaneous Electrical	$2,000

Subtotal Construction Costs **$213,000**

City of Arlington Lift Station 8 Rehabilitation Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$1,500
Mobilization / Demobilization	$0
Salvage and Demolition	$1,500
2 Site Work	$15,000
Excavation, Grading, & Site Prep	$2,500
Dewatering System	$7,500
Trench Safety and Shoring	$5,000
3 Mechanical / Structural	$52,500
Smith & Loveless Duo-Duct Pump Station Internals	$30,000
Temporary bypass system	$5,000
Miscellaneous Structural	$5,000
Miscellaneous Mechanical	$5,000
Wet Well Repair/Replace	$7,500
4 Electrical	$5,000
Controls / Telemetry / Instrumentation	$5,000
Miscellaneous Electrical	$0

Subtotal Construction Costs **$74,000**

City of Arlington Lift Station 11 Rehabilitation Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$50,000
Mobilization / Demobilization	$35,000
Salvage and Demolition	$15,000
2 Site Work	$50,000
Excavation, Grading, & Site Prep	$20,000
Dewatering System	$15,000
Trench Safety and Shoring	$15,000
3 Mechanical / Structural	$215,000
Smith & Loveless Duo-Duct Pump Station Internals	$120,000
Temporary bypass system	$15,000
Miscellaneous Structural	$10,000
Miscellaneous Mechanical	$20,000
Wet Well Repair/Replace/Coating	$50,000
4 Electrical	$125,000
Controls / Telemetry / Instrumentation	$60,000
Standby Power System	$50,000
Miscellaneous Electrical	$15,000

Subtotal Construction Costs **$440,000**

City of Arlington Lift Station 12 Rehabilitation Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$3,000
Mobilization / Demobilization	$0
Salvage and Demolition	$3,000
2 Site Work	$25,500
Excavation, Grading, & Site Prep	$7,500
Dewatering System	$10,000
Trench Safety and Shoring	$8,000
3 Mechanical / Structural	$102,000
Smith & Loveless Duo-Duct Pump Station Internals	$70,000
Temporary bypass system	$10,000
Miscellaneous Structural	$6,000
Miscellaneous Mechanical	$6,000
Wet Well Repair/Replace	$10,000
4 Electrical	$15,000
Controls / Telemetry / Instrumentation	$15,000
Miscellaneous Electrical	$0

Subtotal Construction Costs **$145,500**

City of Arlington Lift Station 14 Construction Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$101,000
Mobilization / Demobilization	$90,000
Removal of Structures/Obstructions	$6,000
Clearing and Grubbing	$5,000
2 Site Work	$75,000
Grading & Site Prep	$30,000
Dewatering System	$15,000
Trench Safety and Shoring	$15,000
Temporary Traffic Control	$5,000
Miscellaneous Site work	$10,000
3 Structural	$270,000
Building	$200,000
Driveway/Sidewalk	$10,000
Wet Well Installation	$60,000
4 Lift Station Pumps, Motors, Cans	$200,000
Smith & Loveless Package Pumps & Motors	$200,000
5 Mechanical	$150,000
Temporary bypass system	$50,000
Facility Piping & Fittings	$60,000
Miscellaneous Mechanical	$40,000
6 Electrical	$205,000
Controls / Telemetry / Instrumentation	$100,000
Engine Generator	$80,000
Miscellaneous Electrical	$25,000

Subtotal Construction Costs **$1,001,000**

City of Arlington Lift Station 15 Construction Preliminary Construction Cost Estimate

Description	Total Cost
1 Mobilization, Demo, Site Prep, and Cleanup	$91,000
Mobilization / Demobilization	$80,000
Removal of Structures/Obstructions	$6,000
Clearing and Grubbing	$5,000
2 Site Work	$75,000
Grading & Site Prep	$30,000
Dewatering System	$15,000
Trench Safety and Shoring	$15,000
Temporary Traffic Control	$5,000
Miscellaneous Site work	$10,000
3 Structural	$220,000
Building	$150,000
Driveway/Sidewalk	$10,000
Wet Well Installation	$60,000
4 Lift Station Pumps, Motors, Cans	$160,000
Smith & Loveless Package Pumps & Motors	$160,000
5 Mechanical	$80,500
Temporary bypass system	$35,000
Facility Piping & Fittings	$25,000
Miscellaneous Mechanical	$20,500
6 Electrical	$174,000
Controls / Telemetry / Instrumentation	$74,000
Engine Generator	$80,000
Miscellaneous Electrical	$20,000

Subtotal Construction Costs **$800,500**

D CURRENT & FUTURE DEVELOPED FLOWS

D.1 SUMMARY TABLE WITH FLOW DATA BY LIFT STATION AND PLANNING HORIZON (2013, 2024, 2035)

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Table D-1. Peak Hour Flows (gpm) by Basin Under Current (2013) and Future Developed Conditions

Basin	Name	Upstream Basins (LS No.)	Current			2015			2035		
			Basin Flow	Pumped Inflow	Total	Basin Flow	Pumped Inflow	Total	Basin Flow	Pumped Inflow	Total
WRF		PI, Old Town									
Primary Interceptor	PI at Division St	Gleneagle									
Old Town											
Gleneagle											
LS-01	WRF		20	-	20	20	-	20	20	-	20
LS-02	Kent Prairie	13	605	100	705	935	100	1,035	1,295	100	1,395
LS-03	Transfer Stn		50	-	50	55	-	55	60	-	60
LS-04	AAMP	5, 12	35	700	735	60	700	760	85	925	1,010
LS-05	Westside AP	6[a]	180	500	680	295	-	295	420	-	420
LS-06	Rest Areas	11[b]	215	115	330	225		225	240	-	240
LS-07	High Clover	14[c]	190	-	190	215	1,425	1,640	235	1,425	1,660
LS-08	Highland View		135	-	135	200	-	200	270	-	270
LS-09	River Crest		110	-	110	110	-	110	115	-	115
LS-11	Island Xing		40	-	40	95	-	95	155	-	155
LS-12	Crown Park		30	-	30	240	-	240	475	-	475
LS-13	Yarmuth		5		5	5	-	5	5	-	5
LS-14	Westside I-5	6, 11, 15[d]	-	-	-	40	1,265	1,305	85	1,325	1,410
LS-15	UGA Expansion		-	-	-	305	-	305	635	-	635

Notes

[a] LS-6 flows are diverted away from LS-5 prior to 2024

[b] LS-11 flows are diverted away from LS-6 prior to 2024

[c] Flows from new LS-14 are delivered to LS-7 just prior to 2024

[d] Flows from LS-6, LS-11, and new LS-15 are delivered to LS-14 just prior to 2024

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E INFLOW AND INFILTRATION DATA

E.1 INFLOW ANALYSES DATA FOR 2009 TO 2014 (45 PAGES)

E.2 INFILTRATION ANALYSES DATA FOR 2009 TO 2014 (1 PAGE)

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Year	Pop.
2009	16,073
2010	16,288
2011	16,292
2012	16,332
2013	16,632
2014	16,116

Max. Q_{res} for Inflow (gpcd)
275

	Max Inflow Day
	Notable Rain Event (> 0.30 in.)

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
2009							
1-Jan	1.70	0.11	31	39	0.000	1.70	106
2-Jan	1.65	0.00	26	38	0.000	1.65	103
3-Jan	1.56	0.02	28	37	0.000	1.56	97
4-Jan	1.74	0.51	31	40	0.000	1.74	108
5-Jan	1.70	0.33	33	43	0.000	1.70	106
6-Jan	2.21	1.74	37	51	0.000	2.21	137
7-Jan	2.41	1.24	42	53	0.000	2.41	150
8-Jan	3.02	0.42	31	43	0.000	3.02	188
9-Jan	2.01	0.22	31	42	0.000	2.01	125
10-Jan	2.33	0.98	34	41	0.000	2.33	145
11-Jan	2.22	0.20	35	43	0.000	2.22	138
12-Jan	2.02	0.10	39	46	0.000	2.02	126
13-Jan	1.97	0.10	32	45	0.000	1.97	123
14-Jan	1.81	0.01	31	42	0.000	1.81	113
15-Jan	1.80	0.00	28	39	0.000	1.80	112
16-Jan	1.69	0.00	28	36	0.000	1.69	105
17-Jan	1.65	0.00	26	37	0.000	1.65	103
18-Jan	1.57	0.00	25	57	0.000	1.57	98
19-Jan	1.63	0.00	25	50	0.000	1.63	101
20-Jan	1.53	0.00	23	48	0.000	1.53	95
21-Jan	1.46	0.00	23	39	0.000	1.46	91
22-Jan	1.42	0.00	25	32	0.000	1.42	88
23-Jan	1.38	0.00	27	36	0.000	1.38	86
24-Jan	1.35	0.09	22	30	0.000	1.35	84
25-Jan	1.27	0.00	19	34	0.000	1.27	79
26-Jan	1.43	0.00	19	42	0.000	1.43	89
27-Jan	1.31	0.13	33	40	0.000	1.31	82
28-Jan	1.26	0.02	34	46	0.000	1.26	78
29-Jan	1.26	0.00	26	46	0.000	1.26	78
30-Jan	1.21	0.03	26	46	0.000	1.21	75
31-Jan	1.16	0.00	29	44	0.000	1.16	72
1-Feb	1.27	0.00	31	45	0.000	1.27	79
2-Feb	1.24	0.00	28	55	0.000	1.24	77
3-Feb	1.16	0.00	28	61	0.000	1.16	72
4-Feb	1.26	0.00	30	63	0.000	1.26	78
5-Feb	1.16	0.00	31	49	0.000	1.16	72
6-Feb	1.14	0.00	31	45	0.000	1.14	71
7-Feb	1.14	0.00	30	49	0.000	1.14	71
8-Feb	1.21	0.14	30	47	0.000	1.21	75
9-Feb	1.19	0.18	30	45	0.000	1.19	74

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
10-Feb	1.20	0.09	31	44	0.000	1.20	75
11-Feb	1.12	0.00	28	47	0.000	1.12	70
12-Feb	1.13	0.00	27	46	0.000	1.13	70
13-Feb	1.19	0.00	30	46	0.000	1.19	74
14-Feb	1.10	0.00	24	49	0.000	1.10	68
15-Feb	1.11	0.15	24	49	0.000	1.11	69
16-Feb	1.19	0.00	25	51	0.000	1.19	74
17-Feb	1.07	0.00	29	54	0.000	1.07	67
18-Feb	1.10	0.00	27	56	0.000	1.10	68
19-Feb	1.10	0.00	25	50	0.000	1.10	68
20-Feb	1.03	0.00	25	55	0.000	1.03	64
21-Feb	1.11	0.01	25	56	0.000	1.11	69
22-Feb	1.10	0.09	37	61	0.000	1.10	69
23-Feb	1.16	0.23	42	56	0.000	1.16	72
24-Feb	1.09	0.04	43	51	0.000	1.09	68
25-Feb	1.12	0.15	29	46	0.000	1.12	69
26-Feb	1.10	0.00	29	42	0.000	1.10	68
27-Feb	1.08	0.00	32	53	0.000	1.08	67
28-Feb	1.11	0.04	34	52	0.000	1.11	69
1-Mar	1.13	0.41	44	57	0.000	1.13	70
2-Mar	1.11	0.14	38	62	0.000	1.11	69
3-Mar	1.10	0.00	33	60	0.000	1.10	68
4-Mar	1.15	0.27	34	54	0.000	1.15	72
5-Mar	1.15	0.05	25	47	0.000	1.15	72
6-Mar	1.10	0.08	26	51	0.000	1.10	69
7-Mar	1.07	0.89	29	45	0.000	1.07	67
8-Mar	1.12	0.13	26	46	0.000	1.12	70
9-Mar	1.11	0.08	17	46	0.000	1.11	69
10-Mar	1.07	0.00	18	41	0.000	1.07	67
11-Mar	1.13	0.00	20	43	0.000	1.13	70
12-Mar	1.08	0.00	20	52	0.000	1.08	67
13-Mar	1.08	0.20	24	61	0.000	1.08	67
14-Mar	1.22	0.71	32	44	0.000	1.22	76
15-Mar	1.20	0.08	30	49	0.000	1.20	75
16-Mar	1.19	0.03	30	45	0.000	1.19	74
17-Mar	1.14	0.06	33	50	0.000	1.14	71
18-Mar	1.17	0.02	37	49	0.000	1.17	73
19-Mar	1.28	0.33	40	51	0.000	1.28	80
20-Mar	1.20	0.24	29	54	0.000	1.20	75
21-Mar	1.23	0.00	29	54	0.000	1.23	77
22-Mar	1.25	0.37	33	46	0.000	1.25	78
23-Mar	1.23	0.20	37	47	0.000	1.23	77
24-Mar	1.34	0.46	37	49	0.000	1.34	83
25-Mar	1.40	0.31	28	50	0.000	1.40	87
26-Mar	1.31	0.10	27	56	0.000	1.31	82
27-Mar	1.21	0.06	37	49	0.000	1.21	75
28-Mar	1.38	0.45	34	40	0.000	1.38	86
29-Mar	1.24	0.00	32	52	0.000	1.24	77
30-Mar	1.45	0.57	34	48	0.000	1.45	90

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
31-Mar	1.28	0.05	36	48	0.000	1.28	80
1-Apr	1.61	1.03	34	41	0.000	1.61	100
2-Apr	1.56	0.21	33	49	0.000	1.56	97
3-Apr	1.42	0.00	28	52	0.000	1.42	89
4-Apr	1.29	0.00	28	62	0.000	1.29	80
5-Apr	1.39	0.00	34	74	0.000	1.39	86
6-Apr	1.31	0.00	35	74	0.000	1.31	81
7-Apr	1.25	0.00	35	67	0.000	1.25	77
8-Apr	1.29	0.00	43	56	0.000	1.29	80
9-Apr	1.23	0.00	41	64	0.000	1.23	76
10-Apr	1.17	0.03	40	51	0.000	1.17	73
11-Apr	1.26	0.30	42	54	0.000	1.26	78
12-Apr	1.43	0.93	38	52	0.000	1.43	89
13-Apr	1.43	0.15	34	44	0.000	1.43	89
14-Apr	1.35	0.00	31	55	0.000	1.35	84
15-Apr	1.30	0.00	35	55	0.000	1.30	81
16-Apr	1.32	0.40	40	63	0.000	1.32	82
17-Apr	1.35	0.03	35	57	0.000	1.35	84
18-Apr	1.18	0.00	35	61	0.000	1.18	73
19-Apr	1.32	0.00	39	65	0.000	1.32	82
20-Apr	1.26	0.00	40	73	0.000	1.26	78
21-Apr	1.22	0.02	40	69	0.000	1.22	76
22-Apr	1.22	0.02	39	56	0.000	1.22	76
23-Apr	1.20	0.00	31	54	0.000	1.20	75
24-Apr	1.28	0.02	33	62	0.000	1.28	79
25-Apr	1.18	0.09	32	58	0.000	1.18	74
26-Apr	1.18	0.00	34	62	0.000	1.18	73
27-Apr	1.13	0.02	32	66	0.000	1.13	70
28-Apr	1.14	0.00	40	61	0.000	1.14	71
29-Apr	1.18	0.00	38	62	0.000	1.18	73
30-Apr	1.14	0.00	35	68	0.000	1.14	71
1-May	1.09	0.00	28	78	0.000	1.09	68
2-May	1.06	0.19	30	67	0.000	1.06	66
3-May	1.15	0.04	39	64	0.000	1.15	72
4-May	1.27	0.62	40	64	0.000	1.27	79
5-May	1.25	0.10	42	57	0.000	1.25	78
6-May	1.27	0.39	43	52	0.000	1.27	79
7-May	1.17	0.07	43	58	0.000	1.17	72
8-May	1.21	0.00	35	60	0.000	1.21	76
9-May	1.14	0.00	38	67	0.000	1.14	71
10-May	1.20	0.16	38	70	0.000	1.20	74
11-May	1.23	0.30	40	64	0.000	1.23	77
12-May	1.26	0.14	40	57	0.000	1.26	79
13-May	1.24	0.39	43	56	0.000	1.24	77
14-May	1.22	0.06	38	63	0.000	1.22	76
15-May	1.18	0.00	41	68	0.000	1.18	73
16-May	1.21	0.00	45	77	0.000	1.21	75
17-May	1.20	0.00	47	77	0.000	1.20	75
18-May	1.26	0.63	45	64	0.000	1.26	79

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
19-May	1.24	0.35	43	55	0.000	1.24	77
20-May	1.19	0.05	35	65	0.000	1.19	74
21-May	1.21	0.00	39	69	0.000	1.21	75
22-May	1.16	0.00	39	71	0.000	1.16	72
23-May	1.13	0.00	39	72	0.000	1.13	70
24-May	1.09	0.00	42	72	0.000	1.09	68
25-May	1.11	0.00	44	70	0.000	1.11	69
26-May	1.15	0.01	43	63	0.000	1.15	72
27-May	1.17	0.00	41	69	0.000	1.17	73
28-May	1.11	0.00	45	80	0.000	1.11	69
29-May	1.13	0.00	44	80	0.000	1.13	70
30-May	1.09	0.00	46	78	0.000	1.09	68
31-May	1.12	0.00	44	78	0.000	1.12	69
1-Jun	1.14	0.00	50	83	0.000	1.14	71
2-Jun	1.09	0.00	51	87	0.000	1.09	68
3-Jun	1.16	0.00	52	88	0.000	1.16	72
4-Jun	1.14	0.00	57	92	0.000	1.14	71
5-Jun	1.03	0.00	58	78	0.000	1.03	64
6-Jun	1.03	0.00	56	68	0.000	1.03	64
7-Jun	1.04	0.00	50	73	0.000	1.04	65
8-Jun	1.22	0.00	46	73	0.000	1.22	76
9-Jun	1.12	0.00	48	79	0.000	1.12	70
10-Jun	1.19	0.00	48	74	0.000	1.19	74
11-Jun	1.12	0.00	53	74	0.000	1.12	70
12-Jun	1.17	0.00	49	74	0.000	1.17	73
13-Jun	1.14	0.00	49	76	0.000	1.14	71
14-Jun	1.04	0.00	53	65	0.000	1.04	65
15-Jun	1.16	0.00	48	76	0.000	1.16	72
16-Jun	1.16	0.02	52	74	0.000	1.16	72
17-Jun	1.13	0.00	54	72	0.000	1.13	70
18-Jun	1.08	0.02	54	75	0.000	1.08	67
19-Jun	1.16	0.13	49	70	0.000	1.16	72
20-Jun	1.04	0.01	47	67	0.000	1.04	65
21-Jun	1.12	0.42	49	66	0.000	1.12	70
22-Jun	1.11	0.02	45	67	0.000	1.11	69
23-Jun	1.16	0.00	48	74	0.000	1.16	72
24-Jun	1.09	0.00	55	74	0.000	1.09	68
25-Jun	1.11	0.06	44	64	0.000	1.11	69
26-Jun	1.01	0.00	42	70	0.000	1.01	63
27-Jun	1.05	0.00	48	78	0.000	1.05	65
28-Jun	1.03	0.00	40	71	0.000	1.03	64
29-Jun	1.18	0.00	42	73	0.000	1.18	73
30-Jun	1.08	0.00	40	74	0.000	1.08	67
1-Jul	1.13	0.00	46	78	0.000	1.13	71
2-Jul	1.20	0.00	48	84	0.000	1.20	75
3-Jul	1.05	0.00	52	89	0.000	1.05	65
4-Jul	1.00	0.00	52	86	0.000	1.00	62
5-Jul	0.99	0.00	53	88	0.000	0.99	62
6-Jul	1.10	0.07	53	64	0.000	1.10	68

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
7-Jul	1.01	0.00	53	65	0.000	1.01	63
8-Jul	1.21	0.03	52	63	0.000	1.21	75
9-Jul	1.11	0.00	47	74	0.000	1.11	69
10-Jul	1.11	0.00	50	84	0.000	1.11	69
11-Jul	1.14	0.00	52	86	0.000	1.14	71
12-Jul	1.01	0.24	54	63	0.000	1.01	63
13-Jul	1.05	0.02	53	62	0.000	1.05	66
14-Jul	1.06	0.00	49	75	0.000	1.06	66
15-Jul	1.16	0.00	49	80	0.000	1.16	72
16-Jul	1.12	0.00	53	85	0.000	1.12	70
17-Jul	1.05	0.00	52	87	0.000	1.05	65
18-Jul	1.05	0.00	54	73	0.000	1.05	66
19-Jul	1.06	0.00	48	76	0.000	1.06	66
20-Jul	1.12	0.00	51	83	0.000	1.12	70
21-Jul	1.06	0.00	53	89	0.000	1.06	66
22-Jul	1.17	0.00	54	83	0.000	1.17	73
23-Jul	1.05	0.00	55	72	0.000	1.05	66
24-Jul	1.12	0.07	56	81	0.000	1.12	70
25-Jul	0.92	0.04	59	88	0.000	0.92	57
26-Jul	1.09	0.00	60	89	0.000	1.09	68
27-Jul	1.06	0.00	64	95	0.000	1.06	66
28-Jul	1.09	0.00	65	95	0.000	1.09	68
29-Jul	1.03	0.00	67	104	0.000	1.03	64
30-Jul	1.05	0.00	57	96	0.000	1.05	66
31-Jul	1.03	0.00	53	84	0.000	1.03	64
1-Aug	1.03	0.00	54	88	0.000	1.03	64
2-Aug	1.00	0.00	54	89	0.000	1.00	62
3-Aug	1.09	0.00	51	84	0.000	1.09	68
4-Aug	1.03	0.00	50	80	0.000	1.03	64
5-Aug	0.99	0.00	47	72	0.000	0.99	62
6-Aug	1.11	0.00	52	69	0.000	1.11	69
7-Aug	1.06	0.00	54	66	0.000	1.06	66
8-Aug	1.01	0.00	58	70	0.000	1.01	63
9-Aug	1.06	0.00	53	80	0.000	1.06	66
10-Aug	1.14	0.50	57	69	0.000	1.14	71
11-Aug	1.02	0.05	54	76	0.000	1.02	63
12-Aug	1.08	0.16	53	74	0.000	1.08	67
13-Aug	1.05	0.03	53	67	0.000	1.05	65
14-Aug	1.00	0.00	54	68	0.000	1.00	62
15-Aug	0.97	0.00	46	73	0.000	0.97	60
16-Aug	1.11	0.00	47	77	0.000	1.11	69
17-Aug	1.13	0.00	51	83	0.000	1.13	70
18-Aug	1.25	0.00	52	87	0.000	1.25	78
19-Aug	1.05	0.00	55	89	0.000	1.05	66
20-Aug	1.08	0.00	58	88	0.000	1.08	67
21-Aug	0.97	0.00	53	72	0.000	0.97	60
22-Aug	0.98	0.00	48	73	0.000	0.98	61
23-Aug	1.03	0.00	44	73	0.000	1.03	64
24-Aug	1.06	0.00	44	79	0.000	1.06	66

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
25-Aug	0.98	0.00	45	71	0.000	0.98	61
26-Aug	1.03	0.00	46	81	0.000	1.03	64
27-Aug	1.01	0.00	47	89	0.000	1.01	63
28-Aug	0.89	0.00	50	77	0.000	0.89	55
29-Aug	1.00	0.00	50	77	0.000	1.00	62
30-Aug	0.99	0.00	50	80	0.000	0.99	62
31-Aug	1.02	0.00	51	78	0.000	1.02	63
1-Sep	1.12	0.00	52	72	0.000	1.12	70
2-Sep	1.13	0.38	51	80	0.000	1.13	70
3-Sep	1.01	0.00	53	75	0.000	1.01	63
4-Sep	1.02	0.06	54	84	0.000	1.02	63
5-Sep	0.96	0.20	52	72	0.000	0.96	60
6-Sep	1.03	0.32	52	62	0.000	1.03	64
7-Sep	1.04	0.00	47	71	0.000	1.04	65
8-Sep	1.12	0.00	47	73	0.000	1.12	70
9-Sep	1.16	0.03	52	71	0.000	1.16	72
10-Sep	1.04	0.00	48	76	0.000	1.04	65
11-Sep	1.03	0.00	49	89	0.000	1.03	64
12-Sep	0.92	0.00	51	88	0.000	0.92	58
13-Sep	1.07	0.00	51	83	0.000	1.07	67
14-Sep	1.06	0.00	53	73	0.000	1.06	66
15-Sep	2.29	0.00	54	82	0.000	2.29	143
16-Sep	0.93	0.00	52	78	0.000	0.93	58
17-Sep	1.02	0.00	50	78	0.000	1.02	63
18-Sep	1.04	0.50	51	86	0.000	1.04	65
19-Sep	0.97	0.17	50	75	0.000	0.97	60
20-Sep	1.06	0.00	41	69	0.000	1.06	66
21-Sep	1.05	0.00	41	75	0.000	1.05	65
22-Sep	1.00	0.00	44	92	0.000	1.00	62
23-Sep	1.02	0.00	48	84	0.000	1.02	63
24-Sep	1.01	0.00	40	71	0.000	1.01	63
25-Sep	1.03	0.00	41	75	0.000	1.03	64
26-Sep	0.94	0.00	36	70	0.000	0.94	58
27-Sep	0.98	0.00	36	71	0.000	0.98	61
28-Sep	1.06	0.14	38	66	0.000	1.06	66
29-Sep	1.01	0.70	43	56	0.000	1.01	63
30-Sep	1.03	0.04	41	62	0.000	1.03	64
1-Oct	1.16	0.56	45	58	0.000	1.16	72
2-Oct	1.04	0.01	34	61	0.000	1.04	65
3-Oct	0.97	0.00	33	61	0.000	0.97	60
4-Oct	1.05	0.00	33	69	0.000	1.05	65
5-Oct	1.05	0.00	33	68	0.000	1.05	65
6-Oct	1.05	0.00	34	65	0.000	1.05	65
7-Oct	1.02	0.00	35	63	0.000	1.02	63
8-Oct	1.05	0.00	35	66	0.000	1.05	66
9-Oct	1.07	0.00	35	64	0.000	1.07	67
10-Oct	0.97	0.00	29	65	0.000	0.97	60
11-Oct	1.05	0.00	27	58	0.000	1.05	66
12-Oct	1.00	0.00	27	56	0.000	1.00	62

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
13-Oct	1.01	0.25	43	62	0.000	1.01	63
14-Oct	1.13	0.17	48	62	0.000	1.13	70
15-Oct	1.04	0.07	48	66	0.000	1.04	65
16-Oct	1.42	1.93	53	67	0.000	1.42	88
17-Oct	1.81	1.58	53	62	0.000	1.81	112
18-Oct	1.18	0.06	46	60	0.000	1.18	73
19-Oct	1.14	0.00	42	59	0.000	1.14	71
20-Oct	1.06	0.04	42	60	0.000	1.06	66
21-Oct	1.14	0.28	43	58	0.000	1.14	71
22-Oct	1.07	0.46	44	56	0.000	1.07	66
23-Oct	1.15	0.49	41	57	0.000	1.15	72
24-Oct	1.02	0.00	32	58	0.000	1.02	63
25-Oct	1.24	1.25	32	48	0.000	1.24	77
26-Oct	1.51	0.50	42	56	0.000	1.51	94
27-Oct	1.23	0.09	33	50	0.000	1.23	77
28-Oct	1.12	0.26	34	48	0.000	1.12	70
29-Oct	1.34	0.62	41	48	0.000	1.34	83
30-Oct	1.30	0.78	39	61	0.000	1.30	81
31-Oct	1.42	0.32	30	52	0.000	1.42	88
1-Nov	1.26	0.00	34	59	0.000	1.26	78
2-Nov	1.25	0.00	32	56	0.000	1.25	78
3-Nov	1.26	0.00	31	59	0.000	1.26	79
4-Nov	1.19	0.00	34	63	0.000	1.19	74
5-Nov	1.34	0.49	44	62	0.000	1.34	83
6-Nov	1.24	0.12	42	53	0.000	1.24	77
7-Nov	1.24	0.40	42	47	0.000	1.24	77
8-Nov	1.28	0.01	43	54	0.000	1.28	80
9-Nov	1.37	0.65	42	51	0.000	1.37	85
10-Nov	1.35	0.45	40	48	0.000	1.35	84
11-Nov	1.24	0.04	33	51	0.000	1.24	77
12-Nov	1.61	0.08	32	54	0.000	1.61	100
13-Nov	1.18	0.12	29	47	0.000	1.18	73
14-Nov	1.26	0.25	31	46	0.000	1.26	79
15-Nov	1.28	0.14	40	56	0.000	1.28	80
16-Nov	1.56	1.09	43	56	0.000	1.56	97
17-Nov	1.47	0.24	38	51	0.000	1.47	91
18-Nov	1.40	0.27	38	47	0.000	1.40	87
19-Nov	1.59	0.62	42	54	0.000	1.59	99
20-Nov	1.59	0.27	35	50	0.000	1.59	99
21-Nov	1.39	0.43	36	46	0.000	1.39	86
22-Nov	1.61	0.50	38	44	0.000	1.61	100
23-Nov	1.51	0.17	41	50	0.000	1.51	94
24-Nov	1.52	0.04	42	50	0.000	1.52	95
25-Nov	1.78	1.31	45	59	0.000	1.78	111
26-Nov	1.70	0.03	43	50	0.000	1.70	105
27-Nov	1.42	0.00	35	50	0.000	1.42	88
28-Nov	1.44	0.12	42	48	0.000	1.44	90
29-Nov	1.44	0.00	43	51	0.000	1.44	90
30-Nov	1.38	0.12	30	49	0.000	1.38	86

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
1-Dec	1.29	0.00	24	49	0.000	1.29	80
2-Dec	1.32	0.00	24	46	0.000	1.32	82
3-Dec	1.29	0.00	23	44	0.000	1.29	80
4-Dec	1.33	0.00	20	42	0.000	1.33	83
5-Dec	1.19	0.00	20	45	0.000	1.19	74
6-Dec	1.22	0.00	14	36	0.000	1.22	76
7-Dec	1.12	0.00	11	35	0.000	1.12	70
8-Dec	1.19	0.00	11	34	0.000	1.19	74
9-Dec	1.14	0.00	8	35	0.000	1.14	71
10-Dec	1.15	0.00	9	37	0.000	1.15	72
11-Dec	1.09	0.00	13	35	0.000	1.09	68
12-Dec	1.11	0.00	13	39	0.000	1.11	69
13-Dec	1.09	0.16	25	34	0.000	1.09	68
14-Dec	1.22	0.27	28	44	0.000	1.22	76
15-Dec	1.23	0.37	37	51	0.000	1.23	76
16-Dec	1.15	0.09	42	51	0.000	1.15	72
17-Dec	1.14	0.00	38	50	0.000	1.14	71
18-Dec	1.16	0.13	40	50	0.000	1.16	72
19-Dec	1.20	0.29	42	49	0.000	1.20	75
20-Dec	1.16	0.37	46	55	0.000	1.16	72
21-Dec	1.86	1.73	31	51	0.000	1.86	116
22-Dec	1.48	0.03	31	43	0.000	1.48	92
23-Dec	1.51	0.00	25	45	0.000	1.51	94
24-Dec	1.49	0.00	21	42	0.000	1.49	93
25-Dec	1.13	0.00	22	46	0.000	1.13	70
26-Dec	1.24	0.00	22	52	0.000	1.24	77
27-Dec	1.23	0.00	21	51	0.000	1.23	77
28-Dec	1.20	0.00	24	44	0.000	1.20	75
29-Dec	1.23	0.07	24	41	0.000	1.23	76
30-Dec	1.21	0.02	34	44	0.000	1.21	75
31-Dec	1.27	0.36	35	52	0.000	1.27	79
2010							
1-Jan	1.15	0.04	46	52	0.000	1.15	71
2-Jan	1.11	0.05	38	49	0.000	1.11	68
3-Jan	1.27	0.30	38	47	0.000	1.27	78
4-Jan	1.54	1.26	42	46	0.000	1.54	94
5-Jan	1.63	0.26	35	45	0.000	1.63	100
6-Jan	1.42	0.00	28	50	0.000	1.42	87
7-Jan	1.38	0.20	29	46	0.000	1.38	85
8-Jan	1.48	0.35	39	50	0.000	1.48	91
9-Jan	1.44	0.00	37	61	0.000	1.44	88
10-Jan	1.34	0.15	37	51	0.000	1.34	83
11-Jan	1.64	0.83	45	54	0.000	1.64	100
12-Jan	1.52	0.11	45	54	0.000	1.52	94
13-Jan	1.64	0.32	44	53	0.000	1.64	100
14-Jan	1.40	0.02	45	58	0.000	1.40	86
15-Jan	1.55	0.46	28	53	0.000	1.55	95
16-Jan	1.36	0.16	28	47	0.000	1.36	84
17-Jan	1.45	0.07	43	57	0.000	1.45	89

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
18-Jan	1.44	0.02	40	59	0.000	1.44	89
19-Jan	1.40	0.00	39	60	0.000	1.40	86
20-Jan	1.28	0.00	34	62	0.000	1.28	79
21-Jan	1.27	0.00	33	63	0.000	1.27	78
22-Jan	1.30	0.00	34	53	0.000	1.30	80
23-Jan	1.15	0.00	29	49	0.000	1.15	71
24-Jan	1.21	0.25	35	45	0.000	1.21	75
25-Jan	1.22	0.02	30	54	0.000	1.22	75
26-Jan	1.18	0.00	29	51	0.000	1.18	72
27-Jan	1.10	0.00	29	53	0.000	1.10	67
28-Jan	1.16	0.00	37	52	0.000	1.16	71
29-Jan	1.15	0.14	39	56	0.000	1.15	70
30-Jan	1.06	0.12	39	50	0.000	1.06	65
31-Jan	1.19	0.08	36	47	0.000	1.19	73
1-Feb	1.13	0.07	35	48	0.000	1.13	70
2-Feb	1.09	0.00	33	56	0.000	1.09	67
3-Feb	1.12	0.12	34	49	0.000	1.12	69
4-Feb	1.23	0.13	38	58	0.000	1.23	75
5-Feb	1.09	0.00	---	---	0.000	1.09	67
6-Feb	1.07	0.12	---	---	0.000	1.07	66
7-Feb	1.09	0.05	---	---	0.000	1.09	67
8-Feb	1.10	0.00	28	56	0.000	1.10	67
9-Feb	1.10	0.00	28	54	0.000	1.10	67
10-Feb	1.13	0.25	30	48	0.000	1.13	69
11-Feb	1.12	0.18	30	50	0.000	1.12	69
12-Feb	1.14	0.14	44	55	0.000	1.14	70
13-Feb	1.17	0.50	42	53	0.000	1.17	72
14-Feb	1.13	0.15	35	54	0.000	1.13	69
15-Feb	1.19	0.13	35	57	0.000	1.19	73
16-Feb	1.22	0.20	30	49	0.000	1.22	75
17-Feb	1.15	0.00	27	57	0.000	1.15	70
18-Feb	1.14	0.00	27	60	0.000	1.14	70
19-Feb	1.12	0.00	27	60	0.000	1.12	69
20-Feb	1.09	0.00	22	60	0.000	1.09	67
21-Feb	1.12	0.00	22	59	0.000	1.12	69
22-Feb	1.10	0.00	26	61	0.000	1.10	67
23-Feb	1.10	0.23	28	51	0.000	1.10	68
24-Feb	1.14	0.08	40	51	0.000	1.14	70
25-Feb	1.10	0.02	43	59	0.000	1.10	68
26-Feb	1.12	0.36	45	55	0.000	1.12	68
27-Feb	1.09	0.08	43	59	0.000	1.09	67
28-Feb	1.09	0.00	39	62	0.000	1.09	67
1-Mar	1.17	0.00	38	65	0.000	1.17	72
2-Mar	1.02	0.13	43	61	0.000	1.02	63
3-Mar	1.00	0.00	32	56	0.000	1.00	62
4-Mar	1.10	0.00	31	56	0.000	1.10	67
5-Mar	1.03	0.00	29	60	0.000	1.03	63
6-Mar	1.07	0.00	29	62	0.000	1.07	66
7-Mar	1.06	0.11	30	62	0.000	1.06	65

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
8-Mar	1.06	0.01	26	49	0.000	1.06	65
9-Mar	1.07	0.03	31	49	0.000	1.07	65
10-Mar	1.10	0.03	35	53	0.000	1.10	68
11-Mar	1.16	0.65	39	46	0.000	1.16	71
12-Mar	1.13	0.03	39	52	0.000	1.13	69
13-Mar	1.07	0.00	29	53	0.000	1.07	66
14-Mar	1.05	0.08	29	56	0.000	1.05	65
15-Mar	1.12	0.00	43	67	0.000	1.12	68
16-Mar	1.16	0.20	41	62	0.000	1.16	71
17-Mar	1.15	0.00	27	55	0.000	1.15	71
18-Mar	1.00	0.00	27	54	0.000	1.00	61
19-Mar	1.06	0.00	28	63	0.000	1.06	65
20-Mar	1.00	0.00	31	69	0.000	1.00	62
21-Mar	1.13	0.27	41	57	0.000	1.13	69
22-Mar	0.99	0.02	36	58	0.000	0.99	61
23-Mar	1.06	0.00	35	60	0.000	1.06	65
24-Mar	1.04	0.03	35	74	0.000	1.04	64
25-Mar	1.47	1.69	40	56	0.000	1.47	90
26-Mar	1.16	0.03	40	57	0.000	1.16	71
27-Mar	1.10	0.14	41	67	0.000	1.10	68
28-Mar	1.18	0.23	44	57	0.000	1.18	72
29-Mar	1.17	0.14	37	50	0.000	1.17	72
30-Mar	1.12	0.10	37	53	0.000	1.12	69
31-Mar	1.09	0.02	38	57	0.000	1.09	67
1-Apr	1.07	0.01	40	55	0.000	1.07	66
2-Apr	1.20	0.29	38	50	0.000	1.20	74
3-Apr	1.17	0.14	37	50	0.000	1.17	72
4-Apr	1.14	0.13	37	60	0.000	1.14	70
5-Apr	1.39	0.92	38	56	0.000	1.39	86
6-Apr	1.29	0.05	38	53	0.000	1.29	79
7-Apr	1.48	0.68	35	49	0.000	1.48	91
8-Apr	1.18	0.04	34	50	0.000	1.18	73
9-Apr	1.27	0.10	29	52	0.000	1.27	78
10-Apr	1.19	0.00	30	63	0.000	1.19	73
11-Apr	1.25	0.00	38	63	0.000	1.25	77
12-Apr	1.28	0.06	41	56	0.000	1.28	79
13-Apr	1.38	0.55	39	52	0.000	1.38	85
14-Apr	1.25	0.00	36	63	0.000	1.25	77
15-Apr	1.20	0.00	36	63	0.000	1.20	74
16-Apr	1.34	0.08	36	68	0.000	1.34	82
17-Apr	1.07	0.11	38	64	0.000	1.07	66
18-Apr	1.17	0.00	45	72	0.000	1.17	72
19-Apr	1.22	0.00	49	76	0.000	1.22	75
20-Apr	1.21	0.84	44	57	0.000	1.21	74
21-Apr	1.46	0.33	39	55	0.000	1.46	90
22-Apr	1.28	0.00	35	60	0.000	1.28	79
23-Apr	1.25	0.38	38	61	0.000	1.25	77
24-Apr	1.34	0.29	40	57	0.000	1.34	82
25-Apr	1.41	0.00	41	62	0.000	1.41	87

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
26-Apr	1.28	0.33	46	73	0.000	1.28	78
27-Apr	1.33	0.40	44	60	0.000	1.33	82
28-Apr	1.44	0.40	41	58	0.000	1.44	88
29-Apr	1.20	0.00	45	60	0.000	1.20	74
30-Apr	1.10	0.18	43	58	0.000	1.10	67
1-May	1.05	0.16	43	58	0.000	1.05	65
2-May	1.18	0.47	43	52	0.000	1.18	72
3-May	1.12	0.00	39	53	0.000	1.12	68
4-May	1.12	0.03	33	56	0.000	1.12	69
5-May	1.10	0.03	36	52	0.000	1.10	67
6-May	1.07	0.00	33	62	0.000	1.07	65
7-May	1.09	0.00	34	67	0.000	1.09	67
8-May	1.01	0.00	35	69	0.000	1.01	62
9-May	1.03	0.00	36	69	0.000	1.03	63
10-May	1.09	0.00	38	56	0.000	1.09	67
11-May	1.19	0.00	41	68	0.000	1.19	73
12-May	1.07	0.00	38	65	0.000	1.07	66
13-May	1.06	0.00	40	71	0.000	1.06	65
14-May	0.98	0.00	41	72	0.000	0.98	60
15-May	1.04	0.00	43	74	0.000	1.04	64
16-May	0.96	0.00	46	71	0.000	0.96	59
17-May	1.05	0.02	49	74	0.000	1.05	64
18-May	1.11	0.06	47	68	0.000	1.11	68
19-May	1.18	0.38	40	79	0.000	1.18	73
20-May	1.00	0.02	41	59	0.000	1.00	61
21-May	1.13	0.00	42	62	0.000	1.13	69
22-May	1.11	0.15	45	62	0.000	1.11	68
23-May	1.15	0.00	43	61	0.000	1.15	71
24-May	1.04	0.00	47	67	0.000	1.04	64
25-May	1.09	0.05	50	67	0.000	1.09	67
26-May	1.19	0.42	45	63	0.000	1.19	73
27-May	1.13	1.12	47	56	0.000	1.13	70
28-May	1.43	0.76	48	54	0.000	1.43	88
29-May	1.31	0.75	43	52	0.000	1.31	80
30-May	1.23	0.24	44	61	0.000	1.23	76
31-May	1.44	0.31	51	67	0.000	1.44	89
1-Jun	1.09	0.57	51	65	0.000	1.09	67
2-Jun	1.11	0.16	45	66	0.000	1.11	68
3-Jun	1.49	0.31	47	66	0.000	1.49	91
4-Jun	1.15	0.05	47	62	0.000	1.15	70
5-Jun	1.02	0.04	49	71	0.000	1.02	63
6-Jun	1.02	1.41	52	65	0.000	1.02	63
7-Jun	1.12	0.12	42	65	0.000	1.12	69
8-Jun	1.42	0.62	45	72	0.000	1.42	87
9-Jun	1.73	1.47	48	67	0.000	1.73	106
10-Jun	1.63	0.06	49	65	0.000	1.63	100
11-Jun	1.36	0.02	43	65	0.000	1.36	83
12-Jun	1.22	0.00	44	76	0.000	1.22	75
13-Jun	1.20	0.00	43	67	0.000	1.20	74

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
14-Jun	1.24	0.06	47	65	0.000	1.24	76
15-Jun	1.32	0.35	46	62	0.000	1.32	81
16-Jun	1.18	0.16	46	64	0.000	1.18	73
17-Jun	1.24	0.02	49	56	0.000	1.24	76
18-Jun	1.14	0.00	49	70	0.000	1.14	70
19-Jun	1.07	0.12	50	66	0.000	1.07	65
20-Jun	1.18	0.23	48	57	0.000	1.18	73
21-Jun	1.19	0.04	48	65	0.000	1.19	73
22-Jun	1.15	0.00	52	75	0.000	1.15	70
23-Jun	1.10	0.00	49	80	0.000	1.10	67
24-Jun	1.10	0.00	53	76	0.000	1.10	68
25-Jun	1.10	0.00	50	68	0.000	1.10	68
26-Jun	1.10	0.00	49	71	0.000	1.10	68
27-Jun	0.99	0.00	52	68	0.000	0.99	60
28-Jun	1.02	0.00	51	76	0.000	1.02	62
29-Jun	0.98	0.09	48	67	0.000	0.98	60
30-Jun	0.92	0.00	46	68	0.000	0.92	57
1-Jul	0.98	0.02	49	64	0.000	0.98	60
2-Jul	0.96	0.00	50	70	0.000	0.96	59
3-Jul	0.92	0.00	45	70	0.000	0.92	57
4-Jul	0.90	0.00	48	58	0.000	0.90	55
5-Jul	0.97	0.05	44	69	0.000	0.97	59
6-Jul	1.00	0.00	49	79	0.000	1.00	61
7-Jul	0.95	0.00	55	91	0.000	0.95	58
8-Jul	0.93	0.00	57	95	0.000	0.93	57
9-Jul	0.96	0.00	60	91	0.000	0.96	59
10-Jul	0.96	0.00	53	84	0.000	0.96	59
11-Jul	0.97	0.00	52	79	0.000	0.97	60
12-Jul	0.98	0.00	51	68	0.000	0.98	60
13-Jul	0.91	0.00	46	72	0.000	0.91	56
14-Jul	0.95	0.00	49	80	0.000	0.95	58
15-Jul	0.98	0.00	48	79	0.000	0.98	60
16-Jul	0.91	0.00	49	73	0.000	0.91	56
17-Jul	0.87	0.00	49	76	0.000	0.87	53
18-Jul	0.90	0.00	51	73	0.000	0.90	55
19-Jul	1.01	0.00	49	72	0.000	1.01	62
20-Jul	0.92	0.00	50	77	0.000	0.92	57
21-Jul	0.92	0.00	51	80	0.000	0.92	56
22-Jul	0.92	0.00	49	72	0.000	0.92	56
23-Jul	0.87	0.00	49	79	0.000	0.87	54
24-Jul	0.95	0.00	49	85	0.000	0.95	58
25-Jul	0.91	0.00	50	84	0.000	0.91	56
26-Jul	0.89	0.00	52	85	0.000	0.89	55
27-Jul	0.96	0.00	52	85	0.000	0.96	59
28-Jul	0.90	0.00	51	76	0.000	0.90	55
29-Jul	0.88	0.00	48	76	0.000	0.88	54
30-Jul	0.94	0.00	49	79	0.000	0.94	58
31-Jul	0.91	0.00	52	74	0.000	0.91	56
1-Aug	0.91	0.00	51	71	0.000	0.91	56

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
2-Aug	0.93	0.00	51	77	0.000	0.93	57
3-Aug	0.94	0.00	52	78	0.000	0.94	58
4-Aug	0.86	0.00	55	83	0.000	0.86	52
5-Aug	0.90	0.00	51	84	0.000	0.90	55
6-Aug	0.92	0.00	54	70	0.000	0.92	56
7-Aug	0.92	0.47	54	67	0.000	0.92	56
8-Aug	0.94	0.00	53	66	0.000	0.94	57
9-Aug	0.93	0.05	54	65	0.000	0.93	57
10-Aug	0.85	0.00	49	72	0.000	0.85	52
11-Aug	0.93	0.00	49	80	0.000	0.93	57
12-Aug	1.09	0.00	50	80	0.000	1.09	67
13-Aug	0.90	0.00	50	88	0.000	0.90	55
14-Aug	0.88	0.00	53	96	0.000	0.88	54
15-Aug	0.86	0.00	56	96	0.000	0.86	53
16-Aug	0.89	0.00	54	91	0.000	0.89	54
17-Aug	0.85	0.00	50	87	0.000	0.85	52
18-Aug	0.87	0.00	52	75	0.000	0.87	54
19-Aug	0.84	0.00	48	71	0.000	0.84	52
20-Aug	0.83	0.00	44	70	0.000	0.83	51
21-Aug	0.86	0.14	45	72	0.000	0.86	53
22-Aug	0.88	0.00	43	68	0.000	0.88	54
23-Aug	0.92	0.00	44	75	0.000	0.92	57
24-Aug	0.84	0.00	48	85	0.000	0.84	52
25-Aug	0.89	0.00	49	84	0.000	0.89	55
26-Aug	0.84	0.19	50	63	0.000	0.84	52
27-Aug	0.86	0.05	42	69	0.000	0.86	53
28-Aug	0.86	0.00	42	71	0.000	0.86	53
29-Aug	0.86	0.00	43	67	0.000	0.86	53
30-Aug	0.88	0.00	46	72	0.000	0.88	54
31-Aug	1.07	1.22	50	57	0.000	1.07	66
1-Sep	0.92	0.00	42	70	0.000	0.92	56
2-Sep	0.92	0.00	43	79	0.000	0.92	56
3-Sep	0.90	0.00	48	81	0.000	0.90	55
4-Sep	0.84	0.00	48	68	0.000	0.84	51
5-Sep	0.79	0.07	48	65	0.000	0.79	48
6-Sep	1.04	0.75	50	58	0.000	1.04	64
7-Sep	0.98	0.04	51	65	0.000	0.98	60
8-Sep	0.92	0.00	52	68	0.000	0.92	56
9-Sep	0.89	0.00	53	67	0.000	0.89	55
10-Sep	0.88	0.11	47	62	0.000	0.88	54
11-Sep	0.83	0.12	43	70	0.000	0.83	51
12-Sep	0.96	0.21	53	63	0.000	0.96	59
13-Sep	0.91	0.00	52	73	0.000	0.91	56
14-Sep	0.88	0.00	47	73	0.000	0.88	54
15-Sep	0.89	0.11	50	71	0.000	0.89	55
16-Sep	0.98	0.40	58	68	0.000	0.98	60
17-Sep	0.88	0.72	57	73	0.000	0.88	54
18-Sep	1.08	0.51	51	76	0.000	1.08	66
19-Sep	1.02	0.03	54	69	0.000	1.02	63

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
20-Sep	1.21	1.08	47	59	0.000	1.21	74
21-Sep	0.97	0.00	40	67	0.000	0.97	59
22-Sep	0.95	0.04	40	71	0.000	0.95	58
23-Sep	0.96	0.17	51	58	0.000	0.96	59
24-Sep	0.94	0.00	50	68	0.000	0.94	57
25-Sep	0.91	0.28	50	80	0.000	0.91	56
26-Sep	1.01	0.09	51	68	0.000	1.01	62
27-Sep	0.97	0.00	59	74	0.000	0.97	60
28-Sep	0.87	0.00	46	71	0.000	0.87	53
29-Sep	0.95	0.00	43	68	0.000	0.95	58
30-Sep	0.93	0.00	44	72	0.000	0.93	57
1-Oct	0.91	0.01	45	77	0.000	0.91	56
2-Oct	0.87	0.00	51	67	0.000	0.87	54
3-Oct	0.87	0.00	48	62	0.000	0.87	53
4-Oct	0.89	0.00	38	64	0.000	0.89	54
5-Oct	0.84	0.00	38	65	0.000	0.84	51
6-Oct	0.90	0.00	37	72	0.000	0.90	56
7-Oct	0.83	0.00	43	68	0.000	0.83	51
8-Oct	0.85	0.29	54	70	0.000	0.85	52
9-Oct	1.01	0.83	51	66	0.000	1.01	62
10-Oct	1.01	0.01	42	65	0.000	1.01	62
11-Oct	0.98	0.00	42	64	0.000	0.98	60
12-Oct	0.95	0.00	36	66	0.000	0.95	58
13-Oct	0.93	0.00	35	73	0.000	0.93	57
14-Oct	0.86	0.00	39	61	0.000	0.86	53
15-Oct	0.87	0.00	30	60	0.000	0.87	54
16-Oct	0.84	0.00	28	58	0.000	0.84	52
17-Oct	0.85	0.00	28	61	0.000	0.85	52
18-Oct	0.89	0.00	34	56	0.000	0.89	55
19-Oct	0.87	0.00	34	67	0.000	0.87	53
20-Oct	0.91	0.00	36	69	0.000	0.91	56
21-Oct	0.84	0.00	36	65	0.000	0.84	51
22-Oct	0.85	0.05	43	65	0.000	0.85	52
23-Oct	0.90	0.61	44	63	0.000	0.90	56
24-Oct	1.02	0.49	45	53	0.000	1.02	63
25-Oct	1.01	0.34	42	52	0.000	1.01	62
26-Oct	0.94	0.08	43	49	0.000	0.94	57
27-Oct	0.91	0.02	43	63	0.000	0.91	56
28-Oct	0.89	0.07	46	53	0.000	0.89	55
29-Oct	0.84	0.00	38	61	0.000	0.84	51
30-Oct	0.88	0.46	38	53	0.000	0.88	54
31-Oct	0.98	0.24	45	54	0.000	0.98	60
1-Nov	1.03	0.46	44	59	0.000	1.03	63
2-Nov	0.94	0.00	38	64	0.000	0.94	58
3-Nov	0.93	0.00	37	75	0.000	0.93	57
4-Nov	0.92	0.00	38	70	0.000	0.92	56
5-Nov	0.90	0.08	45	53	0.000	0.90	55
6-Nov	0.88	0.28	45	56	0.000	0.88	54
7-Nov	1.05	0.96	39	54	0.000	1.05	65

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
8-Nov	1.10	0.09	39	53	0.000	1.10	67
9-Nov	0.88	0.03	29	48	0.000	0.88	54
10-Nov	0.94	0.00	29	53	0.000	0.94	57
11-Nov	0.94	0.26	31	51	0.000	0.94	57
12-Nov	0.85	0.11	40	55	0.000	0.85	52
13-Nov	0.89	0.31	40	48	0.000	0.89	55
14-Nov	0.94	0.16	43	51	0.000	0.94	57
15-Nov	1.07	0.54	42	54	0.000	1.07	65
16-Nov	0.96	0.15	42	52	0.000	0.96	59
17-Nov	1.26	1.26	34	48	0.000	1.26	78
18-Nov	1.21	0.10	35	42	0.000	1.21	74
19-Nov	1.01	0.13	33	48	0.000	1.01	62
20-Nov	1.05	0.00	29	46	0.000	1.05	64
21-Nov	1.14	0.00	20	35	0.000	1.14	70
22-Nov	0.99	0.15	11	30	0.000	0.99	61
23-Nov	0.98	0.00	11	29	0.000	0.98	60
24-Nov	1.03	0.08	16	29	0.000	1.03	63
25-Nov	1.00	0.20	26	43	0.000	1.00	61
26-Nov	1.05	0.10	32	48	0.000	1.05	64
27-Nov	0.97	0.23	32	42	0.000	0.97	59
28-Nov	0.98	0.00	29	42	0.000	0.98	60
29-Nov	0.99	0.15	32	41	0.000	0.99	61
30-Nov	0.91	0.42	36	47	0.000	0.91	56
1-Dec	0.90	0.05	31	48	0.000	0.90	55
2-Dec	0.88	0.26	31	49	0.000	0.88	54
3-Dec	0.88	0.00	23	48	0.000	0.88	54
4-Dec	0.96	0.00	22	48	0.000	0.96	59
5-Dec	0.94	0.00	27	46	0.000	0.94	58
6-Dec	0.97	0.00	27	48	0.000	0.97	60
7-Dec	0.88	0.34	43	55	0.000	0.88	54
8-Dec	1.00	0.74	44	53	0.000	1.00	61
9-Dec	1.02	0.41	39	52	0.000	1.02	63
10-Dec	0.96	0.02	37	51	0.000	0.96	59
11-Dec	1.06	0.84	37	54	0.000	1.06	65
12-Dec	1.34	0.43	37	57	0.000	1.34	82
13-Dec	1.25	0.67	37	54	0.000	1.25	77
14-Dec	1.35	0.11	38	45	0.000	1.35	83
15-Dec	1.22	0.00	30	45	0.000	1.22	75
16-Dec	1.17	0.00	31	45	0.000	1.17	72
17-Dec	1.13	0.00	28	52	0.000	1.13	69
18-Dec	1.14	0.10	31	48	0.000	1.14	70
19-Dec	1.09	0.00	30	48	0.000	1.09	67
20-Dec	1.09	0.07	34	45	0.000	1.09	67
21-Dec	0.98	0.02	34	53	0.000	0.98	60
22-Dec	0.95	0.00	37	52	0.000	0.95	58
23-Dec	0.95	0.24	40	54	0.000	0.95	58
24-Dec	0.99	0.34	43	52	0.000	0.99	61
25-Dec	0.87	0.15	41	54	0.000	0.87	53
26-Dec	0.96	0.15	38	46	0.000	0.96	59

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
27-Dec	0.95	0.24	37	46	0.000	0.95	58
28-Dec	1.02	0.05	32	44	0.000	1.02	62
29-Dec	1.13	0.21	21	38	0.000	1.13	70
30-Dec	1.02	0.00	18	38	0.000	1.02	63
31-Dec	1.07	0.00	15	38	0.000	1.07	65
2011							
1-Jan	1.00	0.00	15	42	0.000	1.00	61
2-Jan	1.07	0.00	15	41	0.000	1.07	65
3-Jan	1.00	0.00	17	44	0.000	1.00	61
4-Jan	1.07	0.30	23	36	0.000	1.07	66
5-Jan	1.05	0.18	33	47	0.000	1.05	65
6-Jan	1.02	0.72	40	48	0.000	1.02	62
7-Jan	1.13	0.49	33	49	0.000	1.13	70
8-Jan	1.44	1.12	31	36	0.000	1.44	88
9-Jan	1.44	0.03	29	38	0.000	1.44	89
10-Jan	1.27	0.00	25	37	0.000	1.27	78
11-Jan	1.27	0.31	25	41	0.000	1.27	78
12-Jan	1.22	0.57	38	48	0.000	1.22	75
13-Jan	1.24	0.08	45	55	0.000	1.24	76
14-Jan	1.17	0.02	48	56	0.000	1.17	72
15-Jan	1.26	0.95	45	56	0.000	1.26	77
16-Jan	1.45	1.21	45	56	0.000	1.45	89
17-Jan	1.89	0.50	37	48	0.000	1.89	116
18-Jan	1.59	0.28	34	41	0.000	1.59	97
19-Jan	1.48	0.03	33	46	0.000	1.48	91
20-Jan	1.58	1.37	34	41	0.000	1.58	97
21-Jan	2.07	0.80	38	47	0.000	2.07	127
22-Jan	1.67	0.08	25	48	0.000	1.67	103
23-Jan	1.56	0.16	39	49	0.000	1.56	96
24-Jan	1.54	0.31	42	48	0.000	1.54	94
25-Jan	1.50	0.07	42	50	0.000	1.50	92
26-Jan	1.32	0.00	32	57	0.000	1.32	81
27-Jan	1.21	0.00	33	48	0.000	1.21	75
28-Jan	1.16	0.10	34	51	0.000	1.16	71
29-Jan	1.10	0.25	34	49	0.000	1.10	68
30-Jan	1.12	0.03	30	41	0.000	1.12	69
31-Jan	1.16	0.00	24	44	0.000	1.16	71
1-Feb	1.14	0.00	24	47	0.000	1.14	70
2-Feb	0.98	0.00	25	49	0.000	0.98	60
3-Feb	0.89	0.41	37	50	0.000	0.89	55
4-Feb	1.01	0.31	39	50	0.000	1.01	62
5-Feb	1.02	0.17	39	48	0.000	1.02	63
6-Feb	1.12	0.22	39	50	0.000	1.12	69
7-Feb	1.10	0.10	32	47	0.000	1.10	68
8-Feb	1.05	0.00	25	49	0.000	1.05	64
9-Feb	1.34	0.00	24	47	0.000	1.34	82
10-Feb	1.37	0.00	24	50	0.000	1.37	84
11-Feb	1.52	0.00	32	51	0.000	1.52	94
12-Feb	1.08	0.28	38	55	0.000	1.08	66

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
13-Feb	1.10	0.30	38	52	0.000	1.10	68
14-Feb	1.22	0.59	36	50	0.000	1.22	75
15-Feb	1.17	0.05	36	46	0.000	1.17	72
16-Feb	1.16	0.35	31	50	0.000	1.16	71
17-Feb	1.20	0.03	31	46	0.000	1.20	74
18-Feb	1.17	0.00	25	52	0.000	1.17	72
19-Feb	1.13	0.00	22	47	0.000	1.13	69
20-Feb	1.08	0.00	23	46	0.000	1.08	66
21-Feb	1.14	0.40	30	43	0.000	1.14	70
22-Feb	1.15	0.43	30	44	0.000	1.15	71
23-Feb	1.15	0.45	24	38	0.000	1.15	70
24-Feb	1.17	0.03	16	38	0.000	1.17	72
25-Feb	1.14	0.00	16	33	0.000	1.14	70
26-Feb	1.15	0.21	18	36	0.000	1.15	71
27-Feb	1.15	0.13	30	41	0.000	1.15	71
28-Feb	1.32	0.00	30	39	0.000	1.32	81
1-Mar	1.25	0.10	32	49	0.000	1.25	76
2-Mar	1.23	0.00	36	54	0.000	1.23	75
3-Mar	1.27	0.22	29	48	0.000	1.27	78
4-Mar	1.21	0.39	30	45	0.000	1.21	74
5-Mar	1.32	0.16	32	50	0.000	1.32	81
6-Mar	1.27	0.00	26	49	0.000	1.27	78
7-Mar	1.15	0.08	27	51	0.000	1.15	71
8-Mar	1.12	0.16	34	49	0.000	1.12	69
9-Mar	1.21	0.55	43	58	0.000	1.21	74
10-Mar	1.36	0.60	39	55	0.000	1.36	83
11-Mar	1.32	0.12	39	50	0.000	1.32	81
12-Mar	1.34	0.49	39	46	0.000	1.34	82
13-Mar	1.35	0.71	40	53	0.000	1.35	83
14-Mar	1.47	0.18	41	56	0.000	1.47	90
15-Mar	1.51	0.53	41	50	0.000	1.51	93
16-Mar	1.54	0.97	32	50	0.000	1.54	95
17-Mar	1.78	0.00	34	54	0.000	1.78	110
18-Mar	1.53	0.35	34	56	0.000	1.53	94
19-Mar	1.50	0.00	33	57	0.000	1.50	92
20-Mar	1.45	0.00	37	58	0.000	1.45	89
21-Mar	1.51	0.31	37	49	0.000	1.51	92
22-Mar	1.35	0.00	31	56	0.000	1.35	83
23-Mar	1.33	0.00	32	65	0.000	1.33	81
24-Mar	1.25	0.19	38	64	0.000	1.25	77
25-Mar	1.28	0.16	35	60	0.000	1.28	79
26-Mar	1.22	0.15	36	55	0.000	1.22	75
27-Mar	1.21	0.05	36	56	0.000	1.21	74
28-Mar	1.24	0.14	42	55	0.000	1.24	76
29-Mar	1.19	0.98	42	51	0.000	1.19	73
30-Mar	1.81	1.54	44	51	0.000	1.81	111
31-Mar	1.74	0.10	43	57	0.000	1.74	107
1-Apr	1.73	1.20	35	47	0.000	1.73	106
2-Apr	2.08	0.48	36	51	0.000	2.08	128

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
3-Apr	1.80	0.18	39	50	0.000	1.80	110
4-Apr	1.91	0.81	36	46	0.000	1.91	117
5-Apr	1.82	0.52	34	46	0.000	1.82	112
6-Apr	1.96	0.10	31	51	0.000	1.96	120
7-Apr	1.79	0.00	28	51	0.000	1.79	110
8-Apr	1.71	0.02	28	58	0.000	1.71	105
9-Apr	1.62	0.06	39	56	0.000	1.62	100
10-Apr	1.71	0.67	37	54	0.000	1.71	105
11-Apr	1.75	0.20	35	52	0.000	1.75	107
12-Apr	1.48	0.00	35	60	0.000	1.48	91
13-Apr	1.54	0.14	35	51	0.000	1.54	94
14-Apr	1.57	0.39	34	47	0.000	1.57	96
15-Apr	1.48	0.15	35	49	0.000	1.48	91
16-Apr	1.45	0.16	37	48	0.000	1.45	89
17-Apr	1.47	0.03	34	54	0.000	1.47	90
18-Apr	1.43	0.05	34	55	0.000	1.43	88
19-Apr	1.35	0.00	31	56	0.000	1.35	83
20-Apr	1.31	0.34	31	51	0.000	1.31	81
21-Apr	1.39	0.04	32	53	0.000	1.39	85
22-Apr	1.22	0.00	31	60	0.000	1.22	75
23-Apr	1.25	0.00	31	70	0.000	1.25	76
24-Apr	1.25	0.04	39	55	0.000	1.25	76
25-Apr	1.44	0.98	39	49	0.000	1.44	88
26-Apr	---	0.03	39	60	0.000	---	---
27-Apr	---	0.39	37	55	0.000	---	---
28-Apr	1.47	0.07	35	54	0.000	1.47	90
29-Apr	1.25	0.06	37	58	0.000	1.25	77
30-Apr	1.22	0.00	32	59	0.000	1.22	75
1-May	1.19	0.00	34	65	0.000	1.19	73
2-May	1.34	0.82	41	50	0.000	1.34	82
3-May	1.35	0.06	33	55	0.000	1.35	83
4-May	1.24	0.06	35	66	0.000	1.24	76
5-May	1.18	0.10	44	55	0.000	1.18	72
6-May	1.26	0.33	44	52	0.000	1.26	78
7-May	1.36	0.70	41	51	0.000	1.36	83
8-May	1.26	0.05	40	57	0.000	1.26	77
9-May	1.34	0.00	43	60	0.000	1.34	82
10-May	1.21	0.05	45	65	0.000	1.21	74
11-May	1.29	0.34	42	54	0.000	1.29	79
12-May	1.16	0.00	39	65	0.000	1.16	71
13-May	1.17	0.00	43	69	0.000	1.17	72
14-May	1.21	0.39	43	65	0.000	1.21	74
15-May	1.35	0.46	44	54	0.000	1.35	83
16-May	1.31	0.10	44	53	0.000	1.31	80
17-May	1.23	0.00	36	64	0.000	1.23	75
18-May	1.16	0.00	36	68	0.000	1.16	71
19-May	1.19	0.00	38	70	0.000	1.19	73
20-May	1.12	0.00	42	71	0.000	1.12	69
21-May	1.11	0.03	46	54	0.000	1.11	68

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
22-May	1.14	0.00	44	58	0.000	1.14	70
23-May	---	0.00	46	62	0.000	---	---
24-May	1.09	0.00	45	65	0.000	1.09	67
25-May	1.13	0.24	44	56	0.000	1.13	69
26-May	1.12	0.05	44	62	0.000	1.12	69
27-May	1.09	0.30	45	60	0.000	1.09	67
28-May	1.05	0.00	45	60	0.000	1.05	65
29-May	1.01	0.05	47	63	0.000	1.01	62
30-May	1.09	0.00	44	63	0.000	1.09	67
31-May	1.29	0.15	44	65	0.000	1.29	79
1-Jun	1.14	0.43	48	58	0.000	1.14	70
2-Jun	1.20	0.38	48	57	0.000	1.20	74
3-Jun	1.14	0.00	43	70	0.000	1.14	70
4-Jun	1.02	0.00	45	80	0.000	1.02	63
5-Jun	1.10	0.00	51	80	0.000	1.10	68
6-Jun	1.05	0.00	52	76	0.000	1.05	65
7-Jun	1.10	0.21	49	58	0.000	1.10	68
8-Jun	1.11	0.03	49	66	0.000	1.11	68
9-Jun	1.06	0.00	50	69	0.000	1.06	65
10-Jun	1.07	0.00	49	60	0.000	1.07	66
11-Jun	1.00	0.00	42	68	0.000	1.00	61
12-Jun	1.06	0.08	47	72	0.000	1.06	65
13-Jun	1.02	0.13	48	68	0.000	1.02	62
14-Jun	1.00	0.16	47	68	0.000	1.00	61
15-Jun	0.98	0.04	44	64	0.000	0.98	60
16-Jun	0.99	0.00	45	67	0.000	0.99	61
17-Jun	0.93	0.06	46	72	0.000	0.93	57
18-Jun	0.96	0.10	50	58	0.000	0.96	59
19-Jun	1.00	0.03	51	60	0.000	1.00	61
20-Jun	1.03	0.00	46	75	0.000	1.03	63
21-Jun	0.95	0.00	50	79	0.000	0.95	58
22-Jun	0.93	0.00	48	65	0.000	0.93	57
23-Jun	0.97	0.11	49	69	0.000	0.97	59
24-Jun	0.97	0.08	47	66	0.000	0.97	59
25-Jun	0.92	0.00	42	68	0.000	0.92	56
26-Jun	0.92	0.00	47	76	0.000	0.92	56
27-Jun	0.92	0.00	53	76	0.000	0.92	56
28-Jun	1.00	0.00	57	74	0.000	1.00	61
29-Jun	0.98	0.48	48	65	0.000	0.98	60
30-Jun	0.96	0.00	49	64	0.000	0.96	59
1-Jul	1.02	0.00	47	73	0.000	1.02	62
2-Jul	0.92	0.19	50	80	0.000	0.92	57
3-Jul	0.90	0.19	44	71	0.000	0.90	55
4-Jul	0.91	0.00	44	78	0.000	0.91	56
5-Jul	0.94	0.00	49	79	0.000	0.94	57
6-Jul	0.92	0.00	53	79	0.000	0.92	56
7-Jul	1.02	0.20	49	59	0.000	1.02	63
8-Jul	0.96	0.13	42	66	0.000	0.96	59
9-Jul	0.88	0.00	44	73	0.000	0.88	54

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
10-Jul	0.91	0.00	46	75	0.000	0.91	56
11-Jul	0.90	0.00	50	71	0.000	0.90	55
12-Jul	0.94	0.02	54	71	0.000	0.94	57
13-Jul	0.95	0.40	54	72	0.000	0.95	59
14-Jul	0.95	0.16	54	63	0.000	0.95	58
15-Jul	0.87	0.07	55	77	0.000	0.87	54
16-Jul	0.97	0.15	53	76	0.000	0.97	59
17-Jul	0.94	0.10	52	63	0.000	0.94	58
18-Jul	0.95	0.00	49	74	0.000	0.95	58
19-Jul	0.87	0.07	51	64	0.000	0.87	54
20-Jul	0.96	0.15	53	76	0.000	0.96	59
21-Jul	0.91	0.15	50	65	0.000	0.91	56
22-Jul	0.92	0.00	47	73	0.000	0.92	57
23-Jul	0.87	0.00	48	78	0.000	0.87	53
24-Jul	0.82	0.00	49	85	0.000	0.82	51
25-Jul	0.95	0.31	53	64	0.000	0.95	58
26-Jul	0.92	0.00	52	69	0.000	0.92	57
27-Jul	0.85	0.00	40	75	0.000	0.85	52
28-Jul	0.88	0.00	50	75	0.000	0.88	54
29-Jul	0.89	0.00	48	77	0.000	0.89	55
30-Jul	0.89	0.00	49	78	0.000	0.89	55
31-Jul	0.91	0.04	45	71	0.000	0.91	56
1-Aug	0.91	0.00	45	79	0.000	0.91	56
2-Aug	0.95	0.00	51	79	0.000	0.95	58
3-Aug	0.85	0.00	50	80	0.000	0.85	52
4-Aug	0.87	0.00	51	81	0.000	0.87	53
5-Aug	0.91	0.00	54	69	0.000	0.91	56
6-Aug	0.84	0.00	49	76	0.000	0.84	51
7-Aug	0.90	0.00	48	78	0.000	0.90	55
8-Aug	0.89	0.00	51	73	0.000	0.89	55
9-Aug	0.85	0.00	52	67	0.000	0.85	52
10-Aug	---	0.00	52	73	0.000	---	---
11-Aug	0.85	0.00	49	76	0.000	0.85	52
12-Aug	0.86	0.00	49	78	0.000	0.86	53
13-Aug	0.87	0.00	52	68	0.000	0.87	54
14-Aug	0.86	0.00	51	74	0.000	0.86	53
15-Aug	0.88	0.00	49	75	0.000	0.88	54
16-Aug	0.88	0.00	45	79	0.000	0.88	54
17-Aug	0.88	0.00	47	74	0.000	0.88	54
18-Aug	0.88	0.00	49	73	0.000	0.88	54
19-Aug	0.87	0.00	48	77	0.000	0.87	53
20-Aug	0.83	0.00	50	87	0.000	0.83	51
21-Aug	0.85	0.00	54	86	0.000	0.85	52
22-Aug	0.87	0.19	58	72	0.000	0.87	54
23-Aug	0.90	0.00	51	80	0.000	0.90	55
24-Aug	0.82	0.00	53	82	0.000	0.82	51
25-Aug	0.87	0.00	53	83	0.000	0.87	53
26-Aug	0.98	0.00	50	85	0.000	0.98	60
27-Aug	0.80	0.00	48	78	0.000	0.80	49

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
28-Aug	0.84	0.00	45	81	0.000	0.84	52
29-Aug	---	0.00	54	75	0.000	---	---
30-Aug	0.88	0.00	49	69	0.000	0.88	54
31-Aug	---	0.00	43	70	0.000	---	---
1-Sep	0.88	0.00	43	74	0.000	0.88	54
2-Sep	0.87	0.00	43	72	0.000	0.87	54
3-Sep	0.80	0.00	43	82	0.000	0.80	49
4-Sep	0.81	0.00	45	85	0.000	0.81	50
5-Sep	0.90	0.00	45	81	0.000	0.90	55
6-Sep	0.90	0.00	45	82	0.000	0.90	55
7-Sep	0.89	0.00	45	85	0.000	0.89	55
8-Sep	0.90	0.00	49	85	0.000	0.90	55
9-Sep	---	0.00	48	85	0.000	---	---
10-Sep	0.89	0.00	49	83	0.000	0.89	55
11-Sep	0.84	0.00	50	84	0.000	0.84	52
12-Sep	0.89	0.00	52	75	0.000	0.89	55
13-Sep	0.91	0.00	55	67	0.000	0.91	56
14-Sep	0.86	0.00	54	67	0.000	0.86	53
15-Sep	0.88	0.05	47	59	0.000	0.88	54
16-Sep	0.83	0.00	46	70	0.000	0.83	51
17-Sep	0.82	0.22	49	63	0.000	0.82	50
18-Sep	0.93	0.00	48	66	0.000	0.93	57
19-Sep	0.90	0.00	42	70	0.000	0.90	55
20-Sep	0.82	0.00	41	80	0.000	0.82	50
21-Sep	0.88	0.08	54	77	0.000	0.88	54
22-Sep	0.91	0.12	59	76	0.000	0.91	56
23-Sep	0.85	0.00	55	86	0.000	0.85	52
24-Sep	0.85	0.05	53	82	0.000	0.85	52
25-Sep	0.92	0.05	48	70	0.000	0.92	56
26-Sep	0.91	0.19	50	62	0.000	0.91	56
27-Sep	0.93	0.10	42	67	0.000	0.93	57
28-Sep	0.80	0.00	37	69	0.000	0.80	49
29-Sep	0.84	0.00	37	83	0.000	0.84	51
30-Sep	0.77	0.02	42	67	0.000	0.77	47
1-Oct	0.82	0.02	46	57	0.000	0.82	50
2-Oct	0.89	0.20	45	66	0.000	0.89	55
3-Oct	0.83	0.02	48	61	0.000	0.83	51
4-Oct	0.91	0.07	48	68	0.000	0.91	56
5-Oct	0.92	0.52	47	55	0.000	0.92	56
6-Oct	0.86	0.07	47	58	0.000	0.86	53
7-Oct	0.91	0.06	37	62	0.000	0.91	56
8-Oct	0.83	0.06	37	69	0.000	0.83	51
9-Oct	0.88	0.02	48	66	0.000	0.88	54
10-Oct	0.89	0.14	49	62	0.000	0.89	54
11-Oct	0.87	0.00	50	60	0.000	0.87	53
12-Oct	0.82	0.00	39	62	0.000	0.82	50
13-Oct	0.89	0.00	39	62	0.000	0.89	55
14-Oct	0.80	0.00	34	61	0.000	0.80	49
15-Oct	0.85	0.00	34	64	0.000	0.85	52

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
16-Oct	0.84	0.00	36	56	0.000	0.84	52
17-Oct	0.86	0.00	34	65	0.000	0.86	53
18-Oct	0.87	0.00	33	69	0.000	0.87	53
19-Oct	0.85	0.11	41	65	0.000	0.85	52
20-Oct	0.85	0.05	43	57	0.000	0.85	52
21-Oct	0.93	0.88	45	58	0.000	0.93	57
22-Oct	1.02	0.37	48	60	0.000	1.02	63
23-Oct	0.94	0.09	38	60	0.000	0.94	58
24-Oct	0.92	0.00	38	57	0.000	0.92	56
25-Oct	0.93	0.00	36	58	0.000	0.93	57
26-Oct	0.85	0.07	33	58	0.000	0.85	52
27-Oct	0.85	0.00	33	58	0.000	0.85	52
28-Oct	0.85	0.14	39	55	0.000	0.85	52
29-Oct	0.88	0.07	40	61	0.000	0.88	54
30-Oct	0.93	0.27	42	53	0.000	0.93	57
31-Oct	0.90	0.04	32	52	0.000	0.90	55
1-Nov	0.79	0.00	29	55	0.000	0.79	48
2-Nov	0.95	1.03	29	60	0.000	0.95	58
3-Nov	1.14	0.63	30	56	0.000	1.14	70
4-Nov	0.95	0.00	31	45	0.000	0.95	58
5-Nov	0.86	0.00	20	54	0.000	0.86	53
6-Nov	0.97	0.00	20	49	0.000	0.97	59
7-Nov	0.85	0.07	33	48	0.000	0.85	52
8-Nov	0.92	0.00	33	60	0.000	0.92	56
9-Nov	1.01	0.00	34	64	0.000	1.01	62
10-Nov	0.86	0.02	34	66	0.000	0.86	53
11-Nov	1.06	0.67	33	52	0.000	1.06	65
12-Nov	0.94	0.52	34	48	0.000	0.94	57
13-Nov	1.10	0.45	34	45	0.000	1.10	68
14-Nov	1.01	0.51	31	49	0.000	1.01	62
15-Nov	1.05	0.00	28	51	0.000	1.05	65
16-Nov	1.01	0.35	32	51	0.000	1.01	62
17-Nov	1.05	0.34	33	54	0.000	1.05	65
18-Nov	1.04	0.00	24	47	0.000	1.04	64
19-Nov	0.98	0.00	22	46	0.000	0.98	60
20-Nov	0.97	0.15	23	43	0.000	0.97	60
21-Nov	1.04	0.93	37	50	0.000	1.04	64
22-Nov	1.53	3.03	38	54	0.000	1.53	94
23-Nov	2.47	0.56	36	54	0.000	2.47	152
24-Nov	1.62	0.24	36	54	0.000	1.62	99
25-Nov	1.41	0.00	34	52	0.000	1.41	86
26-Nov	1.28	0.00	40	59	0.000	1.28	78
27-Nov	1.60	0.86	36	56	0.000	1.60	98
28-Nov	1.40	0.00	31	50	0.000	1.40	86
29-Nov	1.39	0.19	34	43	0.000	1.39	86
30-Nov	1.29	0.00	26	51	0.000	1.29	79
1-Dec	1.22	0.00	25	41	0.000	1.22	75
2-Dec	1.23	0.00	25	48	0.000	1.23	75
3-Dec	1.22	0.00	26	40	0.000	1.22	75

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
4-Dec	1.14	0.00	23	46	0.000	1.14	70
5-Dec	1.12	0.00	21	44	0.000	1.12	69
6-Dec	1.16	0.04	22	38	0.000	1.16	71
7-Dec	1.05	0.00	29	41	0.000	1.05	64
8-Dec	1.03	0.00	24	44	0.000	1.03	63
9-Dec	0.99	0.00	22	45	0.000	0.99	61
10-Dec	1.06	0.05	22	45	0.000	1.06	65
11-Dec	1.00	0.00	22	41	0.000	1.00	61
12-Dec	1.04	0.00	21	43	0.000	1.04	64
13-Dec	0.93	0.00	25	38	0.000	0.93	57
14-Dec	1.01	0.09	30	41	0.000	1.01	62
15-Dec	0.91	0.09	34	42	0.000	0.91	56
16-Dec	0.97	0.00	32	52	0.000	0.97	59
17-Dec	0.93	0.15	32	56	0.000	0.93	57
18-Dec	0.95	0.01	37	46	0.000	0.95	58
19-Dec	0.95	0.00	38	47	0.000	0.95	58
20-Dec	0.89	0.03	35	44	0.000	0.89	55
21-Dec	0.93	0.00	23	50	0.000	0.93	57
22-Dec	---	0.00	23	48	0.000	---	---
23-Dec	---	0.16	32	48	0.000	---	---
24-Dec	1.02	0.23	38	48	0.000	1.02	62
25-Dec	0.88	0.10	32	50	0.000	0.88	54
26-Dec	0.95	0.33	34	46	0.000	0.95	58
27-Dec	0.95	0.15	43	54	0.000	0.95	59
28-Dec	1.06	0.14	37	55	0.000	1.06	65
29-Dec	0.94	0.10	36	50	0.000	0.94	58
30-Dec	1.12	0.03	30	47	0.000	1.12	69
31-Dec	1.02	0.00	30	46	0.000	1.02	63
2012							
1-Jan	0.98	0.00	30	53	0.000	0.98	60
2-Jan	1.13	0.13	30	55	0.000	1.13	69
3-Jan	1.04	0.10	41	59	0.000	1.04	64
4-Jan	1.09	0.61	35	58	0.000	1.09	67
5-Jan	1.09	0.06	35	50	0.000	1.09	67
6-Jan	0.99	0.04	33	42	0.000	0.99	60
7-Jan	1.01	0.05	34	42	0.000	1.01	62
8-Jan	1.04	0.00	39	53	0.000	1.04	64
9-Jan	1.00	0.07	29	50	0.000	1.00	61
10-Jan	1.02	0.00	25	47	0.000	1.02	62
11-Jan	1.01	0.00	22	44	0.000	1.01	62
12-Jan	1.03	0.00	22	41	0.000	1.03	63
13-Jan	0.92	0.27	22	37	0.000	0.92	57
14-Jan	1.07	0.17	22	38	0.000	1.07	65
15-Jan	1.02	0.05	23	37	0.000	1.02	62
16-Jan	1.01	0.24	26	35	0.000	1.01	62
17-Jan	1.00	0.45	22	35	0.000	1.00	62
18-Jan	0.98	0.26	21	31	0.000	0.98	60
19-Jan	0.98	0.27	20	34	0.000	0.98	60
20-Jan	1.07	0.90	31	46	0.000	1.07	66

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
21-Jan	1.94	0.52	32	42	0.000	1.94	119
22-Jan	1.53	0.22	32	44	0.000	1.53	94
23-Jan	1.40	0.04	33	51	0.000	1.40	86
24-Jan	1.45	0.26	35	52	0.000	1.45	89
25-Jan	1.30	0.05	35	47	0.000	1.30	79
26-Jan	1.32	0.00	28	46	0.000	1.32	81
27-Jan	1.31	0.00	28	49	0.000	1.31	80
28-Jan	1.19	0.20	32	57	0.000	1.19	73
29-Jan	1.43	0.58	40	57	0.000	1.43	88
30-Jan	1.40	0.00	39	46	0.000	1.40	86
31-Jan	1.26	0.72	39	51	0.000	1.26	77
1-Feb	1.56	0.02	35	50	0.000	1.56	95
2-Feb	1.39	0.00	27	54	0.000	1.39	85
3-Feb	1.30	0.00	26	62	0.000	1.30	80
4-Feb	1.29	0.00	26	63	0.000	1.29	79
5-Feb	1.33	0.00	26	58	0.000	1.33	82
6-Feb	1.24	0.00	25	62	0.000	1.24	76
7-Feb	1.18	0.02	25	67	0.000	1.18	72
8-Feb	1.19	0.04	25	51	0.000	1.19	73
9-Feb	1.17	0.36	41	49	0.000	1.17	72
10-Feb	1.17	0.13	40	58	0.000	1.17	72
11-Feb	1.13	0.01	40	51	0.000	1.13	69
12-Feb	1.16	0.09	38	49	0.000	1.16	71
13-Feb	1.15	0.00	38	57	0.000	1.15	71
14-Feb	1.05	0.09	29	48	0.000	1.05	64
15-Feb	1.09	0.00	32	51	0.000	1.09	67
16-Feb	1.04	0.15	34	44	0.000	1.04	64
17-Feb	1.16	0.45	33	50	0.000	1.16	71
18-Feb	1.22	0.75	33	43	0.000	1.22	75
19-Feb	1.27	0.15	33	43	0.000	1.27	78
20-Feb	1.26	0.82	33	46	0.000	1.26	77
21-Feb	2.15	2.60	38	48	0.000	2.15	131
22-Feb	2.26	0.00	37	49	0.000	2.26	138
23-Feb	1.81	0.05	36	56	0.000	1.81	111
24-Feb	1.70	0.46	36	47	0.000	1.70	104
25-Feb	1.81	0.58	29	42	0.000	1.81	111
26-Feb	1.73	0.00	24	44	0.000	1.73	106
27-Feb	1.60	0.00	24	50	0.000	1.60	98
28-Feb	1.53	0.24	29	46	0.000	1.53	94
29-Feb	1.71	0.98	30	40	0.000	1.71	105
1-Mar	1.79	0.11	30	40	0.000	1.79	109
2-Mar	1.76	0.55	32	41	0.000	1.76	108
3-Mar	1.78	0.05	37	49	0.000	1.78	109
4-Mar	1.68	0.00	43	51	0.000	1.68	103
5-Mar	1.65	0.47	30	46	0.000	1.65	101
6-Mar	1.57	0.00	24	46	0.000	1.57	96
7-Mar	1.55	0.00	27	48	0.000	1.55	95
8-Mar	1.47	0.00	28	59	0.000	1.47	90
9-Mar	1.49	0.56	41	49	0.000	1.49	91

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
10-Mar	1.50	0.23	38	47	0.000	1.50	92
11-Mar	1.46	0.24	30	46	0.000	1.46	89
12-Mar	1.96	1.08	31	44	0.000	1.96	120
13-Mar	1.80	0.02	31	43	0.000	1.80	111
14-Mar	1.74	0.42	32	49	0.000	1.74	106
15-Mar	1.83	0.20	38	56	0.000	1.83	112
16-Mar	1.70	0.10	36	55	0.000	1.70	104
17-Mar	1.61	0.46	32	50	0.000	1.61	99
18-Mar	1.77	0.45	29	44	0.000	1.77	108
19-Mar	1.65	0.10	29	48	0.000	1.65	101
20-Mar	1.63	0.57	30	47	0.000	1.63	100
21-Mar	1.65	0.08	30	53	0.000	1.65	101
22-Mar	1.52	0.00	29	52	0.000	1.52	93
23-Mar	1.49	0.00	28	60	0.000	1.49	91
24-Mar	1.44	0.00	28	65	0.000	1.44	88
25-Mar	1.50	0.07	30	60	0.000	1.50	92
26-Mar	1.45	0.00	39	54	0.000	1.45	89
27-Mar	1.26	0.05	41	67	0.000	1.26	77
28-Mar	1.32	0.45	37	53	0.000	1.32	81
29-Mar	1.50	0.37	41	48	0.000	1.50	92
30-Mar	1.38	0.20	35	52	0.000	1.38	84
31-Mar	1.39	0.47	37	48	0.000	1.39	85
1-Apr	1.45	0.07	38	51	0.000	1.45	89
2-Apr	1.37	0.00	41	67	0.000	1.37	84
3-Apr	1.48	0.55	35	50	0.000	1.48	90
4-Apr	1.36	0.03	34	55	0.000	1.36	83
5-Apr	1.31	0.15	34	52	0.000	1.31	80
6-Apr	1.33	0.03	35	54	0.000	1.33	81
7-Apr	1.35	0.00	39	68	0.000	1.35	83
8-Apr	1.36	0.00	38	76	0.000	1.36	83
9-Apr	1.24	0.00	37	72	0.000	1.24	76
10-Apr	1.17	0.00	41	71	0.000	1.17	71
11-Apr	1.20	0.32	41	53	0.000	1.20	74
12-Apr	1.19	0.00	31	64	0.000	1.19	73
13-Apr	1.16	0.00	36	61	0.000	1.16	71
14-Apr	1.07	0.00	37	64	0.000	1.07	66
15-Apr	1.11	0.14	42	65	0.000	1.11	68
16-Apr	1.24	0.76	40	55	0.000	1.24	76
17-Apr	1.27	0.05	39	52	0.000	1.27	78
18-Apr	1.20	0.05	38	59	0.000	1.20	74
19-Apr	1.24	1.12	39	60	0.000	1.24	76
20-Apr	1.36	0.00	34	62	0.000	1.36	83
21-Apr	1.22	0.00	35	66	0.000	1.22	75
22-Apr	1.27	0.00	43	73	0.000	1.27	78
23-Apr	1.15	0.00	43	73	0.000	1.15	70
24-Apr	1.22	0.33	49	56	0.000	1.22	75
25-Apr	1.21	0.52	46	63	0.000	1.21	74
26-Apr	1.32	0.26	43	52	0.000	1.32	81
27-Apr	1.20	0.00	42	60	0.000	1.20	74

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
28-Apr	1.14	0.00	42	65	0.000	1.14	70
29-Apr	1.20	0.52	44	63	0.000	1.20	74
30-Apr	1.46	0.88	40	57	0.000	1.46	89
1-May	1.59	0.46	40	51	0.000	1.59	97
2-May	1.60	0.08	39	61	0.000	1.60	98
3-May	1.52	0.69	40	57	0.000	1.52	93
4-May	1.73	0.40	40	55	0.000	1.73	106
5-May	1.73	0.02	35	60	0.000	1.73	106
6-May	1.51	0.00	38	66	0.000	1.51	93
7-May	1.49	0.00	39	77	0.000	1.49	91
8-May	1.41	0.00	43	63	0.000	1.41	86
9-May	1.38	0.00	40	57	0.000	1.38	85
10-May	1.31	0.00	33	62	0.000	1.31	80
11-May	1.25	0.00	36	68	0.000	1.25	77
12-May	1.29	0.00	37	79	0.000	1.29	79
13-May	1.19	0.00	37	80	0.000	1.19	73
14-May	1.19	0.00	43	80	0.000	1.19	73
15-May	1.20	0.00	40	75	0.000	1.20	73
16-May	1.17	0.00	39	69	0.000	1.17	72
17-May	1.09	0.00	42	66	0.000	1.09	67
18-May	1.11	0.00	38	65	0.000	1.11	68
19-May	1.03	0.00	38	72	0.000	1.03	63
20-May	1.12	0.42	52	62	0.000	1.12	69
21-May	1.14	0.29	45	62	0.000	1.14	70
22-May	1.12	0.45	45	57	0.000	1.12	69
23-May	1.43	1.26	44	54	0.000	1.43	87
24-May	1.26	0.02	39	64	0.000	1.26	77
25-May	1.17	0.01	41	73	0.000	1.17	72
26-May	1.09	0.00	47	77	0.000	1.09	67
27-May	1.06	0.00	50	66	0.000	1.06	65
28-May	1.16	0.13	45	62	0.000	1.16	71
29-May	1.18	0.00	47	64	0.000	1.18	72
30-May	1.15	0.18	49	67	0.000	1.15	70
31-May	1.13	0.32	53	61	0.000	1.13	69
1-Jun	1.14	0.11	47	66	0.000	1.14	70
2-Jun	1.04	0.00	45	66	0.000	1.04	64
3-Jun	1.15	0.00	44	64	0.000	1.15	70
4-Jun	1.10	0.12	44	57	0.000	1.10	68
5-Jun	1.15	0.25	45	59	0.000	1.15	70
6-Jun	1.11	0.14	45	63	0.000	1.11	68
7-Jun	1.13	0.39	44	61	0.000	1.13	69
8-Jun	1.16	0.30	45	64	0.000	1.16	71
9-Jun	1.02	0.00	46	62	0.000	1.02	62
10-Jun	1.03	0.00	42	68	0.000	1.03	63
11-Jun	1.08	0.01	43	76	0.000	1.08	66
12-Jun	1.08	0.32	47	66	0.000	1.08	66
13-Jun	1.07	0.02	47	60	0.000	1.07	65
14-Jun	1.04	0.00	38	62	0.000	1.04	64
15-Jun	1.04	0.03	46	72	0.000	1.04	64

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
16-Jun	1.03	0.42	53	66	0.000	1.03	63
17-Jun	1.20	0.65	47	65	0.000	1.20	73
18-Jun	1.24	0.11	48	63	0.000	1.24	76
19-Jun	1.22	0.00	43	69	0.000	1.22	75
20-Jun	1.16	0.00	46	76	0.000	1.16	71
21-Jun	1.08	0.00	46	72	0.000	1.08	66
22-Jun	1.24	0.80	50	61	0.000	1.24	76
23-Jun	1.27	0.28	43	62	0.000	1.27	78
24-Jun	1.24	0.00	42	69	0.000	1.24	76
25-Jun	1.14	0.00	43	66	0.000	1.14	70
26-Jun	1.10	0.00	47	61	0.000	1.10	67
27-Jun	1.10	0.00	49	74	0.000	1.10	67
28-Jun	1.13	0.05	53	76	0.000	1.13	69
29-Jun	1.00	0.20	58	76	0.000	1.00	61
30-Jun	1.14	0.27	52	70	0.000	1.14	70
1-Jul	1.09	0.00	50	68	0.000	1.09	67
2-Jul	1.07	0.72	50	65	0.000	1.07	66
3-Jul	1.30	0.12	48	60	0.000	1.30	79
4-Jul	1.13	0.00	42	71	0.000	1.13	69
5-Jul	1.11	0.00	45	78	0.000	1.11	68
6-Jul	1.15	0.00	47	77	0.000	1.15	70
7-Jul	1.05	0.00	50	80	0.000	1.05	64
8-Jul	1.08	0.00	53	81	0.000	1.08	66
9-Jul	1.04	0.00	48	75	0.000	1.04	64
10-Jul	1.05	0.00	49	76	0.000	1.05	64
11-Jul	1.00	0.00	49	79	0.000	1.00	62
12-Jul	0.97	0.00	52	81	0.000	0.97	60
13-Jul	1.03	0.14	50	70	0.000	1.03	63
14-Jul	0.98	0.00	52	81	0.000	0.98	60
15-Jul	1.00	0.05	51	71	0.000	1.00	61
16-Jul	0.96	0.00	52	80	0.000	0.96	59
17-Jul	1.00	0.00	58	83	0.000	1.00	61
18-Jul	0.95	0.00	55	69	0.000	0.95	58
19-Jul	0.98	0.05	57	80	0.000	0.98	60
20-Jul	0.97	0.31	58	68	0.000	0.97	59
21-Jul	0.95	0.00	51	77	0.000	0.95	58
22-Jul	0.97	0.12	50	68	0.000	0.97	59
23-Jul	1.01	0.00	49	66	0.000	1.01	62
24-Jul	0.95	0.00	49	74	0.000	0.95	58
25-Jul	0.93	0.00	51	81	0.000	0.93	57
26-Jul	0.95	0.00	52	81	0.000	0.95	58
27-Jul	0.99	0.00	54	72	0.000	0.99	61
28-Jul	0.84	0.00	49	75	0.000	0.84	51
29-Jul	0.94	0.00	49	76	0.000	0.94	57
30-Jul	0.89	0.00	52	69	0.000	0.89	55
31-Jul	0.93	0.00	47	74	0.000	0.93	57
1-Aug	0.91	0.00	48	74	0.000	0.91	56
2-Aug	0.95	0.00	48	75	0.000	0.95	58
3-Aug	0.91	0.00	48	82	0.000	0.91	55

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
4-Aug	0.93	0.00	52	94	0.000	0.93	57
5-Aug	0.89	0.00	58	92	0.000	0.89	55
6-Aug	0.96	0.00	55	81	0.000	0.96	59
7-Aug	0.89	0.00	57	69	0.000	0.89	55
8-Aug	0.89	0.00	48	74	0.000	0.89	54
9-Aug	0.93	0.00	47	75	0.000	0.93	57
10-Aug	0.90	0.00	48	78	0.000	0.90	55
11-Aug	0.90	0.00	49	81	0.000	0.90	55
12-Aug	0.92	0.00	50	85	0.000	0.92	56
13-Aug	0.90	0.00	51	81	0.000	0.90	55
14-Aug	0.94	0.00	52	86	0.000	0.94	57
15-Aug	0.88	0.00	51	89	0.000	0.88	54
16-Aug	0.91	0.00	54	94	0.000	0.91	56
17-Aug	0.88	0.00	53	92	0.000	0.88	54
18-Aug	0.91	0.02	53	78	0.000	0.91	56
19-Aug	0.90	0.00	55	77	0.000	0.90	55
20-Aug	0.93	0.00	50	79	0.000	0.93	57
21-Aug	0.93	0.00	50	71	0.000	0.93	57
22-Aug	0.92	0.00	49	73	0.000	0.92	56
23-Aug	0.90	0.00	49	68	0.000	0.90	55
24-Aug	0.93	0.00	43	74	0.000	0.93	57
25-Aug	0.88	0.00	45	82	0.000	0.88	54
26-Aug	0.86	0.00	52	80	0.000	0.86	53
27-Aug	0.91	0.00	50	79	0.000	0.91	56
28-Aug	0.92	0.00	50	74	0.000	0.92	56
29-Aug	0.87	0.00	52	72	0.000	0.87	54
30-Aug	0.93	0.00	43	75	0.000	0.93	57
31-Aug	0.86	0.00	43	72	0.000	0.86	53
1-Sep	0.90	0.00	43	73	0.000	0.90	55
2-Sep	0.78	0.00	44	72	0.000	0.78	48
3-Sep	0.95	0.00	44	74	0.000	0.95	58
4-Sep	0.95	0.00	43	76	0.000	0.95	58
5-Sep	0.90	0.00	45	79	0.000	0.90	55
6-Sep	0.87	0.00	47	85	0.000	0.87	53
7-Sep	0.87	0.00	48	89	0.000	0.87	53
8-Sep	0.89	0.00	49	85	0.000	0.89	54
9-Sep	0.90	0.34	48	70	0.000	0.90	55
10-Sep	0.92	0.00	42	65	0.000	0.92	56
11-Sep	0.93	0.00	37	67	0.000	0.93	57
12-Sep	0.89	0.00	36	75	0.000	0.89	54
13-Sep	0.83	0.00	40	80	0.000	0.83	51
14-Sep	0.92	0.00	44	79	0.000	0.92	57
15-Sep	0.82	0.00	43	79	0.000	0.82	50
16-Sep	0.92	0.00	44	77	0.000	0.92	57
17-Sep	0.90	0.00	44	82	0.000	0.90	55
18-Sep	0.91	0.00	45	85	0.000	0.91	56
19-Sep	0.88	0.00	45	76	0.000	0.88	54
20-Sep	0.92	0.00	46	75	0.000	0.92	56
21-Sep	0.87	0.02	46	75	0.000	0.87	53

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
22-Sep	0.89	0.00	39	67	0.000	0.89	55
23-Sep	0.93	0.00	39	70	0.000	0.93	57
24-Sep	0.94	0.00	41	72	0.000	0.94	58
25-Sep	0.88	0.00	40	69	0.000	0.88	54
26-Sep	0.88	0.00	39	69	0.000	0.88	54
27-Sep	0.88	0.00	41	73	0.000	0.88	54
28-Sep	0.83	0.00	49	76	0.000	0.83	51
29-Sep	0.85	0.00	37	70	0.000	0.85	52
30-Sep	0.91	0.00	36	70	0.000	0.91	56
1-Oct	0.91	0.00	40	75	0.000	0.91	56
2-Oct	0.81	0.00	30	62	0.000	0.81	49
3-Oct	0.89	0.00	30	69	0.000	0.89	55
4-Oct	0.84	0.00	31	68	0.000	0.84	51
5-Oct	0.87	0.00	31	73	0.000	0.87	53
6-Oct	0.80	0.00	32	77	0.000	0.80	49
7-Oct	0.88	0.00	34	75	0.000	0.88	54
8-Oct	0.84	0.00	36	75	0.000	0.84	51
9-Oct	0.89	0.00	38	56	0.000	0.89	54
10-Oct	0.79	0.00	39	59	0.000	0.79	49
11-Oct	0.88	0.00	40	61	0.000	0.88	54
12-Oct	0.80	0.10	45	58	0.000	0.80	49
13-Oct	0.95	0.57	52	63	0.000	0.95	58
14-Oct	1.02	0.55	47	64	0.000	1.02	62
15-Oct	0.92	0.51	46	63	0.000	0.92	57
16-Oct	0.93	0.00	39	59	0.000	0.93	57
17-Oct	0.87	0.00	40	61	0.000	0.87	53
18-Oct	1.00	0.97	41	61	0.000	1.00	61
19-Oct	1.08	0.79	39	58	0.000	1.08	66
20-Oct	1.00	0.32	38	49	0.000	1.00	62
21-Oct	1.00	0.12	33	56	0.000	1.00	61
22-Oct	0.97	0.32	37	48	0.000	0.97	60
23-Oct	1.06	0.34	36	54	0.000	1.06	65
24-Oct	0.96	0.10	37	55	0.000	0.96	59
25-Oct	0.92	0.00	39	56	0.000	0.92	57
26-Oct	0.95	0.33	40	52	0.000	0.95	58
27-Oct	1.05	0.39	46	50	0.000	1.05	64
28-Oct	1.02	0.33	48	61	0.000	1.02	62
29-Oct	1.04	0.22	49	63	0.000	1.04	64
30-Oct	1.10	1.37	49	58	0.000	1.10	68
31-Oct	1.42	0.36	48	59	0.000	1.42	87
1-Nov	1.16	0.05	48	56	0.000	1.16	71
2-Nov	1.17	0.18	48	60	0.000	1.17	72
3-Nov	1.17	0.14	50	59	0.000	1.17	72
4-Nov	1.14	0.22	45	64	0.000	1.14	70
5-Nov	1.09	0.00	41	60	0.000	1.09	67
6-Nov	1.05	0.17	40	56	0.000	1.05	64
7-Nov	1.06	0.00	30	56	0.000	1.06	65
8-Nov	0.99	0.00	27	54	0.000	0.99	61
9-Nov	0.98	0.02	24	50	0.000	0.98	60

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
10-Nov	1.01	0.03	24	48	0.000	1.01	62
11-Nov	1.12	0.55	32	43	0.000	1.12	69
12-Nov	1.06	0.42	39	49	0.000	1.06	65
13-Nov	1.08	0.39	42	48	0.000	1.08	66
14-Nov	1.11	0.05	27	50	0.000	1.11	68
15-Nov	1.04	0.00	27	53	0.000	1.04	64
16-Nov	1.00	0.36	29	48	0.000	1.00	61
17-Nov	1.09	0.22	40	55	0.000	1.09	67
18-Nov	1.15	0.68	42	52	0.000	1.15	70
19-Nov	1.72	1.43	43	53	0.000	1.72	105
20-Nov	1.36	0.53	39	52	0.000	1.36	84
21-Nov	1.52	0.22	34	45	0.000	1.52	93
22-Nov	1.31	0.21	35	50	0.000	1.31	81
23-Nov	1.35	0.03	34	52	0.000	1.35	83
24-Nov	1.30	0.03	30	55	0.000	1.30	79
25-Nov	1.34	0.00	24	49	0.000	1.34	82
26-Nov	1.27	0.00	24	49	0.000	1.27	78
27-Nov	1.23	0.00	29	51	0.000	1.23	76
28-Nov	1.24	0.18	30	48	0.000	1.24	76
29-Nov	1.19	0.45	42	53	0.000	1.19	73
30-Nov	1.47	1.47	44	54	0.000	1.47	90
1-Dec	1.59	0.63	41	50	0.000	1.59	98
2-Dec	1.65	0.14	40	48	0.000	1.65	101
3-Dec	1.50	0.28	42	52	0.000	1.50	92
4-Dec	1.60	0.47	32	54	0.000	1.60	98
5-Dec	1.68	0.03	33	49	0.000	1.68	103
6-Dec	1.57	0.45	36	44	0.000	1.57	96
7-Dec	1.54	0.14	30	43	0.000	1.54	95
8-Dec	1.51	0.02	30	42	0.000	1.51	92
9-Dec	1.54	0.19	33	41	0.000	1.54	94
10-Dec	1.43	0.03	35	43	0.000	1.43	88
11-Dec	1.43	0.61	36	44	0.000	1.43	88
12-Dec	1.52	0.12	34	42	0.000	1.52	93
13-Dec	1.47	0.53	33	43	0.000	1.47	90
14-Dec	1.56	0.02	28	48	0.000	1.56	96
15-Dec	1.55	0.26	31	40	0.000	1.55	95
16-Dec	1.61	0.96	34	43	0.000	1.61	98
17-Dec	1.91	0.37	30	42	0.000	1.91	117
18-Dec	1.70	0.06	30	40	0.000	1.70	104
19-Dec	1.80	1.04	33	44	0.000	1.80	110
20-Dec	1.96	0.43	28	43	0.000	1.96	120
21-Dec	1.81	0.08	30	42	0.000	1.81	111
22-Dec	1.72	0.22	35	49	0.000	1.72	105
23-Dec	1.62	0.18	34	45	0.000	1.62	99
24-Dec	1.53	0.05	33	42	0.000	1.53	94
25-Dec	1.50	0.10	33	43	0.000	1.50	92
26-Dec	1.51	0.34	35	45	0.000	1.51	92
27-Dec	1.50	0.05	34	44	0.000	1.50	92
28-Dec	1.40	0.05	33	45	0.000	1.40	85

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
29-Dec	1.49	0.11	28	41	0.000	1.49	91
30-Dec	1.42	0.00	28	37	0.000	1.42	87
31-Dec	1.35	0.00	24	40	0.000	1.35	83
2013							
1-Jan	1.34	0.00	24	41	0.000	1.34	81
2-Jan	1.26	0.00	21	51	0.000	1.26	76
3-Jan	1.24	0.06	21	51	0.000	1.24	75
4-Jan	1.13	0.00	36	48	0.000	1.13	68
5-Jan	1.18	0.21	31	43	0.000	1.18	71
6-Jan	1.22	1.09	32	46	0.000	1.22	73
7-Jan	1.53	0.24	36	48	0.000	1.53	92
8-Jan	1.47	0.96	37	52	0.000	1.47	88
9-Jan	2.07	0.90	28	44	0.000	2.07	124
10-Jan	1.85	0.13	22	37	0.000	1.85	111
11-Jan	1.65	0.00	19	40	0.000	1.65	99
12-Jan	1.65	0.00	18	39	0.000	1.65	99
13-Jan	1.57	0.00	18	36	0.000	1.57	94
14-Jan	1.56	0.06	27	33	0.000	1.56	94
15-Jan	1.44	0.00	21	48	0.000	1.44	87
16-Jan	1.43	0.00	21	45	0.000	1.43	86
17-Jan	1.41	0.00	21	42	0.000	1.41	85
18-Jan	1.36	0.00	21	34	0.000	1.36	82
19-Jan	1.28	0.00	20	36	0.000	1.28	77
20-Jan	1.29	0.00	22	35	0.000	1.29	78
21-Jan	1.28	0.00	21	32	0.000	1.28	77
22-Jan	1.18	0.00	21	35	0.000	1.18	71
23-Jan	1.25	0.62	26	41	0.000	1.25	75
24-Jan	1.28	0.26	31	46	0.000	1.28	77
25-Jan	1.14	0.18	34	56	0.000	1.14	69
26-Jan	1.34	0.92	34	41	0.000	1.34	81
27-Jan	1.48	0.90	32	42	0.000	1.48	89
28-Jan	2.10	1.70	31	38	0.000	2.10	126
29-Jan	2.16	0.93	34	41	0.000	2.16	130
30-Jan	2.12	0.40	36	40	0.000	2.12	127
31-Jan	2.01	0.16	37	47	0.000	2.01	121
1-Feb	1.76	0.00	27	54	0.000	1.76	106
2-Feb	1.77	0.00	29	47	0.000	1.77	106
3-Feb	1.68	0.20	35	48	0.000	1.68	101
4-Feb	1.66	0.06	40	52	0.000	1.66	100
5-Feb	1.53	0.00	41	51	0.000	1.53	92
6-Feb	1.55	0.31	38	49	0.000	1.55	93
7-Feb	1.58	0.05	26	48	0.000	1.58	95
8-Feb	1.45	0.05	27	43	0.000	1.45	87
9-Feb	1.43	0.04	28	44	0.000	1.43	86
10-Feb	1.45	0.02	28	47	0.000	1.45	87
11-Feb	1.40	0.10	35	44	0.000	1.40	84
12-Feb	1.36	0.02	38	49	0.000	1.36	82
13-Feb	1.36	0.11	38	48	0.000	1.36	82
14-Feb	1.27	0.00	31	52	0.000	1.27	77

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
15-Feb	1.27	0.05	31	58	0.000	1.27	76
16-Feb	1.32	0.72	36	49	0.000	1.32	79
17-Feb	1.38	0.00	29	45	0.000	1.38	83
18-Feb	1.40	0.00	30	47	0.000	1.40	84
19-Feb	1.28	0.00	28	53	0.000	1.28	77
20-Feb	1.23	0.10	31	46	0.000	1.23	74
21-Feb	1.25	0.20	36	43	0.000	1.25	75
22-Feb	1.24	0.45	33	45	0.000	1.24	75
23-Feb	1.32	0.14	33	48	0.000	1.32	79
24-Feb	1.31	0.11	37	47	0.000	1.31	79
25-Feb	1.30	0.15	34	48	0.000	1.30	78
26-Feb	1.24	0.08	34	48	0.000	1.24	75
27-Feb	1.25	0.06	35	52	0.000	1.25	75
28-Feb	1.30	0.46	37	55	0.000	1.30	78
1-Mar	1.20	0.00	50	58	0.000	1.20	72
2-Mar	1.31	0.40	34	58	0.000	1.31	79
3-Mar	1.28	0.00	25	52	0.000	1.28	77
4-Mar	1.26	0.01	25	58	0.000	1.26	76
5-Mar	1.26	0.00	33	55	0.000	1.26	76
6-Mar	1.31	0.62	35	43	0.000	1.31	79
7-Mar	1.35	0.00	26	48	0.000	1.35	81
8-Mar	1.29	0.00	25	55	0.000	1.29	78
9-Mar	1.24	0.00	26	57	0.000	1.24	75
10-Mar	1.16	0.00	31	48	0.000	1.16	70
11-Mar	1.21	0.06	30	56	0.000	1.21	73
12-Mar	1.30	0.51	48	53	0.000	1.30	78
13-Mar	1.27	0.27	45	54	0.000	1.27	76
14-Mar	1.25	0.16	44	55	0.000	1.25	75
15-Mar	1.23	0.23	43	64	0.000	1.23	74
16-Mar	1.37	0.51	34	54	0.000	1.37	82
17-Mar	1.38	0.19	33	54	0.000	1.38	83
18-Mar	1.38	0.00	31	52	0.000	1.38	83
19-Mar	1.25	0.35	33	54	0.000	1.25	75
20-Mar	1.41	0.23	34	54	0.000	1.41	85
21-Mar	1.28	0.34	29	48	0.000	1.28	77
22-Mar	1.30	0.00	27	50	0.000	1.30	78
23-Mar	1.27	0.00	29	63	0.000	1.27	76
24-Mar	1.28	0.00	29	63	0.000	1.28	77
25-Mar	1.21	0.00	30	64	0.000	1.21	73
26-Mar	1.23	0.00	36	62	0.000	1.23	74
27-Mar	1.21	0.00	35	58	0.000	1.21	73
28-Mar	1.19	0.00	37	65	0.000	1.19	72
29-Mar	1.18	0.00	33	66	0.000	1.18	71
30-Mar	1.15	0.00	33	70	0.000	1.15	69
31-Mar	1.04	0.00	35	72	0.000	1.04	63
1-Apr	1.11	0.00	36	64	0.000	1.11	67
2-Apr	1.06	0.00	43	57	0.000	1.06	63
3-Apr	1.08	0.00	42	66	0.000	1.08	65
4-Apr	1.10	0.54	45	56	0.000	1.10	66

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
5-Apr	1.12	0.16	44	61	0.000	1.12	67
6-Apr	1.17	0.45	38	55	0.000	1.17	70
7-Apr	1.45	1.28	38	44	0.000	1.45	87
8-Apr	1.47	0.03	40	56	0.000	1.47	88
9-Apr	1.33	0.00	42	56	0.000	1.33	80
10-Apr	1.35	0.35	42	58	0.000	1.35	81
11-Apr	1.30	0.00	33	57	0.000	1.30	78
12-Apr	1.35	0.46	35	48	0.000	1.35	81
13-Apr	1.44	0.45	35	48	0.000	1.44	86
14-Apr	1.38	0.01	36	53	0.000	1.38	83
15-Apr	1.36	0.08	29	56	0.000	1.36	82
16-Apr	1.32	0.02	31	59	0.000	1.32	79
17-Apr	1.23	0.03	35	62	0.000	1.23	74
18-Apr	1.30	0.78	41	51	0.000	1.30	78
19-Apr	1.48	0.49	44	55	0.000	1.48	89
20-Apr	1.41	0.21	42	55	0.000	1.41	85
21-Apr	1.41	0.08	28	55	0.000	1.41	85
22-Apr	1.38	0.00	29	62	0.000	1.38	83
23-Apr	1.34	0.00	32	63	0.000	1.34	80
24-Apr	1.31	0.00	34	71	0.000	1.31	79
25-Apr	1.19	0.00	37	73	0.000	1.19	72
26-Apr	1.24	0.00	39	70	0.000	1.24	75
27-Apr	1.21	0.32	44	58	0.000	1.21	73
28-Apr	1.28	0.17	42	56	0.000	1.28	77
29-Apr	1.23	0.35	34	55	0.000	1.23	74
30-Apr	1.24	0.04	28	58	0.000	1.24	75
1-May	1.14	0.00	32	65	0.000	1.14	68
2-May	1.15	0.00	36	68	0.000	1.15	69
3-May	1.12	0.00	38	72	0.000	1.12	68
4-May	1.13	0.00	43	78	0.000	1.13	68
5-May	1.08	0.00	44	82	0.000	1.08	65
6-May	1.14	0.00	45	86	0.000	1.14	69
7-May	1.08	0.00	45	75	0.000	1.08	65
8-May	1.07	0.00	43	69	0.000	1.07	65
9-May	1.08	0.00	42	72	0.000	1.08	65
10-May	1.08	0.00	44	79	0.000	1.08	65
11-May	1.08	0.23	52	84	0.000	1.08	65
12-May	1.14	0.03	41	70	0.000	1.14	68
13-May	1.12	0.30	42	65	0.000	1.12	67
14-May	1.05	0.00	40	67	0.000	1.05	63
15-May	1.06	0.10	45	70	0.000	1.06	64
16-May	1.07	0.05	48	72	0.000	1.07	64
17-May	1.07	0.05	50	62	0.000	1.07	64
18-May	1.02	0.00	49	64	0.000	1.02	62
19-May	1.05	0.00	41	66	0.000	1.05	63
20-May	1.07	0.28	43	70	0.000	1.07	64
21-May	1.11	0.32	43	57	0.000	1.11	67
22-May	1.12	0.19	39	51	0.000	1.12	67
23-May	0.99	0.01	38	63	0.000	0.99	59

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
24-May	1.02	0.08	43	67	0.000	1.02	61
25-May	0.99	0.02	47	70	0.000	0.99	60
26-May	1.01	0.09	47	65	0.000	1.01	61
27-May	1.05	0.13	49	62	0.000	1.05	63
28-May	1.03	0.00	48	65	0.000	1.03	62
29-May	1.09	0.56	45	55	0.000	1.09	66
30-May	1.07	0.17	45	61	0.000	1.07	64
31-May	1.04	0.01	45	69	0.000	1.04	63
1-Jun	1.04	0.03	48	72	0.000	1.04	63
2-Jun	1.00	0.00	48	69	0.000	1.00	60
3-Jun	1.05	0.00	48	73	0.000	1.05	63
4-Jun	1.01	0.00	47	80	0.000	1.01	61
5-Jun	1.04	0.00	46	77	0.000	1.04	62
6-Jun	0.95	0.00	49	79	0.000	0.95	57
7-Jun	0.97	0.00	46	70	0.000	0.97	58
8-Jun	1.00	0.00	46	66	0.000	1.00	60
9-Jun	1.02	0.00	40	67	0.000	1.02	61
10-Jun	1.00	0.00	43	71	0.000	1.00	60
11-Jun	0.95	0.00	50	76	0.000	0.95	57
12-Jun	1.03	0.03	49	69	0.000	1.03	62
13-Jun	0.96	0.00	49	69	0.000	0.96	58
14-Jun	0.95	0.00	43	72	0.000	0.95	57
15-Jun	1.02	0.00	49	79	0.000	1.02	61
16-Jun	0.99	0.02	47	73	0.000	0.99	60
17-Jun	0.92	0.13	50	80	0.000	0.92	55
18-Jun	1.01	0.09	52	75	0.000	1.01	60
19-Jun	1.01	0.33	50	71	0.000	1.01	61
20-Jun	1.15	0.65	49	56	0.000	1.15	69
21-Jun	0.99	0.00	48	71	0.000	0.99	59
22-Jun	0.94	0.00	51	79	0.000	0.94	57
23-Jun	0.97	0.10	54	72	0.000	0.97	58
24-Jun	1.04	0.19	53	72	0.000	1.04	63
25-Jun	0.99	0.23	52	77	0.000	0.99	60
26-Jun	1.03	0.26	54	72	0.000	1.03	62
27-Jun	1.06	0.09	54	75	0.000	1.06	64
28-Jun	1.05	0.00	58	86	0.000	1.05	63
29-Jun	0.98	0.00	55	85	0.000	0.98	59
30-Jun	1.04	0.00	58	92	0.000	1.04	63
1-Jul	0.96	0.00	54	86	0.000	0.96	58
2-Jul	1.03	0.00	50	78	0.000	1.03	62
3-Jul	0.97	0.00	53	77	0.000	0.97	59
4-Jul	0.97	0.00	47	74	0.000	0.97	58
5-Jul	0.89	0.00	48	79	0.000	0.89	54
6-Jul	0.95	0.00	51	80	0.000	0.95	57
7-Jul	1.00	0.00	51	81	0.000	1.00	60
8-Jul	0.97	0.00	52	80	0.000	0.97	59
9-Jul	0.97	0.00	50	82	0.000	0.97	59
10-Jul	0.94	0.00	52	75	0.000	0.94	57
11-Jul	0.96	0.00	45	70	0.000	0.96	58

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
12-Jul	0.99	0.00	43	71	0.000	0.99	60
13-Jul	0.93	0.00	43	77	0.000	0.93	56
14-Jul	1.00	0.00	45	80	0.000	1.00	60
15-Jul	0.93	0.00	47	82	0.000	0.93	56
16-Jul	0.94	0.07	52	88	0.000	0.94	57
17-Jul	0.96	0.00	55	75	0.000	0.96	57
18-Jul	0.96	0.00	49	78	0.000	0.96	58
19-Jul	0.99	0.00	50	78	0.000	0.99	60
20-Jul	0.97	0.00	49	79	0.000	0.97	58
21-Jul	0.99	0.00	51	80	0.000	0.99	60
22-Jul	0.96	0.00	50	79	0.000	0.96	58
23-Jul	0.95	0.00	48	86	0.000	0.95	57
24-Jul	0.90	0.00	46	83	0.000	0.90	54
25-Jul	0.94	0.00	47	83	0.000	0.94	57
26-Jul	0.92	0.00	46	82	0.000	0.92	55
27-Jul	0.90	0.00	46	80	0.000	0.90	54
28-Jul	0.88	0.00	47	75	0.000	0.88	53
29-Jul	0.89	0.00	48	78	0.000	0.89	54
30-Jul	0.91	0.00	50	79	0.000	0.91	55
31-Jul	0.92	0.10	51	75	0.000	0.92	55
1-Aug	0.91	0.26	54	67	0.000	0.91	55
2-Aug	0.99	0.25	54	63	0.000	0.99	59
3-Aug	0.94	0.00	52	75	0.000	0.94	57
4-Aug	0.87	0.00	52	82	0.000	0.87	52
5-Aug	0.94	0.00	47	82	0.000	0.94	56
6-Aug	0.88	0.00	47	84	0.000	0.88	53
7-Aug	0.89	0.00	52	85	0.000	0.89	54
8-Aug	0.93	0.00	49	80	0.000	0.93	56
9-Aug	0.89	0.05	51	82	0.000	0.89	54
10-Aug	0.88	0.13	52	84	0.000	0.88	53
11-Aug	0.95	0.00	52	76	0.000	0.95	57
12-Aug	0.92	0.00	52	79	0.000	0.92	56
13-Aug	0.89	0.00	50	83	0.000	0.89	53
14-Aug	0.95	0.07	53	85	0.000	0.95	57
15-Aug	0.93	0.05	58	72	0.000	0.93	56
16-Aug	0.89	0.00	58	86	0.000	0.89	53
17-Aug	0.90	0.00	55	82	0.000	0.90	54
18-Aug	0.93	0.00	55	78	0.000	0.93	56
19-Aug	0.88	0.00	48	78	0.000	0.88	53
20-Aug	0.88	0.00	45	78	0.000	0.88	53
21-Aug	0.91	0.00	46	81	0.000	0.91	55
22-Aug	0.85	0.00	50	86	0.000	0.85	51
23-Aug	0.91	0.18	54	78	0.000	0.91	54
24-Aug	0.98	0.07	48	77	0.000	0.98	59
25-Aug	0.83	0.01	48	79	0.000	0.83	50
26-Aug	0.91	0.00	51	80	0.000	0.91	55
27-Aug	0.90	0.18	52	83	0.000	0.90	54
28-Aug	0.90	0.15	53	82	0.000	0.90	54
29-Aug	0.95	0.30	58	80	0.000	0.95	57

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
30-Aug	0.87	0.00	47	82	0.000	0.87	52
31-Aug	0.85	0.00	48	82	0.000	0.85	51
1-Sep	0.84	0.00	52	85	0.000	0.84	51
2-Sep	0.93	0.12	54	84	0.000	0.93	56
3-Sep	0.98	0.12	54	76	0.000	0.98	59
4-Sep	0.90	0.00	52	71	0.000	0.90	54
5-Sep	0.95	1.63	54	72	0.000	0.95	57
6-Sep	1.23	0.37	56	75	0.000	1.23	74
7-Sep	0.91	0.00	53	77	0.000	0.91	55
8-Sep	0.97	0.00	51	80	0.000	0.97	58
9-Sep	0.92	0.00	51	78	0.000	0.92	55
10-Sep	0.89	0.00	49	82	0.000	0.89	54
11-Sep	0.89	0.00	51	91	0.000	0.89	54
12-Sep	0.92	0.00	53	81	0.000	0.92	56
13-Sep	0.88	0.00	54	67	0.000	0.88	53
14-Sep	0.91	0.00	53	68	0.000	0.91	54
15-Sep	0.96	0.22	53	66	0.000	0.96	58
16-Sep	0.92	0.06	52	64	0.000	0.92	55
17-Sep	0.92	0.14	37	63	0.000	0.92	55
18-Sep	0.91	0.00	43	72	0.000	0.91	55
19-Sep	0.87	0.00	43	83	0.000	0.87	53
20-Sep	0.87	0.00	46	68	0.000	0.87	52
21-Sep	0.90	0.00	45	72	0.000	0.90	54
22-Sep	0.90	0.28	51	62	0.000	0.90	54
23-Sep	0.94	0.17	45	61	0.000	0.94	56
24-Sep	0.92	0.42	43	64	0.000	0.92	55
25-Sep	0.89	0.00	38	61	0.000	0.89	54
26-Sep	0.91	0.05	38	66	0.000	0.91	54
27-Sep	0.84	0.35	46	56	0.000	0.84	51
28-Sep	1.02	0.53	46	61	0.000	1.02	62
29-Sep	1.04	0.30	46	57	0.000	1.04	62
30-Sep	0.93	0.08	45	60	0.000	0.93	56
1-Oct	0.90	0.16	45	60	0.000	0.90	54
2-Oct	1.06	0.36	39	54	0.000	1.06	63
3-Oct	0.94	0.00	34	62	0.000	0.94	56
4-Oct	0.92	0.00	34	68	0.000	0.92	55
5-Oct	0.92	0.00	40	72	0.000	0.92	55
6-Oct	0.99	0.07	40	80	0.000	0.99	59
7-Oct	1.14	0.92	46	60	0.000	1.14	69
8-Oct	1.03	0.18	30	60	0.000	1.03	62
9-Oct	0.99	0.00	31	63	0.000	0.99	59
10-Oct	0.99	0.00	36	59	0.000	0.99	60
11-Oct	0.90	0.04	36	58	0.000	0.90	54
12-Oct	1.00	0.00	37	59	0.000	1.00	60
13-Oct	0.99	0.00	31	61	0.000	0.99	59
14-Oct	0.97	0.00	31	62	0.000	0.97	58
15-Oct	0.94	0.00	33	65	0.000	0.94	57
16-Oct	0.93	0.00	39	58	0.000	0.93	56
17-Oct	0.92	0.00	33	62	0.000	0.92	55

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
18-Oct	0.85	0.00	32	60	0.000	0.85	51
19-Oct	0.95	0.00	34	50	0.000	0.95	57
20-Oct	0.98	0.00	42	51	0.000	0.98	59
21-Oct	0.90	0.01	40	52	0.000	0.90	54
22-Oct	0.88	0.00	36	52	0.000	0.88	53
23-Oct	0.91	0.00	35	65	0.000	0.91	55
24-Oct	0.88	0.00	36	56	0.000	0.88	53
25-Oct	0.89	0.00	43	55	0.000	0.89	54
26-Oct	0.90	0.35	43	54	0.000	0.90	54
27-Oct	1.01	0.00	39	60	0.000	1.01	61
28-Oct	0.95	0.00	27	62	0.000	0.95	57
29-Oct	0.91	0.00	27	62	0.000	0.91	55
30-Oct	0.91	0.12	33	58	0.000	0.91	55
31-Oct	0.86	0.20	43	52	0.000	0.86	52
1-Nov	0.94	0.41	45	56	0.000	0.94	57
2-Nov	1.11	0.84	34	54	0.000	1.11	67
3-Nov	1.13	0.02	28	52	0.000	1.13	68
4-Nov	0.99	0.17	27	50	0.000	0.99	59
5-Nov	0.98	0.16	36	46	0.000	0.98	59
6-Nov	0.93	0.57	36	54	0.000	0.93	56
7-Nov	1.14	0.28	40	51	0.000	1.14	69
8-Nov	0.97	0.04	34	54	0.000	0.97	58
9-Nov	0.98	0.00	35	51	0.000	0.98	59
10-Nov	0.97	0.04	34	50	0.000	0.97	58
11-Nov	1.01	0.04	34	62	0.000	1.01	61
12-Nov	0.95	0.02	41	56	0.000	0.95	57
13-Nov	0.95	0.02	43	60	0.000	0.95	57
14-Nov	0.92	0.10	38	49	0.000	0.92	56
15-Nov	1.16	1.26	35	47	0.000	1.16	70
16-Nov	1.13	0.16	33	44	0.000	1.13	68
17-Nov	1.13	0.17	34	48	0.000	1.13	68
18-Nov	1.18	0.76	40	52	0.000	1.18	71
19-Nov	1.19	0.00	23	46	0.000	1.19	71
20-Nov	1.17	0.00	20	45	0.000	1.17	70
21-Nov	1.16	0.00	19	44	0.000	1.16	70
22-Nov	1.07	0.00	20	47	0.000	1.07	64
23-Nov	1.07	0.00	21	49	0.000	1.07	64
24-Nov	1.10	0.00	24	52	0.000	1.10	66
25-Nov	1.02	0.00	24	54	0.000	1.02	62
26-Nov	1.01	0.00	24	57	0.000	1.01	61
27-Nov	1.00	0.00	25	58	0.000	1.00	60
28-Nov	1.02	0.00	25	60	0.000	1.02	62
29-Nov	0.87	0.08	35	51	0.000	0.87	52
30-Nov	0.99	0.36	40	51	0.000	0.99	60
1-Dec	1.12	0.49	32	51	0.000	1.12	68
2-Dec	1.07	0.00	24	44	0.000	1.07	64
3-Dec	1.01	0.00	18	42	0.000	1.01	61
4-Dec	1.02	0.00	17	42	0.000	1.02	61
5-Dec	1.07	0.00	13	35	0.000	1.07	64

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
6-Dec	0.95	0.00	12	38	0.000	0.95	57
7-Dec	0.99	0.00	10	33	0.000	0.99	60
8-Dec	1.06	0.00	14	36	0.000	1.06	64
9-Dec	1.08	0.00	19	32	0.000	1.08	65
10-Dec	0.98	0.00	23	37	0.000	0.98	59
11-Dec	1.05	0.00	23	41	0.000	1.05	63
12-Dec	1.00	0.16	25	44	0.000	1.00	60
13-Dec	0.91	0.04	34	44	0.000	0.91	55
14-Dec	0.95	0.02	34	46	0.000	0.95	57
15-Dec	0.97	0.04	32	49	0.000	0.97	59
16-Dec	0.94	0.00	26	55	0.000	0.94	57
17-Dec	1.00	0.00	24	40	0.000	1.00	60
18-Dec	0.94	0.00	20	44	0.000	0.94	56
19-Dec	0.95	0.17	20	37	0.000	0.95	57
20-Dec	1.05	0.72	27	35	0.000	1.05	63
21-Dec	1.13	0.50	30	40	0.000	1.13	68
22-Dec	1.10	0.57	34	48	0.000	1.10	66
23-Dec	1.24	0.27	34	51	0.000	1.24	75
24-Dec	1.20	0.00	23	47	0.000	1.20	72
25-Dec	1.02	0.00	24	46	0.000	1.02	61
26-Dec	1.07	0.00	26	51	0.000	1.07	64
27-Dec	1.05	0.10	29	43	0.000	1.05	63
28-Dec	0.99	0.00	34	46	0.000	0.99	59
29-Dec	1.02	0.00	32	42	0.000	1.02	61
30-Dec	0.95	0.07	30	43	0.000	0.95	57
31-Dec	0.97	0.00	28	46	0.000	0.97	58
2014							
1-Jan	0.97	0.13	28	44	0.000	0.97	60
2-Jan	1.10	0.72	33	50	0.000	1.10	68
3-Jan	1.04	0.00	28	48	0.000	1.04	65
4-Jan	1.04	0.00	21	47	0.000	1.04	64
5-Jan	1.09	0.00	21	44	0.000	1.09	68
6-Jan	1.05	0.17	22	40	0.000	1.05	65
7-Jan	1.26	0.87	36	46	0.000	1.26	78
8-Jan	1.24	0.41	32	48	0.000	1.24	77
9-Jan	1.23	0.07	37	47	0.000	1.23	76
10-Jan	1.21	0.75	40	52	0.000	1.21	75
11-Jan	1.60	0.55	24	48	0.000	1.60	99
12-Jan	1.74	0.95	35	48	0.000	1.74	108
13-Jan	1.59	0.17	42	51	0.000	1.59	99
14-Jan	1.45	0.00	35	51	0.000	1.45	90
15-Jan	1.41	0.00	28	52	0.000	1.41	87
16-Jan	1.31	0.00	28	40	0.000	1.31	82
17-Jan	1.26	0.00	28	43	0.000	1.26	78
18-Jan	1.26	0.00	28	45	0.000	1.26	78
19-Jan	1.14	0.00	29	44	0.000	1.14	71
20-Jan	1.18	0.00	25	51	0.000	1.18	73
21-Jan	1.12	0.00	25	45	0.000	1.12	70
22-Jan	1.03	0.00	27	50	0.000	1.03	64

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
23-Jan	1.08	0.00	26	49	0.000	1.08	67
24-Jan	1.05	0.00	25	57	0.000	1.05	65
25-Jan	0.98	0.00	22	61	0.000	0.98	61
26-Jan	1.03	0.00	24	47	0.000	1.03	64
27-Jan	1.08	0.02	26	41	0.000	1.08	67
28-Jan	0.99	0.50	36	46	0.000	0.99	62
29-Jan	1.14	0.88	36	50	0.000	1.14	71
30-Jan	1.28	0.45	35	43	0.000	1.28	79
31-Jan	1.15	0.00	27	44	0.000	1.15	71
1-Feb	1.14	0.00	28	49	0.000	1.14	70
2-Feb	1.05	0.00	23	46	0.000	1.05	65
3-Feb	1.11	0.00	22	43	0.000	1.11	69
4-Feb	1.03	0.00	14	36	0.000	1.03	64
5-Feb	1.05	0.00	10	38	0.000	1.05	65
6-Feb	1.05	0.00	10	32	0.000	1.05	65
7-Feb	1.04	0.00	12	40	0.000	1.04	65
8-Feb	1.02	0.05	13	41	0.000	1.02	63
9-Feb	1.03	0.28	28	40	0.000	1.03	64
10-Feb	1.08	0.07	33	48	0.000	1.08	67
11-Feb	1.02	0.17	33	51	0.000	1.02	63
12-Feb	1.00	0.08	37	52	0.000	1.00	62
13-Feb	0.96	0.09	36	57	0.000	0.96	60
14-Feb	1.07	0.12	34	57	0.000	1.07	67
15-Feb	1.10	0.62	34	50	0.000	1.10	68
16-Feb	1.17	0.64	34	46	0.000	1.17	72
17-Feb	1.29	0.17	33	46	0.000	1.29	80
18-Feb	1.16	0.21	32	48	0.000	1.16	72
19-Feb	1.13	0.07	31	48	0.000	1.13	70
20-Feb	1.10	0.25	30	50	0.000	1.10	68
21-Feb	1.15	0.00	26	43	0.000	1.15	72
22-Feb	1.18	0.92	28	37	0.000	1.18	73
23-Feb	1.48	0.71	32	37	0.000	1.48	92
24-Feb	1.47	0.52	31	41	0.000	1.47	91
25-Feb	1.35	0.00	28	54	0.000	1.35	84
26-Feb	1.31	0.00	27	63	0.000	1.31	82
27-Feb	1.25	0.00	32	51	0.000	1.25	77
28-Feb	1.18	0.00	34	60	0.000	1.18	73
1-Mar	1.17	0.05	31	46	0.000	1.17	73
2-Mar	1.21	0.35	34	50	0.000	1.21	75
3-Mar	1.22	0.44	37	51	0.000	1.22	76
4-Mar	1.28	0.89	37	48	0.000	1.28	79
5-Mar	1.64	0.82	40	60	0.000	1.64	102
6-Mar	1.70	0.56	42	52	0.000	1.70	105
7-Mar	1.57	0.00	40	61	0.000	1.57	97
8-Mar	1.52	0.38	42	55	0.000	1.52	95
9-Mar	1.50	0.39	41	55	0.000	1.50	93
10-Mar	1.53	0.00	35	55	0.000	1.53	95
11-Mar	1.43	0.00	29	61	0.000	1.43	89
12-Mar	1.37	0.00	29	64	0.000	1.37	85

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
13-Mar	1.36	0.17	29	62	0.000	1.36	84
14-Mar	1.33	0.24	39	57	0.000	1.33	83
15-Mar	1.34	0.97	39	60	0.000	1.34	83
16-Mar	1.85	0.83	34	44	0.000	1.85	115
17-Mar	1.74	0.10	33	52	0.000	1.74	108
18-Mar	1.53	0.31	34	54	0.000	1.53	95
19-Mar	1.72	0.63	32	46	0.000	1.72	107
20-Mar	1.60	0.19	27	51	0.000	1.60	99
21-Mar	1.53	0.00	27	55	0.000	1.53	95
22-Mar	1.41	0.00	27	51	0.000	1.41	87
23-Mar	1.39	0.00	28	57	0.000	1.39	86
24-Mar	1.28	0.00	38	72	0.000	1.28	79
25-Mar	1.28	0.20	42	58	0.000	1.28	79
26-Mar	1.26	0.17	41	55	0.000	1.26	78
27-Mar	1.25	0.12	41	56	0.000	1.25	78
28-Mar	1.24	0.48	40	54	0.000	1.24	77
29-Mar	1.31	0.30	42	54	0.000	1.31	82
30-Mar	1.30	0.10	30	57	0.000	1.30	81
31-Mar	1.19	0.00	30	65	0.000	1.19	74
1-Apr	1.14	0.00	32	63	0.000	1.14	71
2-Apr	1.11	0.00	37	62	0.000	1.11	69
3-Apr	1.13	0.07	38	57	0.000	1.13	70
4-Apr	1.14	0.08	41	61	0.000	1.14	71
5-Apr	1.12	0.45	41	53	0.000	1.12	69
6-Apr	1.14	0.00	42	63	0.000	1.14	71
7-Apr	1.09	0.00	43	76	0.000	1.09	67
8-Apr	1.12	0.45	36	60	0.000	1.12	70
9-Apr	1.12	0.00	34	61	0.000	1.12	69
10-Apr	1.05	0.00	35	59	0.000	1.05	65
11-Apr	1.06	0.00	33	62	0.000	1.06	66
12-Apr	1.04	0.00	30	63	0.000	1.04	65
13-Apr	1.07	0.00	31	72	0.000	1.07	67
14-Apr	1.04	0.00	33	69	0.000	1.04	65
15-Apr	1.01	0.07	43	69	0.000	1.01	62
16-Apr	1.07	0.61	44	52	0.000	1.07	66
17-Apr	1.21	0.72	38	54	0.000	1.21	75
18-Apr	1.10	0.00	37	61	0.000	1.10	69
19-Apr	1.25	0.78	39	55	0.000	1.25	78
20-Apr	1.19	0.00	39	62	0.000	1.19	74
21-Apr	1.15	0.45	40	62	0.000	1.15	71
22-Apr	1.17	0.25	39	62	0.000	1.17	73
23-Apr	1.19	0.32	41	59	0.000	1.19	74
24-Apr	1.17	0.00	37	58	0.000	1.17	73
25-Apr	1.10	0.00	33	60	0.000	1.10	68
26-Apr	1.07	0.11	37	63	0.000	1.07	67
27-Apr	1.13	0.09	37	58	0.000	1.13	70
28-Apr	1.09	0.00	39	66	0.000	1.09	68
29-Apr	1.02	0.00	40	79	0.000	1.02	64
30-Apr	1.06	0.00	43	83	0.000	1.06	66

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
1-May	0.97	0.00	43	89	0.000	0.97	60
2-May	1.05	0.12	48	72	0.000	1.05	65
3-May	1.09	0.59	45	60	0.000	1.09	68
4-May	1.14	0.25	44	57	0.000	1.14	71
5-May	1.15	0.20	42	62	0.000	1.15	71
6-May	1.11	0.00	35	65	0.000	1.11	69
7-May	1.08	0.00	43	69	0.000	1.08	67
8-May	1.20	1.18	42	60	0.000	1.20	75
9-May	1.47	1.18	43	57	0.000	1.47	91
10-May	1.45	0.03	39	60	0.000	1.45	90
11-May	1.31	0.00	41	68	0.000	1.31	81
12-May	1.44	0.00	43	79	0.000	1.44	90
13-May	1.23	0.00	46	82	0.000	1.23	77
14-May	1.15	0.00	48	84	0.000	1.15	71
15-May	1.13	0.00	51	82	0.000	1.13	70
16-May	1.15	0.00	50	72	0.000	1.15	71
17-May	1.10	0.16	47	68	0.000	1.10	68
18-May	1.34	0.85	49	72	0.000	1.34	83
19-May	1.33	0.00	44	71	0.000	1.33	82
20-May	1.21	0.00	44	70	0.000	1.21	75
21-May	1.17	0.00	47	70	0.000	1.17	73
22-May	1.09	0.04	50	75	0.000	1.09	68
23-May	1.20	0.17	49	59	0.000	1.20	74
24-May	1.07	0.00	49	69	0.000	1.07	66
25-May	1.12	0.20	46	62	0.000	1.12	69
26-May	1.18	0.06	42	65	0.000	1.18	73
27-May	1.19	0.00	41	68	0.000	1.19	74
28-May	1.09	0.07	44	69	0.000	1.09	67
29-May	1.14	0.02	41	62	0.000	1.14	71
30-May	1.61	0.00	40	70	0.000	1.61	100
31-May	0.98	0.00	44	77	0.000	0.98	61
1-Jun	1.08	0.00	44	75	0.000	1.08	67
2-Jun	1.12	0.00	48	77	0.000	1.12	69
3-Jun	1.02	0.00	50	71	0.000	1.02	63
4-Jun	1.01	0.00	44	71	0.000	1.01	63
5-Jun	1.05	0.00	42	74	0.000	1.05	65
6-Jun	0.98	0.00	45	77	0.000	0.98	61
7-Jun	1.03	0.00	50	74	0.000	1.03	64
8-Jun	1.05	0.00	50	76	0.000	1.05	65
9-Jun	1.06	0.00	45	69	0.000	1.06	66
10-Jun	0.94	0.00	43	68	0.000	0.94	58
11-Jun	1.07	0.00	47	75	0.000	1.07	67
12-Jun	1.06	1.08	48	69	0.000	1.06	66
13-Jun	1.16	0.44	48	60	0.000	1.16	72
14-Jun	1.11	0.20	47	64	0.000	1.11	69
15-Jun	1.03	0.17	46	60	0.000	1.03	64
16-Jun	1.11	0.13	43	66	0.000	1.11	69
17-Jun	1.03	0.00	48	70	0.000	1.03	64
18-Jun	1.04	0.00	48	70	0.000	1.04	65

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
19-Jun	1.01	0.10	48	76	0.000	1.01	63
20-Jun	1.10	0.00	41	69	0.000	1.10	68
21-Jun	0.96	0.00	42	74	0.000	0.96	59
22-Jun	1.07	0.00	47	77	0.000	1.07	66
23-Jun	1.00	0.00	53	75	0.000	1.00	62
24-Jun	0.97	0.00	50	79	0.000	0.97	60
25-Jun	1.01	0.00	50	79	0.000	1.01	62
26-Jun	1.00	0.02	55	75	0.000	1.00	62
27-Jun	0.98	0.11	54	72	0.000	0.98	61
28-Jun	0.96	0.22	52	71	0.000	0.96	59
29-Jun	0.99	0.03	46	71	0.000	0.99	61
30-Jun	1.09	0.00	48	79	0.000	1.09	67
1-Jul	0.96	0.00	51	94	0.000	0.96	59
2-Jul	0.96	0.00	53	78	0.000	0.96	60
3-Jul	1.03	0.00	48	70	0.000	1.03	64
4-Jul	0.88	0.00	47	75	0.000	0.88	55
5-Jul	0.87	0.00	47	75	0.000	0.87	54
6-Jul	0.96	0.00	55	84	0.000	0.96	60
7-Jul	0.97	0.00	51	81	0.000	0.97	60
8-Jul	1.04	0.00	50	85	0.000	1.04	65
9-Jul	0.92	0.00	48	81	0.000	0.92	57
10-Jul	0.97	0.00	49	82	0.000	0.97	61
11-Jul	0.95	0.00	53	88	0.000	0.95	59
12-Jul	0.92	0.00	50	90	0.000	0.92	57
13-Jul	0.98	0.00	53	88	0.000	0.98	61
14-Jul	0.94	0.00	51	85	0.000	0.94	58
15-Jul	1.00	0.00	49	86	0.000	1.00	62
16-Jul	1.00	0.00	52	89	0.000	1.00	62
17-Jul	0.92	0.00	49	81	0.000	0.92	57
18-Jul	0.93	0.00	52	78	0.000	0.93	58
19-Jul	0.92	0.04	48	68	0.000	0.92	57
20-Jul	0.96	0.00	52	65	0.000	0.96	59
21-Jul	0.96	0.00	47	77	0.000	0.96	60
22-Jul	0.92	0.04	46	77	0.000	0.92	57
23-Jul	1.09	0.98	41	64	0.000	1.09	68
24-Jul	1.03	0.22	50	62	0.000	1.03	64
25-Jul	0.93	0.00	48	75	0.000	0.93	58
26-Jul	0.92	0.00	47	80	0.000	0.92	57
27-Jul	0.98	0.00	49	82	0.000	0.98	61
28-Jul	0.97	0.00	47	86	0.000	0.97	60
29-Jul	0.99	0.00	50	82	0.000	0.99	61
30-Jul	0.99	0.00	48	83	0.000	0.99	61
31-Jul	0.92	0.00	48	86	0.000	0.92	57
1-Aug	0.95	0.00	51	84	0.000	0.95	59
2-Aug	0.93	0.00	52	84	0.000	0.93	58
3-Aug	1.00	0.00	49	89	0.000	1.00	62
4-Aug	0.96	0.00	50	88	0.000	0.96	60
5-Aug	0.98	0.00	52	79	0.000	0.98	61
6-Aug	0.95	0.00	49	80	0.000	0.95	59

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
7-Aug	0.98	0.00	49	80	0.000	0.98	61
8-Aug	0.93	0.00	45	79	0.000	0.93	58
9-Aug	0.91	0.00	46	81	0.000	0.91	56
10-Aug	0.98	0.00	48	86	0.000	0.98	61
11-Aug	0.93	0.00	52	96	0.000	0.93	58
12-Aug	1.03	0.67	58	79	0.000	1.03	64
13-Aug	1.16	0.19	54	73	0.000	1.16	72
14-Aug	1.03	0.05	53	67	0.000	1.03	64
15-Aug	1.02	0.01	56	72	0.000	1.02	63
16-Aug	0.98	0.00	53	79	0.000	0.98	61
17-Aug	0.98	0.00	53	81	0.000	0.98	61
18-Aug	0.98	0.00	54	84	0.000	0.98	61
19-Aug	0.91	0.00	54	83	0.000	0.91	56
20-Aug	0.96	0.00	48	75	0.000	0.96	60
21-Aug	0.89	0.00	45	74	0.000	0.89	55
22-Aug	0.98	0.00	47	75	0.000	0.98	61
23-Aug	0.90	0.00	48	82	0.000	0.90	56
24-Aug	0.93	0.00	48	80	0.000	0.93	58
25-Aug	1.00	0.00	50	87	0.000	1.00	62
26-Aug	0.91	0.00	54	89	0.000	0.91	56
27-Aug	1.00	0.00	54	84	0.000	1.00	62
28-Aug	0.81	0.00	55	79	0.000	0.81	50
29-Aug	0.95	0.12	49	70	0.000	0.95	59
30-Aug	0.92	0.03	50	69	0.000	0.92	57
31-Aug	0.93	0.00	51	76	0.000	0.93	58
1-Sep	1.00	0.00	54	78	0.000	1.00	62
2-Sep	1.09	1.08	49	66	0.000	1.09	68
3-Sep	1.04	0.00	42	73	0.000	1.04	65
4-Sep	0.95	0.00	42	75	0.000	0.95	59
5-Sep	0.99	0.00	43	84	0.000	0.99	61
6-Sep	0.89	0.00	46	89	0.000	0.89	55
7-Sep	0.99	0.00	47	87	0.000	0.99	62
8-Sep	0.99	0.00	47	71	0.000	0.99	61
9-Sep	0.98	0.00	46	74	0.000	0.98	61
10-Sep	0.96	0.00	39	74	0.000	0.96	59
11-Sep	0.92	0.00	35	76	0.000	0.92	57
12-Sep	0.94	0.00	35	78	0.000	0.94	58
13-Sep	0.90	0.00	37	83	0.000	0.90	56
14-Sep	0.95	0.00	42	88	0.000	0.95	59
15-Sep	0.97	0.00	42	88	0.000	0.97	60
16-Sep	0.91	0.00	47	76	0.000	0.91	57
17-Sep	0.91	0.23	53	74	0.000	0.91	57
18-Sep	0.86	0.19	49	68	0.000	0.86	53
19-Sep	0.85	0.20	49	76	0.000	0.85	53
20-Sep	0.83	0.00	46	80	0.000	0.83	51
21-Sep	0.87	0.00	46	87	0.000	0.87	54
22-Sep	0.83	0.04	52	74	0.000	0.83	51
23-Sep	0.87	0.76	53	71	0.000	0.87	54
24-Sep	1.01	0.28	52	67	0.000	1.01	62

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
25-Sep	0.90	0.62	51	72	0.000	0.90	56
26-Sep	1.08	0.91	48	65	0.000	1.08	67
27-Sep	0.89	0.00	48	69	0.000	0.89	55
28-Sep	0.92	0.00	45	66	0.000	0.92	57
29-Sep	0.91	0.18	42	63	0.000	0.91	57
30-Sep	0.89	0.00	48	63	0.000	0.89	55
1-Oct	0.86	0.00	42	67	0.000	0.86	53
2-Oct	0.85	0.00	39	69	0.000	0.85	53
3-Oct	0.84	0.00	39	75	0.000	0.84	52
4-Oct	0.84	0.02	47	72	0.000	0.84	52
5-Oct	0.86	0.00	47	78	0.000	0.86	54
6-Oct	0.86	0.00	48	76	0.000	0.86	54
7-Oct	0.85	0.00	49	63	0.000	0.85	53
8-Oct	0.89	0.00	43	65	0.000	0.89	55
9-Oct	0.91	0.00	43	72	0.000	0.91	56
10-Oct	0.83	0.03	43	65	0.000	0.83	52
11-Oct	0.89	0.40	43	65	0.000	0.89	55
12-Oct	0.87	0.02	48	65	0.000	0.87	54
13-Oct	0.98	1.34	47	70	0.000	0.98	61
14-Oct	1.06	0.29	47	63	0.000	1.06	66
15-Oct	0.99	0.38	42	69	0.000	0.99	62
16-Oct	0.94	0.00	42	71	0.000	0.94	58
17-Oct	0.91	0.50	47	70	0.000	0.91	56
18-Oct	0.87	0.00	53	69	0.000	0.87	54
19-Oct	0.91	0.18	52	75	0.000	0.91	57
20-Oct	0.93	0.21	48	67	0.000	0.93	58
21-Oct	0.92	0.53	48	63	0.000	0.92	57
22-Oct	1.16	0.78	48	57	0.000	1.16	72
23-Oct	1.00	0.06	43	58	0.000	1.00	62
24-Oct	0.93	0.16	41	59	0.000	0.93	58
25-Oct	1.08	0.95	41	62	0.000	1.08	67
26-Oct	1.11	0.25	39	53	0.000	1.11	69
27-Oct	1.03	0.10	38	60	0.000	1.03	64
28-Oct	1.10	0.28	46	63	0.000	1.10	68
29-Oct	1.08	0.03	45	64	0.000	1.08	67
30-Oct	1.23	1.32	46	60	0.000	1.23	77
31-Oct	1.38	0.45	37	53	0.000	1.38	86
1-Nov	1.20	0.03	36	51	0.000	1.20	74
2-Nov	1.21	0.30	41	56	0.000	1.21	75
3-Nov	1.27	0.83	45	56	0.000	1.27	79
4-Nov	1.32	0.21	45	51	0.000	1.32	82
5-Nov	1.24	0.42	45	56	0.000	1.24	77
6-Nov	1.38	0.58	39	60	0.000	1.38	85
7-Nov	1.26	0.03	30	60	0.000	1.26	78
8-Nov	1.22	0.29	31	56	0.000	1.22	76
9-Nov	1.27	0.09	33	53	0.000	1.27	79
10-Nov	1.18	0.01	29	55	0.000	1.18	73
11-Nov	1.16	0.00	17	50	0.000	1.16	72
12-Nov	1.11	0.00	14	49	0.000	1.11	69

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)
13-Nov	1.08	0.00	14	47	0.000	1.08	67
14-Nov	1.06	0.00	14	45	0.000	1.06	66
15-Nov	1.03	0.00	14	47	0.000	1.03	64
16-Nov	1.06	0.00	16	48	0.000	1.06	66
17-Nov	1.05	0.00	18	51	0.000	1.05	65
18-Nov	1.05	0.00	20	47	0.000	1.05	65
19-Nov	1.01	0.09	27	50	0.000	1.01	63
20-Nov	1.05	0.07	42	54	0.000	1.05	65
21-Nov	1.11	0.85	36	57	0.000	1.11	69
22-Nov	1.08	0.24	39	50	0.000	1.08	67
23-Nov	1.16	0.16	35	54	0.000	1.16	72
24-Nov	1.13	0.87	37	50	0.000	1.13	70
25-Nov	1.39	0.41	37	56	0.000	1.39	86
26-Nov	1.29	0.00	46	61	0.000	1.29	80
27-Nov	1.21	0.13	33	51	0.000	1.21	75
28-Nov	1.35	1.04	27	48	0.000	1.35	84
29-Nov	1.38	0.00	9	38	0.000	1.38	86
30-Nov	1.34	0.00	9	37	0.000	1.34	83
1-Dec	1.26	0.00	10	39	0.000	1.26	78
2-Dec	1.21	0.00	11	41	0.000	1.21	75
3-Dec	1.18	0.00	17	41	0.000	1.18	73
4-Dec	1.15	0.18	30	44	0.000	1.15	71
5-Dec	1.12	0.43	38	51	0.000	1.12	69
6-Dec	1.19	0.07	38	53	0.000	1.19	74
7-Dec	1.15	0.02	38	55	0.000	1.15	71
8-Dec	1.16	0.29	43	61	0.000	1.16	72
9-Dec	1.21	0.49	46	62	0.000	1.21	75
10-Dec	1.44	0.69	43	66	0.000	1.44	89
11-Dec	1.54	0.69	33	58	0.000	1.54	95
12-Dec	1.39	0.16	35	50	0.000	1.39	87
13-Dec	1.39	0.10	24	51	0.000	1.39	86
14-Dec	1.40	0.00	22	51	0.000	1.40	87
15-Dec	1.33	0.03	22	45	0.000	1.33	83
16-Dec	1.26	0.00	31	50	0.000	1.26	78
17-Dec	1.24	0.22	32	46	0.000	1.24	77
18-Dec	1.26	0.42	39	51	0.000	1.26	78
19-Dec	1.25	0.18	39	53	0.000	1.25	77
20-Dec	1.28	0.29	39	55	0.000	1.28	80
21-Dec	1.24	0.00	32	52	0.000	1.24	77
22-Dec	1.20	0.02	31	49	0.000	1.20	74
23-Dec	1.32	0.92	34	52	0.000	1.32	82
24-Dec	1.41	0.10	33	43	0.000	1.41	88
25-Dec	1.26	0.09	30	41	0.000	1.26	78
26-Dec	1.25	0.46	32	44	0.000	1.25	77
27-Dec	1.33	0.29	33	47	0.000	1.33	82
28-Dec	1.26	0.05	27	44	0.000	1.26	78
29-Dec	1.25	0.00	19	45	0.000	1.25	78
30-Dec	1.24	0.00	17	39	0.000	1.24	77
31-Dec	1.21	0.00	17	39	0.000	1.21	75

City of Arlington
2015 Comprehensive Sewer System Plan
Appendix E - Infiltration Data and Analyses

Year	Pop.
2009	16,073
2010	16,288
2011	16,292
2012	16,332
2013	16,632
2014	16,116

Max. Q_{res} for Infiltration (gpcd)
120

	Max Inflow Day
	Max Dry-Weather Infiltration - First Day
	Notable Rain Event (> 0.30 in.)

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)	Q_{avg} Dry-Weather Average (MGD)	Q_{res} Dry-Weather Average (gpcd)
2009									
4-Jan	1.74	0.51	31	40	0.000	1.74	108		
5-Jan	1.70	0.33	33	43	0.000	1.70	106		
6-Jan	2.21	1.74	37	51	0.000	2.21	137		
7-Jan	2.41	1.24	42	53	0.000	2.41	150		
8-Jan	3.02	0.42	31	43	0.000	3.02	188		
9-Jan	2.01	0.22	31	42	0.000	2.01	125		
10-Jan	2.33	0.98	34	41	0.000	2.33	145		
11-Jan	2.22	0.20	35	43	0.000	2.22	138	1.88	117
12-Jan	2.02	0.10	39	46	0.000	2.02	126		
13-Jan	1.97	0.10	32	45	0.000	1.97	123		
14-Jan	1.81	0.01	31	42	0.000	1.81	113		
15-Jan	1.80	0.00	28	39	0.000	1.80	112		
16-Jan	1.69	0.00	28	36	0.000	1.69	105		
17-Jan	1.65	0.00	26	37	0.000	1.65	103		
18-Jan	1.57	0.00	25	57	0.000	1.57	98		

Note:
-Q_{avg} = Average of January 11th through January 17th only; January 4th through January 10th WWTP flows could be attributed to inflow events

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)	Q_{avg} Dry-Weather Average (MGD)	Q_{res} Dry-Weather Average (gpcd)
2011									
29-Mar	1.19	0.98	42	51	0.000	1.19	73		
30-Mar	1.81	1.54	44	51	0.000	1.81	111		
31-Mar	1.74	0.10	43	57	0.000	1.74	107		
1-Apr	1.73	1.20	35	47	0.000	1.73	106		
2-Apr	2.08	0.48	36	51	0.000	2.08	128		
3-Apr	1.80	0.18	39	50	0.000	1.80	110		
4-Apr	1.91	0.81	36	46	0.000	1.91	117		
5-Apr	1.82	0.52	34	46	0.000	1.82	112		
6-Apr	1.96	0.10	31	51	0.000	1.96	120	1.77	109
7-Apr	1.79	0.00	28	51	0.000	1.79	110		
8-Apr	1.71	0.02	28	58	0.000	1.71	105		
9-Apr	1.62	0.06	39	56	0.000	1.62	100		
10-Apr	1.71	0.67	37	54	0.000	1.71	105		

Note:
-Q_{avg} = Average of April 6th through April 9th only; March 29th through April 5th WWTP flows could be attributed to inflow events

Date	Q (MGD)	Precip. (in.)	Min. Temp. (°F)	Max. Temp. (°F)	Q_{ind} (MGD)	Q_{res} (MGD)	Q_{res} (gpcd)	Q_{avg} Dry-Weather Average (MGD)	Q_{res} Dry-Weather Average (gpcd)
2013									
23-Jan	1.25	0.62	26	41	0.000	1.25	75		
24-Jan	1.28	0.26	31	46	0.000	1.28	77		
25-Jan	1.14	0.18	34	56	0.000	1.14	69		
26-Jan	1.34	0.92	34	41	0.000	1.34	81		
27-Jan	1.48	0.90	32	42	0.000	1.48	89		
28-Jan	2.10	1.70	31	38	0.000	2.10	126		
29-Jan	2.16	0.93	34	41	0.000	2.16	130		
30-Jan	2.12	0.40	36	40	0.000	2.12	127		
31-Jan	2.01	0.16	37	47	0.000	2.01	121	1.73	104
1-Feb	1.76	0.00	27	54	0.000	1.76	106		
2-Feb	1.77	0.00	29	47	0.000	1.77	106		
3-Feb	1.68	0.20	35	48	0.000	1.68	101		
4-Feb	1.66	0.06	40	52	0.000	1.66	100		
5-Feb	1.53	0.00	41	51	0.000	1.53	92		
6-Feb	1.55	0.31	38	49	0.000	1.55	93		

Note:
-Q_{avg} = Average of January 31st through February 5th only; January 23rd through January 30th WWTP flows could be attributed to inflow events

F BREKHUS-BEACH INFORMATION

F.1 BREKHUS-BEACH CONCEPTUAL ROAD LAYOUT

F.2 BREKHUS-BEACH CONCEPTUAL SEWER COLLECTION SYSTEM

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E MAPLE ST
S HAMLIN DR
215TH PL NE
87TH AVE NE
MEDICAL CENTER DR
89TH AVE NE
92ND AVE NE
E HIGHLAND DR
TVEIT RD
PORTAGE ST
207TH ST NE
BURN RD
OLD BURN RD
97TH AVE NE
200TH ST NE
196TH PL NE
95TH AVE NE
196TH ST NE
195TH ST NE
CROWN RIDGE BLVD

Critical Areas

- Wetlands (NWI)
- Moderate slopes (>15%)
- Steep slopes (>33%)

DRAFT

CITY OF ARLINGTON

N

Legend

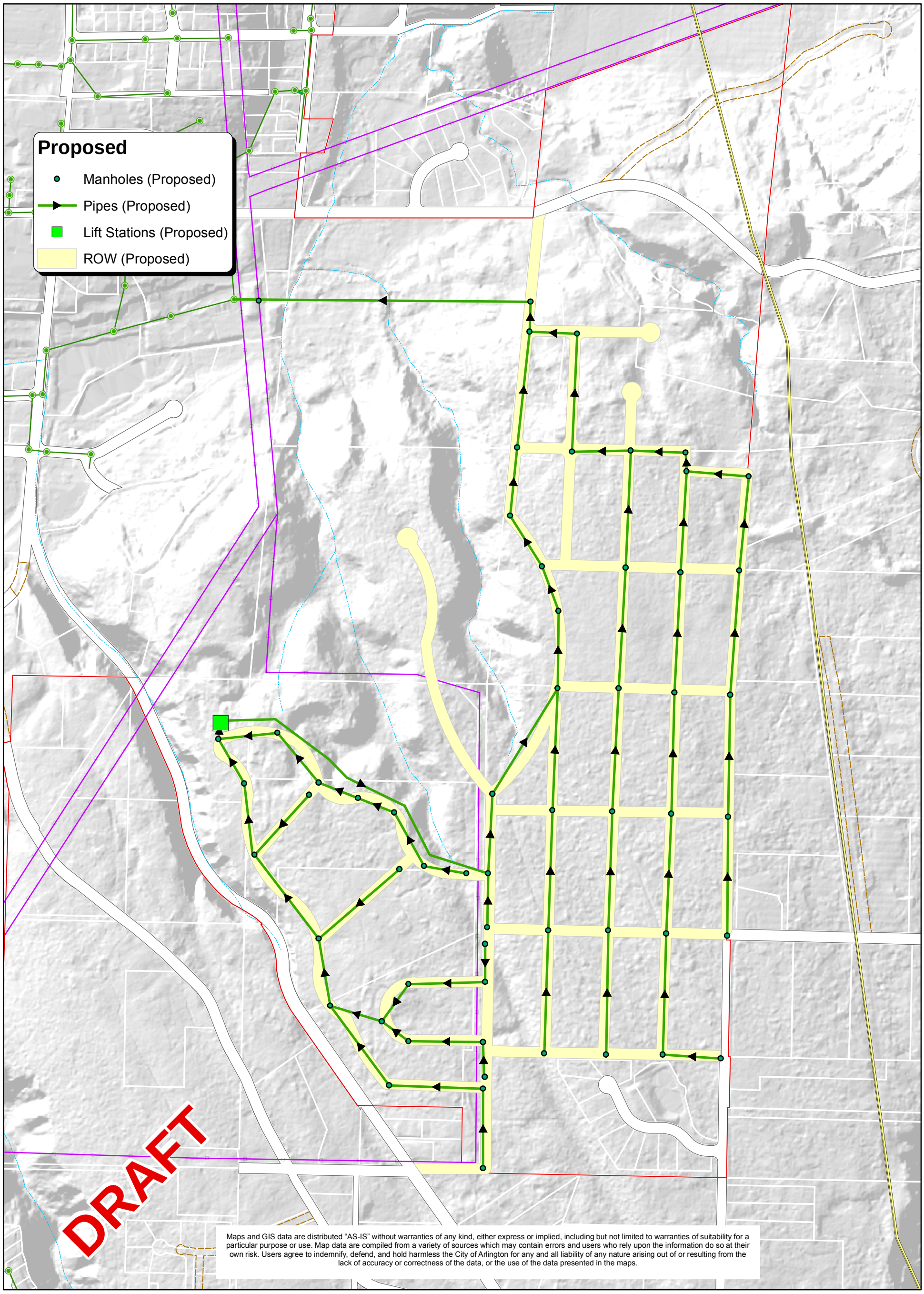
- Connections to existing roads
- Power lines
- Roads
- County mapped streams
- City Limits
- ROW (Proposed)
- Developable land

0 0.05 0.1 0.2
Miles

City of Arlington

Brekhus Beach Critical Areas, Developable Lands and Road Areas

Scale:	File:
1 inch = 500 feet	BBCriticalAreas11x17_15
Date:	**Cartographer:**
April 22, 2015	kdh / akc



CITY OF ARLINGTON

N

Legend

- Manholes (Proposed)
- Pipes (Proposed)
- Lift Stations (Proposed)
- Manholes
- Pipes - Gravity
- Pipes - Force
- Gas Line
- City Limits
- Power lines
- County mapped streams
- Public ROW
- Private ROW*
- Rail ROW
- Trail
- Assessor parcels

0 0.05 0.1 0.2
Miles

City of Arlington

Brekhus Beach Proposed Sewer Infrastructure

Scale:	File:
1 inch = 500 feet	BBProposedSewer11x17_15
Date:	**Cartographer:**
April 22, 2015	kdh / akc

G SEPA

G.1 DETERMINATION OF NON-SIGNIFICANCE (DNS)

G.2 SEPA CHECKLIST FOR A NON-PROJECT ACTION

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COMMUNITY & ECONOMIC DEVELOPMENT
PLANNING & LAND USE DIVISION

★

ARLINGTON AIRPORT OFFICE
18204 59TH AVE NE
ARLINGTON, WA 98223
8am – 5pm M-F
Closed Holidays

T: 360.403.3551

TO LEARN MORE

You may email the planner assigned to the project or review the project file at the address listed above.

TO COMMENT

Send written comments to the listed Staff Contact within the specified comment period.

SEPA THRESHOLD DETERMINATION

Determination of Non-Significance (DNS)

FILE NAME: 2015 Wastewater Comprehensive Plan SEPA

FILE NUMBER: PLN#166 (SEPA Only)

LEAD AGENCY: City of Arlington, Community & Economic Development Department

DESCRIPTION: Planned update of the City's Comprehensive Wastewater Plan. Noteworthy changes in this update include identification of six focus areas to accommodate residential growth and commercial/industrial expansion, including expansion of the City's UGA and Wastewater Service Area west of I-5 (dependent on Snohomish County Council approval of its 2016 docket). Capital projects are identified for 10 and 20 year horizons.

LOCATION: City of Arlington

APPLICANT: City of Arlington Department of Public Works

STAFF CONTACT: Troy Davis, Senior Planner, tdavis@arlingtonwa.gov

DATE CHECKLIST PREPARED: July 15, 2015

APPROVALS REQUIRED: City of Arlington, Washington State Department of Ecology

SEPA THRESHOLD DETERMINATION: The City has determined that this proposal does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request. Impacts of the project will be mitigated by the requirement that the development must comply with all City of Arlington zoning and development regulations.

DISCLAIMER: The determination that an environmental impact statement does not have to be filed does not mean there will be no adverse environmental impacts. The City of Arlington codes governing noise control, land use performance standards, construction and improvements of roads, off site road improvement obligations, drainage control, traffic, school, park, stormwater, and utility mitigations, fire protection; and building practices will provide substantial mitigation of the aforementioned impacts.

The issuance of this DNS should not be interpreted as acceptance or approval of this proposal as presented. The City of Arlington reserves the right to deny or

approve said proposal subject to conditions if it is determined to be in the best interest of the city and/or necessary for the general health, safety, and welfare of the public to do so.

STUDIES REQUIRED: None

DATE OF MITIGATED DETERMINATION OF NON-SIGNIFICANCE: 08/12/2015

COMMENT PERIOD: There is a 14-day comment period for this DNS. If you would like to comment on this Threshold Determination, written comments must be received prior to 5:00 p.m. on August 26, 2015. The Responsible Official may incorporate any substantial comments into the DNS. If the DNS is substantially modified, it will be reissued for further public review.

SEPA RESPONSIBLE OFFICIAL: Chris Young, Director of Community & Economic Development

8/13/15 | Christopher Young

DATE | SIGNATURE OF SEPA RESPONSIBLE OFFICIAL

TO APPEAL A DECISION: An agency or person may appeal the City's procedural compliance with WAC Chapter 197-11 (SEPA) for issuance of this DNS. Appeal of the final DNS must be made to the Hearing Examiner within 10 days of the date the DNS is final (see WAC 197-11-390 (2)(a)). The DNS is a final DNS when the City issues the land use permit. Appeal of the land use permit must be made to the Hearing Examiner within 14 days of the date the permit is issued.

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

City of Arlington 2015 Comprehensive Wastewater Plan

2. Name of applicant: [help]

City of Arlington

3. Address and phone number of applicant and contact person: [help]

Jim Kelly
Public Works Director
City of Arlington
238 N Olympic Avenue
Arlington, WA 98223
360.403.3505
jkelly@arlingtonwa.gov

4. Date checklist prepared: [help]

July 15, 2015

5. Agency requesting checklist: [help]

City of Arlington

6. Proposed timing or schedule (including phasing, if applicable): [help]

The City of Arlington's *2015 Comprehensive Wastewater Plan* (CWP) is an update of the 2008 version. It is a General Sewer Plan designed to meet state regulatory requirements. It also identifies Capital Improvement Projects necessary to facilitate and extend wastewater services to a customer base envisioned to grow as described in the City's 2015 Update to its General Comprehensive Plan. The implementation of the proposed plan would be phased. This non-project action is within the 2015 City of Arlington Comprehensive Plan Update docket cycle.

It is anticipated that a public hearing on the CWP will be held at City Council in fall 2015. Adoption of the Plan by City Council is anticipated to be completed by year-end 2015.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

Arlington Public Works would continue to focus on programs that address wastewater capital and O&M needs. The City would periodically review and update the *2015 Comprehensive Wastewater Plan*, as needed (probably on a 6 to 10 year cycle). In addition, the City is concurrently producing updates to its Comprehensive Water System Plan, Comprehensive

Transportation Plan, and General Comprehensive Plan. Any future updates of this proposed plan and the related plans would undergo environmental review under SEPA.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

None.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

There are no other applications pending for governmental approvals. However, individual projects related to the proposed plan may require additional approvals, and such approvals would be sought for the individual projects prior to construction or development.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

City Council approval of the Comprehensive Plan Amendments, which include the Comprehensive Wastewater Plan. Ecology reviews and approves General Sewer Plans such as this one, as required by Section 173-240-050 WAC.

More specific information on approvals or permits for projects anticipated under the proposed plan would be determined during project-level environmental review. Future programs and projects that would result from the *2015 Comprehensive Wastewater Plan* must comply with applicable federal, state, and local regulations. Future projects to implement the proposed plan could require certain federal, state, and local government approvals and permits, including SEPA review, and potentially NEPA review if a project involves federal funding or agency approval.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

Planned update of the City's Comprehensive Wastewater Plan. Noteworthy changes in this update include identification of six focus areas to accommodate residential growth and commercial/industrial expansion, including expansion of the City's UGA and Wastewater Service Area west of I-5 (dependent on Snohomish County Council approval of its 2016 docket). Capital projects are identified for 10 and 20 year horizons.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

This SEPA checklist evaluates an update of the City's Comprehensive Wastewater Plan which applies citywide. The City's wastewater service area occupies its urban growth area (UGA). See the attached map.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

N/A for this nonproject action.

b. What is the steepest slope on the site (approximate percent slope)? [help]

N/A

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

N/A

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

N/A

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

N/A

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

N/A

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

N/A

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

N/A

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

N/A for this nonproject action.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

N/A

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

N/A

3. Water [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There is surface water in the form of the Stillaguamish River and numerous streams and creeks throughout the City of Arlington. A City-owned constructed wetland lies adjacent to the water reclamation facility (WRF, aka WWTP). The WRF is currently permitted to discharge treated effluent to both the river and the wetland and would continue to do so. This non-project action could allow specific projects that would affect the wastewater collection and treatment process.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

N/A for this nonproject action.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

N/A

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

N/A

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

N/A

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

N/A

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

N/A

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, thenumber of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

Effluent of Class B reclaimed water quality would continue to be discharged to the Stillaguamish River. In addition, effluent of Class A reclaimed water quality could also be discharged to the constructed wetland. This non-project action would not affect these processes.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

N/A for this nonproject action.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

N/A

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

N/A

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

N/A

4. Plants [help]

a. Check the types of vegetation found on the site: [help]

N/A for this nonproject action.

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered? [help]

N/A

c. List threatened and endangered species known to be on or near the site. [help]

N/A

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

N/A

e. List all noxious weeds and invasive species known to be on or near the site. [help]

N/A

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

N/A for this nonproject action.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site. [help]

N/A for this non-project action, although salmon and bullhead trout likely exist in the Stillaguamish River.

c. Is the site part of a migration route? If so, explain. [help]

N/A

d. Proposed measures to preserve or enhance wildlife, if any: [help]

N/A

e. List any invasive animal species known to be on or near the site. [help]

N/A

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

N/A for this nonproject action.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

N/A

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

N/A

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, riskof fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

N/A for this nonproject action.

1) Describe any known or possible contamination at the site from present or past uses. [help]

N/A

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

N/A

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

N/A

4) Describe special emergency services that might be required. [help]

N/A

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

N/A

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

N/A for this nonproject action.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

N/A

3) Proposed measures to reduce or control noise impacts, if any: [help]

N/A

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

N/A for this nonproject action.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

N/A for this nonproject action.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

N/A for this nonproject action.

c. Describe any structures on the site. [help]

N/A for this nonproject action.

d. Will any structures be demolished? If so, what? [help]

N/A for this nonproject action.

e. What is the current zoning classification of the site? [help]

This nonproject action covers all City zoning classifications.

f. What is the current comprehensive plan designation of the site? [help]

This nonproject action covers all City comprehensive plan designations.

g. If applicable, what is the current shoreline master program designation of the site? [help]

N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

N/A

i. Approximately how many people would reside or work in the completed project? [help]

N/A

j. Approximately how many people would the completed project displace? [help]

N/A

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

N/A

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

N/A

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any: [help]

N/A

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

N/A for this nonproject action.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

N/A

c. Proposed measures to reduce or control housing impacts, if any: [help]

N/A

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

N/A for this nonproject action.

b. What views in the immediate vicinity would be altered or obstructed? [help]

N/A

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

N/A

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

N/A for this nonproject action.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

N/A

c. What existing off-site sources of light or glare may affect your proposal? [help]

N/A

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

N/A

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

N/A for this nonproject action.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

N/A

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

N/A

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [help]

N/A for this nonproject action.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

N/A

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

N/A

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

N/A

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

N/A for this nonproject action.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

N/A

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

N/A

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

N/A

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

N/A

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

N/A

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

N/A

h. Proposed measures to reduce or control transportation impacts, if any: [help]

N/A

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

N/A for this nonproject action.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

N/A

16. Utilities [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

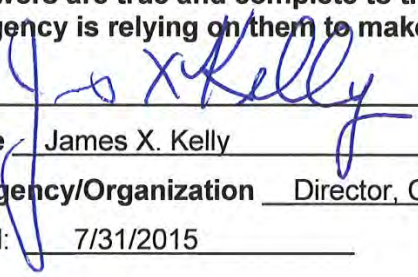
N/A for this nonproject action.

c. Describe the utilities that are proposed for the project, the utility providing the service,and the general construction activities on the site or in the immediate vicinity which mightbe needed. [help]

N/A

C. Signature [help]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee James X. Kelly

Position and Agency/Organization Director, City of Arlington Pubic Works

Date Submitted: 7/31/2015

D. supplemental sheet for nonproject actions [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

This non-project action references separate, preliminary, capital improvement projects which could individually facilitate increases in discharges to receiving waters, and which could affect the quality of the effluent and the loading of contaminants to those receiving waters. These changes in quantity and quality would be within (or restricted by) limits specified by permit under state and federal law. This non-project action itself is not likely to increase: emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise. Any projects that may occur as listed within the CWP would likely be reviewed under SEPA and require environmental analysis and review.

Proposed measures to avoid or reduce such increases are:

The return of water supply as wastewater flows to the river are addressed under this CWP and the Wastewater Utility's NPDES operating permit. Return flows discharged as reclaimed water to a riparian, created wetland are addressed within the City's reclaimed water permit. The Department of Ecology monitors compliance with permit conditions intended to avoid or mitigate impacts from these discharges.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Permit conditions require specific monitoring and reporting of temperature and copper levels to Ecology. Discharges to the constructed wetland are an adaptive management measure to reduce impacts to the river. Also, protections are afforded through SEPA review and compliance with the City's Environmentally Critical Areas regulations and the requirements of the Endangered Species Act.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Permit conditions require specific monitoring and reporting of temperature and copper levels to Ecology. Discharges to the constructed wetland are an adaptive management measure to reduce impacts to the river. Also, protections are afforded through SEPA review and

compliance with the City's Environmentally Critical Areas regulations and the requirements of the Endangered Species Act.

3. How would the proposal be likely to deplete energy or natural resources?

This non-project action itself is not likely to deplete energy or natural resources

Proposed measures to protect or conserve energy and natural resources are:

None proposed.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

This non-project action itself is not likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection.

Proposed measures to protect such resources or to avoid or reduce impacts are:

See D.2 above.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

This non-project action would continue without physical modification the operation of the Haller Water Reclamation Facility on the south bank of the Stillaguamish River, a facility which has been previously approved under the Shorelines review process. It is not likely to affect land and shoreline use nor is it likely to allow or encourage land or shoreline uses incompatible with existing plans.

Proposed measures to avoid or reduce shoreline and land use impacts are:

This non-project would not allow uses that are incompatible with existing plans.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

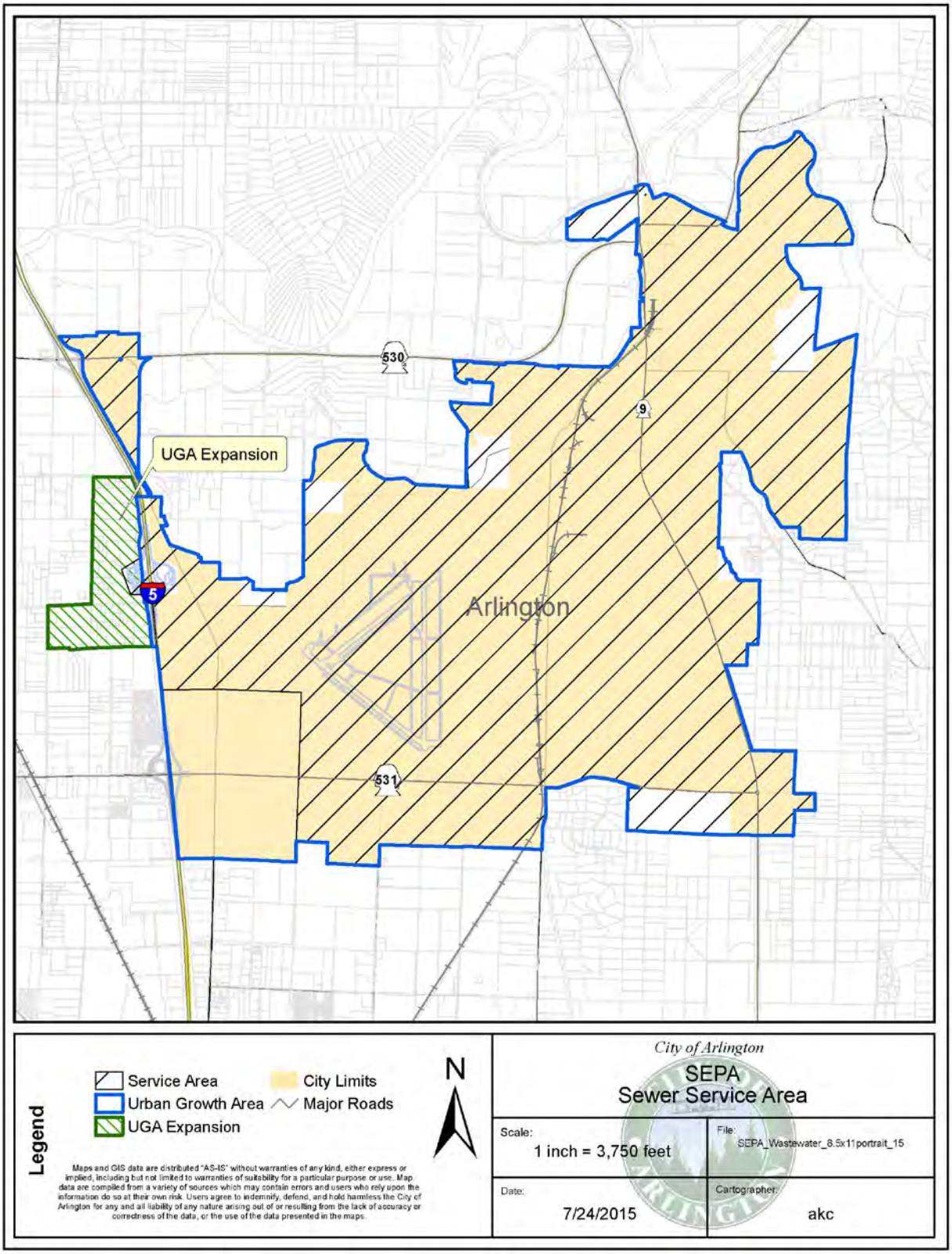
This non-project action itself is not likely to increase demands on transportation or public services and utilities.

Proposed measures to reduce or respond to such demand(s) are:

None proposed since no increase is anticipated.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

This non-project action itself is not known to be in conflict with local, state, or federal laws or requirements for the protection of the environment.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Urban Growth Area
Major Roads
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City of Arlington
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Sewer Service Area
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H SEWER CONSTRUCTION STANDARDS AND SPECIFICATIONS

H.1 CHAPTER 3 OF JANUARY 2015 DRAFT ENGINEERING STANDARDS (26 PAGES)

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5-1 GENERAL REQUIREMENTS

5-1.01 STANDARDS

No extension or modification to the City's sewer system shall be made without approved construction plans with the signature of the City Engineer. Except where modified or amended in these Standards, all work and materials shall conform to the current edition of the following:

(AMC) Arlington Municipal Code
Title 13, and Title 20.60

(COA Comp Plan) City of Arlington Sewer Comprehensive Plan

(DOE) Washington State Department of Ecology, Criteria for Sewage Work Design

(WSDOT) Washington Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction.

5-1.02 LIMITS OF PUBLIC SEWER SYSTEM

Standards contained within this section shall apply to public sewer systems owned and maintained by the City of Arlington. Public sewer systems shall include all sewer systems within the public right-of-way up to the property line of the lot, unless a recorded utility easement is established for extension of the public sewer main onto private property. Utility easements shall be in accordance with Section 1-??? of these Standards. Sewer systems outside of the public right-of-way and utility easements shall be the responsibility of the property owner and shall be installed in accordance with applicable building and plumbing codes.

5-1.03 SANITARY SEWER MAIN EXTENSION

A sanitary sewer main extension shall be required when the property does not front a sewer main. The sewer main shall be extended 5 feet beyond the farthest edge(s) of the property, or as directed by the City Engineer. The sanitary sewer shall be sized for the ultimate development of the tributary area and match the City's Sanitary Sewer Comprehensive Plan. The City may require the installation of a larger size main if the City determines that it is needed to meet the requirement for future service. Sewer main replacement and upgrade shall be required when the existing sewer main is not adequate for the proposed use. Such criteria used to determine adequacy include but are not limited to age, pipe diameter, type, and conditions of existing sewer mains. If the proposed development requires pump station and/or force main upgrade, it shall be done at the Developer's expense. The extent of the improvements shall be extended from the project to a point where the system is deemed reliable. The improvements shall be consistent with the City's Design Standards for new construction and must be approved by the City Engineer.

If the Developer's project directly benefits other property owners, the Developer may enter into a reimbursement agreement with the City per AMC Chapter 12.32.

5-1.04 SEWER PIPE SIZING

No public gravity sewer conveying raw wastewater shall be less than 8 inches in diameter. The pipe diameter and slope shall be selected to obtain the greatest practical velocities to minimize settling problems. Oversize sewers will not be approved to justify flatter slopes.

New sewer mains shall be designed so that, under ultimate development, peak flow including inflow/infiltration (I/I) shall not exceed 50% capacity of the main.

No storm drainage connections shall be made to the City's sanitary sewer system.

5-1.05 SLOPE

Sanitary sewers shall be laid with uniform slope between manholes. All sanitary sewers shall be designed and constructed to give mean velocities of not less than 2.0 feet per second when flowing full, based on Manning's Formula using an "N" value of 0.013. The following are the minimum slopes, however, slopes greater than these are desirable.

Sewer Pipe Diameter	**Minimum Slope**
(inches)	**(% or feet per 100 feet)**
4	2.00
6	1.00
8	0.40
10	0.28
12	0.22
15	0.15
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06
36	0.05

Maximum sewer main slope shall not induce velocities greater than 10 feet per second under daily peak flows.

Pipe anchor blocks shall be installed where the pipe slope exceeds 20%. Each pipe length shall have one anchor block and they shall be spaced at 20 foot on center.

Timber baffle or hill holders shall be required on unpaved slopes that exceed 20%, with minimum spacing of 20 feet on center.

Alignment

In general, sanitary sewers 24 inches or smaller shall be laid with straight alignment between manholes. Curvilinear alignment of sewer larger than 24 inches may be considered on a case-by-case basis, providing compression joints are specified and the specific pipe manufacturer's maximum allowable pipe joint deflection limits are not exceeded. Curvilinear sewers shall be limited to simple curves which start and end at manholes. When curvilinear sewers are proposed, minimum slopes required in these Standards must be increased accordingly to provide a recommended minimum velocity of 2.0 feet per second when flowing full.

Changes in Pipe Size

Where a smaller sewer main joins a larger one, the invert of the larger sewer main at the manhole should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the crowns of both sewers at the same elevation.

5-1.06 MINIMUM DEPTH

The minimum depth of gravity sewer main is 5 feet.

5-1.07 SEWER IN RELATION TO STREAMS

Sanitary sewers crossing streams shall be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be free from change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

Sanitary sewers located along streams shall be located outside of the stream bed and sufficiently away from the stream to provide for future possible stream widening and to prevent pollution by siltation during construction. Sanitary sewer structures shall not interfere with the free discharge of flood flows of the stream.

The top of all sewers entering or crossing streams shall be at sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general, the following cover requirements shall be met.

A minimum of 1 foot of cover above the top of the casing pipe if the sewer is located in rock;

A minimum of 5 feet of cover above the top of the casing pipe in other material.

5-1.08 HORIZONTAL SEPARATION

Sanitary sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the City may allow deviation on a case-by-case basis using DOE criteria. Side sewer and water service lines shall have minimum horizontal clearances of 10 feet unless otherwise approved by the City Engineer.

Horizontal clearances from sanitary sewers:

Cable	5’
Gas	5’
Power	10’
Storm drain	5’
Telephone, Fiber optic	10’
Water	10’

5-1.09 VERTICAL SEPARATION

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the sewer and the outside of the water main. The City prefers the water main to be above the sewer main. Where a sewer crosses a water main, one full length of water pipe (18 feet minimum) shall be used with the pipe centered over the sewer for maximum joint separation. When the above conditions cannot be met, the City has the right to approve a variance, but shall require that the sewer be constructed of ductile iron pipe and be pressure tested before being activated, and/or be encased as directed by the City Engineer. DOE criteria shall also apply.

Vertical clearances from sanitary sewer:

Cable	1’
Gas	1’
Power	1’
Storm drain	1’
Telephone, Fiber optic	1’
Water	1.5’

5-1.10 STEEL CASING

Sewer pipe shall be encased in a steel or ductile iron casing when crossing under improvements where the ability to remove and replace pipe without disturbance to the improvement is needed. Casings are required when:

Crossing under rockeries over 5 feet high;

Crossing under retaining wall footings over 5 feet wide;

Crossing under reinforced earth retaining walls;

Crossing under streams or wetlands; and

Crossing under railways and highways.

Casings shall extend a minimum of 5 feet past each edge of the structure, or a distance equal to the depth of pipe, whichever is greater. The carrier pipe shall be supported by casing spacers per City Standard Detail W-230. The minimum vertical clearance between the bottom of the wall (or footing) and top of the pipe (or casing) shall be 2 feet. The pipe trench at the casing shall be backfilled with gravel backfill material when the vertical clearance is less than 3 feet.

Ductile iron pipe shall be encased in a steel casing when crossing under a railroad or highway where open cut is not allowed. Casings shall extend a minimum of six feet (6') beyond the edges of the right-of-way if not owned by the City. The casing pipe and carrier pipe shall be installed in accordance with the applicable Federal, State and local regulations. In the case of railroad crossings, the project shall also comply with regulations established by the railroad company. Casing spacers shall be placed under the carrier pipe to ensure approximate centering within the casing pipe and to prevent damage during installation. Voids between all steel casings and native soil shall be pressure grouted. The Design Engineer shall refer to the City Standard Detail W-230.

5-1.11 SEWER CONNECTION

All new sanitary sewer mains (8 inches and larger) shall connect to existing sewer mains at manholes. If an existing manhole is not available, a new saddle manhole on existing sewer is required per the City Standard Detail SS-020.

The Design Engineer shall check that the existing manhole diameter is adequate to accommodate the new sewer mains. If not, the existing manhole shall be upgraded at the Developer's expenses. If the existing manhole access is less than 24 inches in diameter, and/or concentric cone (manhole over 7 feet deep), the manhole shall be upgraded to include new 24 inch ring and cover and/or eccentric cone.

At the connection to the existing sewer system, new sewer connections shall be physically plugged until all tests have been completed and the City approves the removal of the plugs.

5-1.12 FAT, OIL, AND GREASE SEPARATION

Oil/Water Separator

An oil/water separator is required whenever an industrial or commercial business generates or has the potential to generate fats, oils, or greases exceeding 100 milligrams per liter which will be discharged to the sanitary sewer system. An oil/water separation device shall be installed on the private property by the property owner. Water discharged from any oil/water separator to the sanitary sewer system shall not contain more than 100 milligrams per liter of fats, oils or greases.

The oil/water separator shall be covered with removable sections. Access and inspection covers, weighing not more than 30 lbs., with suitable hand holds, are to be provided directly above the inspection "tee" and oil/grit collection compartments.

Only wastewater from floor drains and covered parking areas shall drain to the separator. The location and design shall eliminate the possibility of stormwater reaching the separator.

The separator shall be located within 20 feet from the driveway for access by maintenance vehicles.

A sampling tee shall be located on the outlet with a minimum 18 inch drop below the invert. Access to the separator shall be available for inspection and compliance determination sampling at all times.

When pre-treatment is no longer required, the inlet and outlet pipes shall be permanently plugged, the separation chambers pumped out, and the vault removed, or filled with compacted crushed rock or controlled density fill.

Grease Interceptor

The size and design of grease interceptors and hydromechanical grease interceptors (HGI's) shall conform to the Uniform Plumbing Code and shall be approved by the City Building Official after review by the Utilities Division. The interceptor shall be located on private property outside the building within 20 feet of driveway for access by maintenance vehicles. An HGI may be located inside the building, and shall remain privately owned, maintained at the owner's or occupant's expense. A maintenance program must be submitted and approved that includes maintenance, testing requirements and reporting intervals. These facilities shall be available for the inspection by City Utilities crews any time with a 24 hour verbal notification to the occupant or property owner, or as allowed by the discharge agreement.

When pre-treatment is no longer required, the inlet and outlet pipes shall be permanently plugged, the separation chambers pumped out, and the vault removed, or filled with compacted crushed rock or controlled density fill.

5-1.13 SEPTIC TANKS

Septic systems are generally not allowed within the City limits. If the City Engineer determines that public sanitary sewer service is not available or it is not "practical" to provide public sewer service, the septic tank systems may be installed upon approval by the City Engineer and issuance of a septic permit by the Snohomish Health District.

5-1.14 PRIVATE GRINDER PUMP

Use of grinder pumps requires approval by the City Engineer and will be evaluated on a case-by-case basis. The City may require the applicant to deepen the existing gravity sewer at their expense to eliminate the need for grinder pumps. The applicant shall demonstrate that there is no other feasible means of sewer service available.

The Design Engineer shall specify pumps with proper flow rate and dynamic head and provide pump curves from the manufacture to the City for review and approval. The minimum diameter of the force main shall be 2 inches (Schedule 80 PVC or approved equal). Interior grinder pump systems shall meet the requirements of UPC. Exterior grinder pumps systems shall be approved by the City Engineer.

5-1.15 MONITORING MANHOLE

Monitoring manholes are required for all industrial/commercial applications and other applications as determined by the City Utilities Manager. The monitoring manhole shall be located to be accessed for inspection by City staff at any time and under all weather conditions. The depths of monitoring manholes shall be 4 feet minimum and 8 feet maximum. If the depth is less than 7 feet, a flat top manhole shall be used. Monitoring manholes shall be 48 inch Type I (or larger) with locking rings and covers. The rim elevations of the monitoring manholes shall be set to finished grade or as directed by the City Inspector. See City of Arlington Standard Detail SS-130.

5-2 CONSTRUCTION

5-2.01 SEWER MAIN

5-2.01(1) MATERIALS

5-2.01(1)A GENERAL

All materials shall be new and undamaged. The same manufacturer of each item shall be used throughout the work.

When specific manufacturers or models are specified in these Standards, no substitutions will be allowed without prior approval by the City Engineer. If required by the City, the Contractor shall furnish certification from the manufacturer of the materials being supplied that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the reference standards.

The Developer/Contractor shall provide material submittals to the City for approval after the plans are approved for construction. The Developer shall assume the risk for material or equipment, which is fabricated or delivered prior to the City's approval of material submittals.

Five (5) sets of material submittals are required. The City shall either approve or otherwise indicate the reasons for disapproval. Disapproved submittals shall be resubmitted to the City for approval.

The City's review of material submittals covers only general conformity to the plans and these Standards. The Developer is responsible for quantity determination. No quantities are to be verified by the City. The Developer is responsible for any errors, omissions or deviations from the contract requirements. Review and approval of submittals by the City does not relieve the Developer from his obligation to furnish required items in accordance with the plans and these Standards.

Each "Material Submittal" section shall follow a Material Submittal Form provided by the City. Each submittal must have the specific part number(s) checked or highlighted along with its specific purpose.

5-2.01(1)B SEWER PIPE & FITTINGS

Sanitary sewer pipe shall be polyvinyl chloride (PVC) where cover depths are from 4 feet to 12 feet. For cover depths outside of these parameters, ductile iron pipe (DIP) or AWWA C900/C905 PVC pipe shall be used. If the cover depth exceeds maximum cover on any portion of the pipe segment, the entire segment between manholes must be DIP or C900/C905. If product manufacturer's specifications for maximum cover requirements are less than that stated above, the more conservative cover requirement shall govern.

1. PVC sanitary sewer pipe and fittings shall conform to the requirements of ASTM D-3034 SDR-35 with joints and rubber gaskets conforming to ASTM D 3212. All pipes shall be clearly marked with the data of manufacture. All pipe shall be provided with a reference mark for proper spigot insertion. Joint gaskets shall be fabricated from a

compound of which the basic polymer shall be a synthetic rubber consisting of styrene, butadiene, polyisoprene or any combination thereof and shall meet the requirements of ASTM D-3212.

2. DIP sanitary sewer pipe shall be Class 52 epoxy coated pipe and shall be in accordance with Chapter 4 of these Standards. Interior of DIP shall be epoxy coated with amine-cured Novalac Epoxy lining. Cement-lined ductile iron pipe shall not be used for sanitary sewer.

3. AWWA C900/C905 PVC sanitary sewer pipe shall be pressure class 150 (SDR 18) unless otherwise called for in the plans, and pipe material color shall be white or light grey. Black pipe shall not be used as it hinders video inspection. Pipe joints shall be manufactured using an integral bell with an elastomeric gasket push-on type joint. Elastomeric gaskets shall conform to ASTM F477. All fittings shall be PVC, compatible with C900 with respect to joint dimensions and physical properties.

4. ADS Santite Pipe?????

5-2.01(1)C DETECTABLE MARKING TAPE

Utility pipe tracer tape shall be detectable below ground surface, color coded, with utility name printed on tape. Tracer tape shall be detectable type, up to 6 inches in width, and buried 24 inches to 48 inches below finished grades. The color of the tape for sanitary sewer shall be green with black printing reading "CAUTION SANITARY SEWER BURIED BELOW". Tracer tape shall be “Lineguard Type II Detectable”, or approved equal.

5-2.01(1)D STEEL CASING

Steel casing shall be black steel pipe conforming to ASTM A53. Casing thickness shall be 0.250 inch for casing 24 inches or less in diameter and 0.375 inch for casings over 24 inches in diameter.

5-2.01(1)E CASING SPACER

Casing spacers and end seals shall be sized for pipe installation and shall be manufactured by Advance Products & Systems, Cascade Waterworks, Pipeline Seal and Insulators Co., or approved equal. See Standard Detail W-230.

5-2.01(1)F PLUGS

Plugs shall be able to withstand all test pressures without leakage. All plugs shall be approved by the City Inspector.

5-2.01(1)G CONTROLLED DENSITY FILL

Controlled Density Fill (CDF) shall conform to the requirements of WSDOT Section 2-09.3(1) E..

5-2.01(1)H CONCRETE

Concrete used for pads, thrust blocking, encasement, or slope anchor shall be mixed from materials acceptable to the City and shall have a 30 day compressive strength of not less than 2,500 psi. The mix shall contain five (5) sacks of cement per cubic yard and shall be of such consistency that the slump is between 1 inch and 5 inches.

5-2.01(1)I BEDDING MATERIAL

Bedding material shall be clean ⅜ inch minus manufactured pea gravel. Pipe bedding shall be ⅜ inch minus pea gravel meeting the requirements of WSDOT Section 9-03.17.

5-2.01(2) CONSTRUCTION

5-2.01(2)A HANDLING OF PIPE

All types of pipe shall be handled in a manner that prevents damage to the pipe, pipe lining or coating. Pipe and fittings shall be loaded and unloaded using forks or cable choker in a manner that avoids shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. Damaged pipe will be rejected, and the Contractor shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the project site within 24 hours.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails or other similar supports. Pipe on succeeding tiers shall be alternated by bell and plain end. Timbers of 4 inch × 4 inch shall be placed between tiers and chocks shall be placed at each end to prevent movement. Each size of pipe shall be stacked separately.

Threaded pipe ends shall be protected by couplings or other means until the pipe is installed. Dirt or other foreign material shall be prevented from entering the pipe or pipe joints during handling and installation. When pipe installation is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the City.

5-2.01(2)B STAKING

Staking shall be performed by or under the direct supervision of the Developer's Land Surveyor licensed in the State of Washington. Provide the City with two (2) business days notice to inspect construction staking before construction begins.

The minimum staking of sewer lines shall be as directed by the City Engineer or as follows:

Staking location of sewer mains and side sewers every 50 feet with cut or fill to invert of pipe.

Staking location of all manholes for alignment and grade with cut or fill to rim and pipe inverts.

Staking front lot corners prior to installation for side sewer tees.

5-2.01(2)C TRENCH EXCAVATION

Trench excavation and backfill operations within State right-of-way: All excavation and backfill within state right-of-way shall adhere to WSDOT.

Trench excavation and backfill operations within County right-of-way: Excavation within Snohomish County right-of-way shall conform first to Snohomish County Road Standards, and secondly WSDOT.

Trench excavation and backfill operations within City right-of-way:
Excavation within the City right-of-way shall conform to WSDOT Section 7-09.3. Trench backfill shall be in accordance with Section 2-??? of these Standards.

The length of trench excavation in advance of pipe laying shall be kept to a minimum and shall not exceed more than 150 feet without written approval of the City Engineer.

5-2.01(2)D GENERAL PIPE INSTALLATION

Pipe shall be installed in accordance with WSDOT Section 7-08 and 7-17.
Compaction tests shall be required for all backfilled trenches in paved public roadways and in roadway shoulders. A minimum of one test location shall be chosen by the City Inspector for every 200 lineal feet of sewer main installed. The City Inspector has the discretion to require additional tests, in locations specified by the City Inspector. All testing shall be at the expense of the Developer.

No construction materials, soil, debris etc. shall be stockpiled in the public right-of-way unless specific permission is granted in writing by the City Inspector.

Under no circumstances shall pipe materials be dropped or dumped into trench. Broken or otherwise defective pipe shall be removed from the job site and replaced.

Every precaution shall be taken to ensure foreign material does not enter the pipe. When pipe laying is not in progress, the open ends of the pipe shall be closed by a water tight plug or other means approved by the City Inspector. If water is in the trench when work resumes, the seal on the pipe shall remain in place until the trench is completely pumped dry. No pipe shall be laid in water, or when in the opinion of the City Inspector, trench conditions are unsuitable.

No willows, poplars, cottonwoods, birches, soft maple, gum or any other tree or shrub whose roots are likely to obstruct public sewers are allowed within 30 feet of any public sewer. Any of these trees found to be located within 30 feet of a proposed sewer main shall be removed at the Developer's expense.

Ponding of water within alignment of pipe will not be acceptable.

5-2.01(2)E PIPE BEDDING

Bedding shall be installed and spread smoothly so that the pipe is uniformly supported. Subsequent lifts are not to exceed 6 inches in thickness and shall be installed to the crown of the pipe. A 12 inch lift of material shall be placed and compacted over the crown of the pipe prior to backfilling the trench. The Developer may use Controlled Density Fill (CDF), in accordance with Section 2-???? of these Standards, for pipe backfill above the pipe's invert level.

5-2.01(2)F CONNECTION TO EXISTING PIPE

When connecting to the end of a existing pipe known to have a bell at the end of the pipe, a new pipe in the same material as the existing pipe, plans can specify connection by inserting a spigot of the new pipe into the existing bell end, with a "donut" gasket.

When connecting to the end of a existing pipe known to have a plain end, or must be cut, plans shall specify use of a coupling to connect new and existing lines.

Couplings and O-ring adapters utilized for joining pipes of dissimilar materials or different nominal sizes shall be flexible elastomeric PVC as manufactured by Fernco, Inc. or approved equal. Couplings shall be supplied with 316 stainless steel band clamps, fasteners and shear rings as applicable to the sizes and types that are being connected together.

5-2.01(2)G PLUGS AND CONNECTIONS

All fittings shall be capped or plugged with a plug of an approved material and gasketed with the same gasket material as the pipe unit, or the pipe shall be fitted with an approved mechanical stopper, or the pipe shall have an integrally cast knock-out plug. The plug shall be able to withstand all test pressures without leaking.

5-2.01(2)H JOINTING

Where it is necessary to break out or connect to an existing sewer during construction, only new pipe having the same inside diameter will be used in reconnecting the sewer. Where joints must be made between pipes with a mismatched wall thickness, the Developer shall use flexible gasket coupling, adapter or coupling-adapter to make a watertight joint. Rigid connection couplers shall be required within the mainline pipe. Couplings shall be those manufactured by "Romac", "Smith Blair", or approved equal for reinforced pipes and "Fernco" or approved equal as approved by the City Inspector for non-reinforced pipes.

5-2.01(2)I JACKING, AUGURING AND TUNNELING

See Section 2-10 – Underground Utilities.

5-2.01(2)J SEWER ABANDONMENT

Existing sewer lines to be abandoned shall be removed or filled completely with sand, concrete or controlled density fill. At the manhole connection, where existing sewer main is to be abandoned, the manhole shall be rechanneled with 3,000 psi cement concrete.

5-2.01(2)K CLEANING AND TESTING

All sanitary sewer pipe shall be cleaned and tested in accordance with WSDOT Section 7-17.3(2) after backfilling at Contractor's expense.

Testing shall be by either exfiltration or low pressure air method. The Contractor has the option to select the method of testing, unless the ground water table is such that the City Inspector may require the exfiltration test.

The Contractor shall clean and flush all sewer lines with clean water using approved jet vactoring equipment prior to testing. Cleaning by jetting and vacuuming of pipe shall be performed at downstream manhole.

The Developer shall notify the City Inspector at least 2 business days prior to the start of any testing.

All tees and stubs shall be plugged with flexible jointed caps, or acceptable alternate, securely fastened to withstand the internal test pressure. These plugs or caps shall be readily removable and their removal shall provide a socket suitable for making a flexible jointed lateral connection or extension.

If the Contractor elects to test larger diameter pipe one joint at a time, leakage allowances shall be converted from GPH per 100 feet to GPH per joint by dividing the number of joints occurring in 100 feet. If leakage exceeds the allowable amount, corrective measures shall be taken and the line shall be re-tested to the satisfaction of the City Inspector.

5-2.01(2)L VIDEO INSPECTION

All new sanitary sewer mains within the public right-of-way and those in the easements to be maintained by the City will be subject to a visual inspection with a video camera. Any deficiencies noted by the video camera inspection shall be corrected to the satisfaction of the City Inspector. Contractor shall use a tractor style camera, as push cameras are not acceptable.

Video inspection shall be done after the air test has successfully passed inspection but before the roadway is paved. Immediately prior to a television inspection, pipe shall be thoroughly cleaned with no debris present at the time of video inspection. Additionally at the start of inspection, enough water shall run down the line so it comes out the lower manhole. Video inspection of pipe shall be from downstream to upstream.

A copy of the recorded video inspection and written report shall be submitted to the City. The recorded video shall show an accurate measurement from entry point at manhole to location of video camera along the pipe. If the City determines that the location measurement is not accurate, or there are other deficiencies with the video inspection, a new video inspection shall be performed at the Contractor's expense. The video inspection shall also show 365° inspection of all pipe joints and lateral connections.

Acceptance of the sewer will be made after the tape has been reviewed and approved by the City Inspector. Contractor shall provide additional video inspections after corrections are made until system is accepted by City Inspector.

5-2.02 SIDE SEWER

5-2.02(1) GENERAL

Side sewers shall be installed in accordance with WSDOT Section 7-18 and the provisions of these Standards.

A side sewer stub shall extend from the main line to 10 feet past the edge of the property line. A side sewer stub shall also extend additional 5 feet beyond any easements including the standard 10 feet utility easement required on lots fronting public right-of-way. Pipe of 6 inches in diameter shall be used within the public right-of-way or easement unless expected flow requires a larger size of line. See Standard Detail SS-090.

4 inch side sewers on private property from the end of a 6 inch stub to the building may be a minimum of 4 inches for residential side sewers with a single connection within the lot.

Each unit in a duplex or triplex shall have its own separate side sewer stub and connection. 6 inch minimum pipe shall be used for commercial side sewers.

For a multi-family development four-plex and larger, a side sewer for each separate building is required and must be at least 6 inches in diameter. For side sewers serving more than ten units or serving more than one building, side sewers shall be a minimum of 8 inches in diameter and must connected to a manhole.

Maximum distances between side sewer clean-outs shall be 100 feet. All side sewer clean-outs on commercial and multi-family developments shall include at grade access with covers per the City Standard Detail SS-080.

A side sewer shall be connected to the sewer main with a 6 inch tee connection or at a manhole. Where an existing side sewer stub is not available, a ROMAC tapping tee is required for an existing sewer main. A core drilled INSERT-A-TEE may be allowed upon approval of the City Engineer.

5-2.02(2) MATERIALS

5-2.02(2)A SIDE SEWER PIPE

Side sewer services shall be PVC, ASTM D-3034 SDR-35, with flexible gasket joints. Depths greater than 14 feet shall be AWWA C900 or CL 52 epoxy coated DIP.

5-2.02(2)B BEDDING MATERIAL

Bedding material shall be clean ⅜ inch minus manufactured pea gravel. Pipe bedding shall be ⅜ inch minus pea gravel meeting the requirements of WSDOT Section 9-03.17.

5-2.02(2)C BACKWATER CHECK VALVE

Backwater check valves installed on 4 inch through 8 inch diameter side sewers shall be rubber flapper swing type check valves. Flapper shall be constructed from steel reinforced rubber with 45 durometer standard rubber hardness. Valve seat shall be at 45 degree angle to direction of flow. Flow area through valve shall equal full pipe area. Valve body shall be cast iron with flanged ends and bolted over to allow removal of flapper without removing valve from line.

The backwater valve shall be housed in a 48 inch diameter pre-cast concrete valve chamber with concentric 48 inch by 24 inch concentric reducing cone, or concrete meter box, depending on depth. The 24 inch frame and cover shall be marked “SEWER”.

5-2.02(3) CONSTRUCTION

5-2.02(3)A FITTINGS AND CLEAN-OUTS FOR SIDE SEWERS

All fittings shall be factory produced and shall be designed for installation on the pipe to be used. Fittings shall be of the same quality and material as the pipe used, except when installing a PVC insert on existing pipe.

Side sewers shall be connected to the tee provided in the public sewer where such is available, utilizing approved fittings or adapters. Where no tee is provided or available, connection shall be made by the use of a Romac tapping tee or core drilled INSERT-A-TEE. See City Standard Detail SS-100.

All side sewers shall have a 6 inch clean-out at the property line per City Standard Detail SS-080. The riser portion of the clean-out shall be PVC unless otherwise approved by the City Inspector. For longer side sewer installations, extra clean-outs will be required at spacing not to exceed 100 feet.

5-2.02(3)B MARKING OF SIDE SEWERS

Tracer tape shall be installed over side sewer pipes and side sewer stubs. The tracer tape shall be placed 24 inches to 48 inches below the finished grade and it shall extend its full length. The location of all side sewers shall be marked with a 12 gauge wire and 2 inch x 4 inch wood marker at the termination of the stub. The marker shall be connected to the pipe at the invert and wrapped around marker post. Above the ground surface, it shall be painted white with black letters of 2 inches in height “SEWER LOT xx INVERT DEPTH xx”. Offset markers may be used when the side sewer location is within an existing driveway or other obstacle.

5-2.02(3)C PRIVATE GRINDER PUMP

Private grinder pumps shall be installed in accordance with the manufacture procedures and per approved plans by the City. The force main shall be pressure tested at 150% of the total dynamic head. All inspections must be completed prior to backfilling.

5-2.02(3)D TESTING OF SIDE SEWERS

All side sewers shall be tested in accordance with Section 5-2.01(2)K of these Standards after backfill. Side sewers that are reconstructed or repaired to a length of 10 feet or more shall be tested for water-tightness. Testing of newly reconstructed sections of side sewers consisting of a single length of pipe will not be required. Testing shall be performed in the presence of the City Inspector in accordance with these Standards or as directed by the City Inspector.

When a new side sewer is installed, the entire length of new pipe installed shall be tested.

In cases where a new tap is made on the main, the first joint of pipe off the main shall be installed with a test tee, so that an inflatable rubber ball can be inserted for sealing off the side sewer installation for testing. In cases where the side sewer stub is existing to the

property line, the test ball may be inserted through the clean-out wye to test the new portion of the side sewer installation.

5-2.02(3)E VIDEO INSPECTION

Video inspection of side sewer shall be performed in accordance with Section 5-2.01(2)L of these Standards.

5-2.02(3)F SIDE SEWER AS-BUILT PLANS

The as-built drawings shall show the following:

- Location of the side sewer, its connection with the building(s) and all dimensions.
- Show station as distance of side sewer tee from the center of the next downstream manhole.
- The depth and point of connection of the side sewer to the sanitary sewer main.
- Any additional information which might be deemed pertinent.

5-2.02(3)G SIDE SEWER DEMOLITION

Side sewer demolition shall be performed prior to removal of building foundation. The side sewer for each building shall be excavated and removed from the house connection to the property line or the main as required by the City. The contractor shall cap the end of the side sewer to remain in place. Side sewer demolition shall be performed in the presence of the City Inspector.

5-2.03 MANHOLES AND STRUCTURES

5-2.03(1) MATERIALS

5-2.03(1)A MANHOLE

Manholes shall be constructed of pre-cast sections with a confined O-ring rubber gasket joints, and with either a pre-cast base or a cast-in-place base in accordance with the City Standard Details SS-010. Any request to deviate from these details must be reviewed by the City Engineer.

Manholes shall be constructed in accordance with AASHTO M-199 (ASTM C 478) unless otherwise shown on plans and approved by the City.

All pre-cast concrete and reinforced cast-in-place concrete shall be Class 4000. Non-reinforced concrete in channel and shelf shall be Class 3000. Concrete blocks or concrete (masonry) rings may be used for adjustment of the casting to final street grade. Pre-cast bases shall be furnished with cutouts or knockouts. Knockouts shall have a wall thickness of 2 inch minimum.

All base reinforcing steel shall have a minimum yield strength of 60,000 psi and be placed in the upper half of the base with one inch minimum clearance.

5-2.03(1)B MANHOLE RING AND COVER

Ductile iron rings and cast iron rings and covers shall conform to the City Standard Detail SS-030 and WSDOT Section 9-05.15.

Manhole rings shall be gray iron conforming to the requirements of AASHTO M 105 Grade 30B. Manhole cover shall be ductile iron conforming to ASTM A536, GR 80-55-06, and Olympic Foundry Part No. MH 30 or approved equal. Rings and covers shall be tested for accuracy of fit and shall be locked down with a 5 ⅝ inch stainless steel socket head cap screws. All castings shall have a bituminous coating.

5-2.03(1)C GROUT

Grout shall conform to WSDOT Section 9-20.3(2) Type 2 for non-shrink applications. Approved prepackaged materials are as follows:

1. Blueline
2. All-Patch
3. Rapid-Set

Jet-Set brand prepackaged grout shall not be allowed. The Contractor may also use an onsite blend comprised of two parts Portland cement Type I/II and fine aggregates conforming to WSDOT Section 9-03.2.

Material must withstand movement caused by thermal cycle changes and or settling of the structure. The grout shall be resistant to chemicals, most organic solvents, mild acids and alkali. The grout shall also be able to withstand freeze-thaw and moving load conditions.

5-2.03(2) CONSTRUCTION

5-2.03(2)A MANHOLE LOCATION

Sanitary sewer manholes shall be located so that the center of the frames and covers shall be in the middle of the traveled lanes on the west or south side of the street center lines, or as directed by the City to make sure frames and covers are not located in the tire track of a traveled lane. If sanitary sewers are in easements, they shall be in the middle of the easements and parallel to the easement lines unless otherwise directed by the City Engineer.

Sanitary manholes shall be installed at the end of each line; all changes in grade, size, or alignment; all intersections; and at distances not greater than 400 feet. Upon approval by the City Engineer, cleanouts may be installed at the end of a pipe run if less than 250’ from last manhole and no lateral connections are present between last manhole and end of run.

5-2.03(2)B MANHOLE DIAMETER

The sanitary manhole diameter depends on sizes, location and number of holes for pipes. The minimum diameter of manholes shall be 48 inches. Larger diameters are required for larger diameter sewers. The following configurations shall provide adequate shelves and room for maintenance and performing video inspections, and represent maximum pipe size and number for connection to sanitary manholes.

48" manhole
1. 2 connecting pipes, up to 12" diam.
2. 3 connecting pipes, up to 10" pipe

54" manhole
1. 2 connecting pipes, 15" diam. to 21" diam.
2. 3 connecting pipes, 10" diam. to 15" diam.
3. 4 connecting pipes, up to 12" diam.

72" manhole
1. 2 connecting pipes, 21" diam. to 24" diam.
2. 3 connecting pipes, 15" diam.
3. 4 connecting pipes, 15" diam.

For other pipe configurations and hydraulic concerns, the size of the manhole will be investigated on a case by case basis.

The minimum distance between knockout holes is 8 inch (48 inch or 54 inch manholes) and 12 inches (72 inch or 96 inch manholes) measured on the inside of the manhole. The knockout hole size is equal to the outer pipe diameter plus manhole wall thickness. A minimum access diameter of 24 inches shall be provided.

5-2.03(2)C MANHOLE DEPTH

The minimum sanitary manhole depth shall be 7 feet. The minimum depth of flat-top manholes may be used with the approval of the City. Where depths are more than 25 feet, the manhole base slabs shall be designed by a Professional Structural Engineer licensed in the State of Washington.

5-2.03(2)D MANHOLE INVERTS

Drop in invert elevation across the manhole shall typically be from 0.1 to 0.2 feet. Maximum allowable drop in invert elevation across the manhole shall be 2.0 feet.

Where a side sewer connects to a manhole, the invert of the side sewer shall be equal to or above the main sewer crown, but not to exceed 18 inches above the invert of the main sewer.

5-2.03(2)E MANHOLE FOUNDATION

Unless otherwise directed by the City, manhole bases (pre-cast base sections or cast-in-place) shall be placed on a minimum thickness of 6 inches of crushed surfacing base course meeting the requirements of WSDOT Section 9-03.9(3). The crushed surfacing base course must be compacted to 95% of standard density.

5-2.03(2)F MANHOLE SECTIONS

Manhole sections shall be placed and aligned so as to provide vertical sides and vertical alignment of the ladder steps. The completed manholes shall be rigid, true to dimension and watertight. Rough or uneven surfaces shall not be permitted inside or outside. All manhole sections shall be newly manufactured and free of breaks or cracks.

Manholes shall have eccentric cones aligned with the ladder access.

Joints between pre-cast manhole elements shall be rubber gasketed in a manner similar to pipe joints conforming to ASTM C-443 and they shall be grouted inside and outside. Joints in the pre-cast sections and for laying manhole adjustment rings shall be thoroughly wetted and completely filled with grout, smoothed both inside and outside. Grout shall be ½ inch minimum thick and 3 inch minimum on each side of joints. The exterior joints shall receive a water proof coating that overlaps the manufacturer's water proofing by a minimum of 1 inch when required by the City Inspector. Shop drawings of the joint design shall be submitted to the City Inspector for approval prior to manufacture.

Completed joints shall show no visible leakage and shall conform to the dimensional requirements of ASTM 478. They must be inspected before backfill.

5-2.03(2)G DROP MANHOLE

Drop manholes may be allowed if a sanitary sewer extension has no possibility of future extension to avoid unnecessary construction costs.

5-2.03(2)H LIFT HOLES AND STEEL LOOPS

All manhole lift holes shall be completely filled with non-shrink grout and smoothed both inside and outside to ensure water tightness. All steel loops must be removed, flush with the manhole structure. The stubs shall be covered with grout and smoothed. Rough or uneven surfaces shall not be permitted.

5-2.03(2)I MANHOLE CHANNELS

All manholes shall be channeled unless otherwise approved by the City. Channels shall match existing sewer grades. Channels shall converge with smooth transitions rounded into well finished junctions. Channel sides shall be carried up vertically to the crown elevation of

the various pipes. Concrete shelves between channels shall be smoothly finished, warped evenly and sloped to drain.

All manholes shall have a minimum drop of 0.10 feet to a maximum drop of 2.0 feet between the invert in and the invert out.

5-2.03(2)J PIPE CONNECTIONS AT MANHOLES

All pipes except PVC pipe entering or leaving the manhole shall be provided with flexible joints within ½ of a pipe diameter or 12 inches, whichever is greater, from the outside face of the manhole structure. The flexible joint shall be placed on firmly compacted bedding, particularly within the area of the manhole excavation which normally is deeper than that of the sewer trench. Special care shall be taken to see that the openings through which pipes enter the manhole are completely and firmly rammed full of non-shrink grout to ensure water tightness.

PVC pipe connected to manholes shall be provided with a manhole adapter complete with gasket and approved by the City Engineer. No PVC pipe joint shall be placed within 10 feet of the outside face of the manhole.

All stubbed out pipes placed through manhole walls for future connections shall be suitably plugged and blocked, with bell end left intact in a manner acceptable to the City.

5-2.03(2)K CONNECTION TO EXISTING MANHOLES

When connecting to an existing manhole, check that the existing manhole diameter is adequate to accommodate the new sewer mains. The existing manhole may need upgrade or repair at the Developer's expenses. If the existing manhole access is less than 24 inches in diameter, and/or concentric cone (manhole over 7 feet deep), the manhole shall be upgraded to include new 24 inch ring and cover and/or eccentric cone. If connection to an existing manhole places a channel directly under access opening, move the ladder and rotate the cone section to place the access the over concrete shelf.

Connection of new sewer pipe to an existing manhole shall be accomplished by using core drilled holes to match the size of pipe. Sawcutting of square openings or hammer drilling in manhole will not be acceptable. All openings must provide a minimum of 1 inch and a maximum of 2 inch clearance around the outside circumference of the pipe. Pipe connections shall use manhole adapter in accordance with Section 5-2.03(2)E of these Standards.

The transition of connecting channels shall be constructed so as not to interrupt existing flow patterns.

5-2.03(2)L PIPE PLUGGING AT CONNECTIONS

At the connection to the existing sewer system, Contractor shall physically plug all new sewer connections until all tests have been completed and the City approves the removal of the plugs. Plugs shall be secured in place in such a manner as to prevent them from traveling downstream in the pipe, in the event of a plug failure. If the Contractor fails to take necessary precautions to secure the plug, all costs associated with damage to downstream systems and backing up of sewer system shall be borne by the Contractor.

5-2.03(2)M SADDLE MANHOLE

The existing pipe shall not be cut until approval is received from the City.

5-2.03(2)N GRADE ADJUSTMENT

Grade adjustments of structures shall be in accordance with Section 2-??? of these Standards.

Manholes located in the public right-of-way, adjustment rings not less than 8 inches and not more than 26 inches shall be provided between the top of the cone (or slab for flat top manholes) and the bottom of the manhole frame. Grade adjustments shall be done within 24 hours after paving. Paving, repaving, and patching shall be completed within 72 hours.

Manhole rim elevations in unpaved areas (planters and grassed areas) shall be 4 inches to 6 inches above the finished grade or as directed by the City Inspector. See Standard Detail SS-070.

Locking cover shall be used for all manholes. Manholes shall not be located in areas subject to inflow. If a manhole must be located in an area subject to inflow in the opinion of the City Engineer, the manhole shall be equipped with a PRECO sewer guard watertight manhole insert or approved equal.

5-2.03(2)O CLEANOUT

All clean-outs in the City right-of-way or easements shall be extended to grade and a 3 feet x 3 feet x 4 inch concrete pad shall be installed around all clean-outs in unpaved areas.

5-2.03(2)P GREASE TRAP AND INTERCEPTOR

Grease traps and interceptors shall be installed and sized according to the criteria in the Uniform Plumbing Code. Grease trap and interceptors shall be located on private property, and they shall remain privately owned and maintained at the owner's or occupant's expense. These facilities shall be available for the inspection by the City's Public Works crews with a 24 hour verbal notification to the occupant or property owners.

5-2.03(2)Q FRAMES/LIDS/GRATES/COVERS

The cover or grating of a manhole or catch basin shall not be grouted to final grade until the final elevation of the pavement, gutter, ditch, or sidewalk in which it is to be placed has been established, and until permission thereafter is given by the City inspector to grout the cover or grating in place.

Lids, grates, and covers shall be seated properly to prevent rocking.

All lids and grates shall be locking type.

Round lids on all sewer structures shall have “Sewer” cast into the lid.

5-3 STANDARD DETAILS

The following standard details shall be included as part of these standards. In the event that reference to the standard details is not made in the above requirements, the standard details shall still apply.

Detail Number	Detail Name
SS - 010	Manhole T1
SS - 015	Manhole T2
SS - 020	Saddle Manhole
SS - 030	Manhole Cover
SS - 040	Manhole Ladder
SS - 050	Manhole Ladder Step
SS - 060	Manhole Drop Connection
SS - 070	Manhole Pad & Adjustment
SS -080	Sewer Cleanout
SS -090	Side Sewer Stub
SS - 100	New Service on Existing
SS -110	Back Water Valve
SS - 120	Trench Section
SS - 130	Monitoring Manhole

I RELEVANT PERMITS

I.1 NPDES AND RECLAIMED WATER WASTE DISCHARGE PERMIT NO. WA0022560, EFFECTIVE MARCH 1, 2014 (54 PAGES)

I.2 GENERAL PERMIT FOR BIOSOLIDS MANAGEMENT, DRAFT, EFFECTIVE 2015 (40 PAGES)

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Issuance Date: January 31, 2014
Effective Date: March 1, 2014
Expiration Date: February 28, 2019

National Pollutant Discharge Elimination System
Waste Discharge Permit No. WA0022560

State of Washington
DEPARTMENT OF ECOLOGY
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The State of Washington Reclaimed Water Act
Chapter 90.46 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.
and
State of Washington
DEPARTMENT OF HEALTH
In compliance with the provisions of
Chapter 90.46 and 43.70 Revised Code of Washington

CITY OF ARLINGTON
154 West Cox Avenue
Arlington, Washington 98223

is authorized to discharge in accordance with the Special and General Conditions that follow.

Plant Location: Arlington Water Reclamation Facility 108 W Haller Avenue, Arlington, WA	**Receiving Water**: Stillaguamish River
Treatment Type: Membrane Bioreactor and Biological Nutrient Removal	**Reclaimed Water Use Area Location:** Constructed Wetland in Arlington, WA

Kevin C. Fitzpatrick
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

Table of Contents

Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	First Submittal Date
Wastewater Discharge through Outfall #001 to Stillaguamish River			
S2.A(5) and S3.A(8)	Permit Renewal Application Requirements – Conventional Pollutants	Testing 3/permit cycle	September 1, 2018 - with the next permit renewal application
S2.A(5) and S3.A(8)	Permit Renewal Application Requirements – Priority Pollutants	Sampling and Testing 3/permit cycle: January 2015, July 2016, and May 2017	September 1, 2018 - with the next permit renewal application
S3.A(1)	Discharge Monitoring Report (DMR) for parameters in S2.A(1), (2), and (3)	Monthly	April 15, 2014
S3.E	Reporting Permit Violations	As necessary	
S3.F	Other Reporting	As necessary	
S4.B	Plans for Maintaining Adequate Capacity	As necessary	
S4.D	Notification of New or Altered Sources	As necessary	
S5.F	Bypass Notification	As necessary	
S5.G (a)(2)	Operations and Maintenance Manual Substantial Changes or Updates	As necessary	
S6.E	Industrial User Survey Submittal	1/permit cycle	September 1, 2018 - with the next permit renewal application
S8(3)	Effluent and Receiving Water Temperature Study Report	1/permit cycle	March 31, 2017
S9(1)	Effluent and Receiving Water Copper and Zinc Study - Sampling and Quality Assurance Plan	1/permit cycle	June 30, 2014
S9(4)	Effluent and Receiving Water Copper and Zinc Study Report	1/permit cycle	March 31, 2016
S10	Acute Toxicity Effluent Test Results with Permit Renewal Application	Testing during: August 2017 February 2018	Report submittal by September 1, 2018, with the next permit renewal application
S11	Chronic Toxicity Effluent Test Results with Permit Renewal Application	Testing during: November 2017 May 2018	Report submittal by September 1, 2018, with the next permit renewal application
S12	Application for Permit Renewal	1/permit cycle	September 1, 2018
Reclaimed Water Production and Use - Outfall #002			
S3.A	Discharge Monitoring Report (DMR) for parameters in R2.A	Monthly	April 15, 2014
S3.E	Reporting Permit Violations	As needed	
R3.F	Other Reporting	As necessary	
S3.G(4)	Cross Connection Control Coordination Letter	Annually	June 1, 2014
S5.C	Reclaimed Water Use Summary Plan Update	Annually	March 31, 2015
S5.D(2)	Sale and Distribution Agreements	As needed	
S5.E(3)	Service and Use Area Agreements	As needed	

Permit Section	Submittal	Frequency	First Submittal Date
S5.G	Net Environmental Benefit Report	1/permit cycle	September 1, 2018 - with the next permit renewal application
General Conditions			
G1	Notice of Change in Authorization	As necessary	
G4	Reporting Planned Changes	As necessary	
G5	Engineering Report for Construction or Modification Activities	As necessary	
G7	Notice of Permit Transfer	As necessary	
G10	Duty to Provide Information	As necessary	
G13	Payment of Fees	As assessed	
G20	Compliance Schedules	As necessary	
G21	Contract Submittal	As necessary	

Special Conditions

S1. Discharge Limits

S1.A. Effluent Limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit violates the terms and conditions of this permit.

Beginning on the effective date of this permit, the Permittee may discharge treated municipal wastewater to the Stillaguamish River at the permitted location subject to compliance with the following limits:

Effluent Limits: Outfall 001 Latitude: 48.203320 Longitude -122.129951		
Parameter	**Average Monthly [a]**	
Flow (July through September)	2.01 million gallons per day (MGD)	
Parameter	**Average Monthly [a]**	**Average Weekly [b]**
Biochemical Oxygen Demand (5-day) (BOD_5)	30 milligrams/liter (mg/L), 500 pounds/day (lbs/day) 85% removal of influent BOD_5	45 mg/L, 751 lbs/day
Total Suspended Solids (TSS)	30 mg/L, 500 lbs/day 85% removal of influent TSS	45 mg/L, 751 lbs/day
Parameter	**Minimum**	**Maximum**
pH	6.0 standard units	9.0 standard units
Parameter	**Monthly Geometric Mean**	**Weekly Geometric Mean**
Fecal Coliform Bacteria [c]	39/100 milliliter (mL)	100/100 mL
[a]	Average monthly effluent limit means the highest allowable (arithmetic) average of daily discharges over a calendar month.	
[b]	Average weekly discharge limitation means the highest allowable (arithmetic) average of daily discharges over a calendar week.	
[c]	Ecology provides directions to calculate the monthly and the weekly geometric mean in publication No. 04-10-020, Information Manual for Treatment Plant Operators available at: http://www.ecy.wa.gov/pubs/0410020.pdf	

S1.B. Mixing Zone Authorization

Mixing Zone for Outfall 001

The mixing zone boundaries are based on the allowable percentage of the ambient 7Q20 flows. The allowable flow in the chronic mixing zone is 25% of the 7Q20 ambient flow. The allowable flow in the acute mixing zone is 2.5% of the 7Q20 ambient flow.

The maximum allowable ambient flows for the chronic mixing zone are:

(i) 67.75 cfs for the July through September period.

(ii) 95.0 cfs for the October through June period.

The maximum allowable ambient flows for the acute mixing zone are:

(i) 6.78 cfs for the July through September period.

(ii) 9.5 cfs for the October through June period.

The mixing zones extend from the discharge port to the top of the water surface.

Available Dilution (Dilution Factors)		
	July through September	October through June
Acute Aquatic Life Criteria	3	3
Chronic Aquatic Life Criteria	23	24
Human Health Criteria - Non-carcinogen	23	24

S2. Monitoring Requirements

S2.A. Monitoring Schedule

The Permittee must monitor in accordance with the following schedule and the requirements specified in Appendix A.

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
(1) Wastewater Influent			
Wastewater Influent means the raw sewage flow from the collection system into the treatment facility. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant.			
Flow	MGD	Continuous [a]	Metered/recorded
Biochemical Oxygen Demand (BOD_5)	mg/L	1/week	24-hr composite [b]
	lbs/day		Calculated [c]
Total Suspended Solids (TSS)	mg/L	1/week	24-hr composite [b]
	lbs/day		Calculated [c]
(2) Final Wastewater Effluent			
Final Wastewater Effluent means wastewater exiting the last treatment process or operation. This is after or at the exit from the UV disinfection process.			
Flow	MGD	Continuous [a]	Metered/recorded
BOD_5	mg/L	1/week	24-hr composite [b]
	lbs/day	1/week	Calculated [c]
	% removal	1/month	Calculated [d]
TSS	mg/L	1/week	24-hr composite [b]
	lbs/day	1/week	Calculated [c]
	% removal	1/month	Calculated [d]
Fecal Coliform [f]	# /100 ml	1/week	Grab [e]
pH [g]	Standard Units	Daily	Grab [e]
Total Phosphorus	mg/L as P	1/week	24-hr composite [b]
	lbs/day as P	1/week	Calculated [c]
(3) Effluent Characterization – Final Wastewater Effluent			
Soluble Reactive Phosphorus	mg/L as P	1/month	24-hr composite [b]
Total Ammonia	mg/L as N	1/month	24-hr composite [b]

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
Nitrate plus Nitrite -Nitrogen	mg/L as N	1/month	24-hr composite [b]
Total Kjeldahl Nitrogen (TKN)	mg/L as N	1/month	24-hr composite [b]
(4) Whole Effluent Toxicity Testing – Final Wastewater Effluent			
Acute Toxicity Testing	--------	2/permit cycle: August 2017 and February 2018	24-hr composite [b]
Chronic Toxicity Testing	--------	2/permit cycle: November 2017 and May 2018	
Additional requirements specified in Special Conditions S10 and S11.			
(5) Permit Renewal Application Requirements – Final Wastewater Effluent The final effluent must be analyzed for the following parameters during the permit cycle. The analysis results must be submitted with the next permit renewal application - EPA Form 3510-2A. The Permittee must record and report the wastewater treatment plant flow discharged on the day it collects the sample for priority pollutant testing with the discharge monitoring report.			
Dissolved Oxygen	mg/L	3/permit cycle	
Oil and Grease			
Total Dissolved Solids			
Cyanide	µg/L	3/permit cycle: January 2015, July 2016, and May 2017	Grab
Total Phenolic Compounds	µg/L		Grab
Priority Pollutants (PP) – Total Metals	µg/L;nanograms(ng/L) for Mercury		24-hr composite [b] Grab for Mercury [e]
PP – Volatile Organic Compounds	µg/L		Grab [e]
PP – Acid-extractable Compounds	µg/L		24-hr composite [b]
PP – Base-neutral Compounds	µg/L		24-hr composite [b]
(6) Receiving Water Study of Temperature			
As specified in Special Condition S8.			
(7) Receiving Water Study of Copper and Zinc			
As specified in Special Condition S9.			

[a]	Continuous means uninterrupted except for brief lengths of time for calibration, power failure, or unanticipated equipment repair or maintenance.
[b]	24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.
[c]	Calculated means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in MGD) X Conversion Factor (8.34) = lbs/day
[d]	% removal = $\frac{\text{Influent concentration (mg/L)} - \text{Effluent concentration (mg/L)}}{\text{Influent concentration (mg/L)}} \times 100$ Calculate the percent (%) removal of BOD_5 and TSS using the above equation.
[e]	Grab means an individual sample collected over a fifteen (15) minute, or less, period.
[f]	Report a numerical value for fecal coliforms following the procedures in Ecology's *Information Manual for Wastewater Treatment Plant Operators*, Publication Number 04-10-020 available at: http://www.ecy.wa.gov/programs/wq/permits/guidance.html . Do not report a result as too numerous to count (TNTC).
[g]	Report the daily pH and the minimum and maximum for the monitoring period.

S2.B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501-503]) unless otherwise specified in this permit . Ecology may only specify alternative methods for parameters without permit limits and for those parameters without an EPA approved test method in 40 CFR Part 136.

S2.C. Flow Measurement Devices

The Permittee must:

1. Select and use appropriate flow measurement device and methods consistent with accepted scientific practices.
2. Install and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.
3. Calibrate these devices at the frequency recommended by the manufacturer and at a minimum frequency of at least one calibration per year.
4. Maintain calibration records for at least three years.

S2.D. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, temperature, pH, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for pH if it must receive accreditation or registration for other parameters.

S2.E. Request for Reduction in Monitoring

The Permittee may request a reduction of the sampling frequency after twelve (12) months of monitoring. Ecology will review each request and at its discretion grant the request when it reissues the permit or by a permit modification.

The Permittee must:

1. Provide a written request.
2. Clearly state the parameters for which it is requesting reduced monitoring.
3. Clearly state the justification for the reduction.

S3. Reporting and Recording Requirements

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WQWebDMR. Include data for each of the parameters tabulated in Special Conditions S2.A(1), (2) and (3), and as required by the form. Report a value for each day sampling occurred and for the summary values (when applicable) included on the electronic form.

   To find out more information and to sign up for WQWebDMR go to: http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.
3. Report single analytical values below detection as "less than the detection level (DL)" by entering < followed by the numeric value of the detection level (e.g. < 2.0) on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments or in the location provided.
4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A.
5. Calculate average values (unless otherwise specified in the permit) using:
   a. The reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
   b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample for the reporting period.
   c. Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.
6. Ensure that DMRs for the parameters tabulated in Special Conditions S2.A.(1), (2) and (3) are electronically submitted no later than the 15th day of the following month.

7. Submit reports to Ecology online using Ecology's electronic WQWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:

   Water Quality Permit Coordinator
   Department of Ecology
   Northwest Regional Office
   3190 160th Avenue SE
   Bellevue, WA 98008-5452

8. Submit permit renewal application monitoring requirement data [Parameters listed in Conditions S2.A(5)] in the next permit renewal application form. For the priority pollutants analyses required in this condition, the Permittee must submit an electronic PDF copy of the laboratory report, when submitting the next permit renewal application form.

9. Include the following information (for priority pollutant organic and metal parameters lab reports): sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. The Permittee must submit a copy of the contract laboratory report to provide this information. Analytical results from samples sent to a contract laboratory must also include information on the chain of custody, QA/QC results, and documentation of accreditation for the parameter.

S3.B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

S3.C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

S3.D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

S3.E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

1. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

a. Immediate Reporting

The Permittee must immediately report to Ecology and the Local Health Jurisdiction (at the numbers listed below), all:

- Failures of the disinfection system.
- Collection system overflows.
- Plant bypasses resulting in a discharge.
- Any other failures of the sewage system (pipe breaks, etc).

Northwest Regional Office	425-649-7000
Snohomish Health District, Environmental Health Division	425-339-5200 (Business Hours)

b. Twenty-four-hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at the telephone number listed above, within 24 hours from the time the Permittee becomes aware of any of the following circumstances:

1. Any noncompliance that may endanger health or the environment, unless previously reported under immediate reporting requirements.
2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (See Part S5.F, "Bypass Procedures").
3. Any upset that causes an exceedance of an effluent limit in the permit (See G.15, "Upset").
4. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.
5. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.

c. Report Within Five Days

The Permittee must also submit a written report within five days of the time that the Permittee becomes aware of any reportable event under subparts a or b, above. The report must contain:

1. A description of the noncompliance and its cause.
2. The period of noncompliance, including exact dates and times.
3. The estimated time the Permittee expects the noncompliance to continue if not yet corrected.
4. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
5. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

d. Waiver of Written Reports

Ecology may waive the written report required in subpart c, above, on a case-by-case basis upon request if the Permittee has submitted a timely oral report.

e. All other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24 hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in subpart c, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

f. Report Submittal

The Permittee must submit reports to the address listed in S3.A(7).

S3.F. Other Reporting

a. Spills of Oil or Hazardous Materials

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website:
http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

b. Failure to submit Relevant or Correct Facts

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

S3.G. Maintaining a Copy of this Permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. Facility Loading

S4.A. Design Criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

Maximum Month Design Flow (MMDF)	2.67 MGD
BOD_5 Influent Loading for Maximum Month	8,284 lb/day
TSS Influent Loading for Maximum Month	8,284 lb/day

S4.B. Plans for Maintaining Adequate Capacity

a. Conditions triggering Plan Submittal

The Permittee must submit a plan and a schedule for continuing to maintain capacity to Ecology when:

1. The actual flow or waste load reaches 85 percent of any one of the design criteria in S4.A for three consecutive months.
2. The projected plant flow or loading would reach design capacity within five years.

b. Plan and Schedule Content

The plan and schedule must identify the actions necessary to maintain adequate capacity for the expected population growth and to meet the limits and requirements of the permit. The Permittee must consider the following topics and actions in its plan.

1. Analysis of the present design and proposed process modifications.
2. Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system.
3. Limits on future sewer extensions or connections or additional waste loads.
4. Modification or expansion of facilities.
5. Reduction of industrial or commercial flows or waste loads

Engineering documents associated with the plan must meet the requirements of WAC 173-240-060, "Engineering Report," and be approved by Ecology prior to any construction.

S4.C. Duty to Mitigate

The Permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S4.D. Notification of New or Altered Sources

1. The Permittee must submit written notice to Ecology whenever any new discharge or a substantial change in volume or character of an existing discharge into the wastewater treatment plant is proposed which:
   a. Would interfere with the operation of, or exceed the design capacity of, any portion of the wastewater treatment plant.
   b. Is not part of an approved general sewer plan or approved plans and specifications.
   c. Is subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act.
2. This notice must include an evaluation of the wastewater treatment plant's ability to adequately transport and treat the added flow and/or waste load, the quality and volume of effluent to be discharged to the treatment plant, and the anticipated impact on the Permittee's effluent [40 CFR 122.42(b)].

S5. Operation and Maintenance

The Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes keeping a daily operation logbook (paper or electronic), adequate laboratory controls, and appropriate quality assurance procedures. This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.

S5.A. Certified Operator

This permitted facility must be operated by an operator certified by the state of Washington for at least a Class III plant. This operator must be in responsible charge of the day-to-day operation of the wastewater treatment plant. An operator certified for at least a Class II plant must be in charge during all regularly scheduled shifts.

S5.B. Operation and Maintenance Program

The Permittee must:

1. Institute an adequate operation and maintenance program for the entire sewage system.

2. Keep maintenance records on all major electrical and mechanical components of the treatment plant, as well as the sewage system and pumping stations. Such records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed.
3. Make maintenance records available for inspection at all times.

S5.C. Short-term Reduction

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out in a manner approved by Ecology.

If a Permittee contemplates a reduction in the level of treatment that would cause a violation of permit discharge limits on a short-term basis for any reason, and such reduction cannot be avoided, the Permittee must:

1. Give written notification to Ecology, if possible, thirty (30) days prior to such activities.
2. Detail the reasons for, length of time of, and the potential effects of the reduced level of treatment.

This notification does not relieve the Permittee of its obligations under this permit.

S5.D. Electrical Power Failure

The Permittee must ensure that adequate safeguards prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include, but are not limited to, alternate power sources, standby generator(s), or retention of inadequately treated wastes.

The Permittee must maintain Reliability Class I (EPA 430/9-74-001) at the wastewater treatment plant. Reliability Class I requires a backup power source sufficient to operate all vital components and critical lighting and ventilation during peak wastewater flow conditions.

S5.E. Prevent Connection of Inflow

The Permittee must strictly enforce its sewer ordinances and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

S5.F. Bypass Procedures

This permit prohibits a bypass, which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

   This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

2. Bypass which is unavoidable, unanticipated, and results in noncompliance of this permit.

   This permit authorizes such a bypass only if:

   a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

   b. No feasible alternatives to the bypass exist, such as:

      - The use of auxiliary treatment facilities.
      - Retention of untreated wastes.
      - Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
      - Transport of untreated wastes to another treatment facility or preventative maintenance), or transport of untreated wastes to another treatment facility.

   c. Ecology is properly notified of the bypass as required in Special Condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

   a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:

      - A description of the bypass and its cause.
      - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
      - A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
      - The minimum and maximum duration of bypass under each alternative.
      - A recommendation as to the preferred alternative for conducting the bypass.

- The projected date of bypass initiation.
- A statement of compliance with SEPA.
- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

S5.G. Operations and Maintenance (O&M) Manual

a. O&M Manual Submittal and Requirements

The Permittee must:

1. Review the O&M Manual at least annually.
2. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual. The Permittee must submit an electronic copy (preferably as a PDF).
3. Keep the approved O&M Manual at the permitted facility.
4. Follow the instructions and procedures of this manual.

b. O&M Manual Components

When the Permittee updates the O&M manual for the permitted facility, the updated manual must meet the content requirements of WAC 173-240-080 (4) and be consistent with the guidance in Table G1-3 in the *Criteria for Sewage Works Design* (Orange Book), 2008 Version. The O&M Manual must include:

1. Emergency procedures for cleanup in the event of wastewater system upset or failure.
2. A review of system components which if failed could pollute surface water or could impact human health. Provide a procedure for a routine schedule of checking the function of these components.
3. Wastewater system maintenance procedures that contribute to the generation of process wastewater.
4. Reporting protocols for submitting reports to Ecology to comply with the reporting requirements in the discharge permit.
5. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).
6. The treatment plant process control monitoring schedule.
7. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.
8. Specify other items on case-by-case basis such as O&M for collection systems pump stations, lagoon liners, etc.

S6. Pretreatment

S6.A. General Requirements

The Permittee must work with Ecology to ensure that all commercial and industrial users of the publicly owned treatment works (POTW) comply with the pretreatment regulations in 40 CFR Part 403 and any additional regulations that the Environmental Protection Agency (U.S. EPA) may promulgate under Section 307(b) (pretreatment) and 308 (reporting) of the Federal Clean Water Act.

S6.B. Duty to Enforce Discharge Prohibitions

1. Under federal regulations (40 CFR 403.5(a) and (b)), the Permittee must not authorize or knowingly allow the discharge of any pollutants into its POTW which may be reasonably expected to cause pass through or interference, or which otherwise violate general or specific discharge prohibitions contained in 40 CFR Part 403.5 or WAC-173-216-060.

2. The Permittee must not authorize or knowingly allow the introduction of any of the following into their treatment works:
   a. Pollutants which create a fire or explosion hazard in the POTW (including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21).
   b. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, or greater than 11.0 standard units, unless the works are specifically designed to accommodate such discharges.
   c. Solid or viscous pollutants in amounts that could cause obstruction to the flow in sewers or otherwise interfere with the operation of the POTW.
   d. Any pollutant, including oxygen-demanding pollutants, (BOD_5, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.
   e. Petroleum oil, non-biodegradable cutting oil, or products of mineral origin in amounts that will cause interference or pass through.
   f. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity which may cause acute worker health and safety problems.
   g. Heat in amounts that will inhibit biological activity in the POTW resulting in interference but in no case heat in such quantities such that the temperature at the POTW headworks exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless Ecology, upon request of the Permittee, approves, in writing, alternate temperature limits.
   h. Any trucked or hauled pollutants, except at discharge points designated by the Permittee.
   i. Wastewaters prohibited to be discharged to the POTW by the Dangerous Waste Regulations (chapter 173-303 WAC), unless authorized under the Domestic Sewage Exclusion (WAC 173-303-071).
3. The Permittee must also not allow the following discharges to the POTW unless approved in writing by Ecology:
   a. Noncontact cooling water in significant volumes.
   b. Stormwater and other direct inflow sources.
   c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment, or would not be afforded a significant degree of treatment by the system.
   d. The Permittee must notify Ecology if any industrial user violates the prohibitions listed in this section (S6.B), and initiate enforcement action to promptly curtail any such discharge.

S6.C. Wastewater Discharge Permit Required

The Permittee must

1. Establish a process for authorizing non-domestic wastewater discharges that ensures all SIUs in all tributary areas meet the applicable state waste discharge permit (SWDP) requirements in accordance with chapter 90.48 RCW and chapter 173-216 WAC.
2. Immediately notify Ecology of any proposed discharge of wastewater from a source, which may be a significant industrial user (SIU) [see fact sheet definitions or refer to 40 CFR 403.3(t)(i)(ii)].
3. Require all SIUs to obtain a SWDP from Ecology prior to accepting their non-domestic wastewater, or require proof that Ecology has determined they do not require a permit.
4. Require the documentation as described in S6.C.3 at the earliest practicable date as a condition of continuing to accept non-domestic wastewater discharges from a previously undiscovered, currently discharging and unpermitted SIU.
5. Require sources of non-domestic wastewater, which do not qualify as SIUs but merit a degree of oversight, to apply for a SWDP and provide it a copy of the application and any Ecology responses.
6. Keep all records documenting that its users have met the requirements of S6.C.

S6.D. Identification and Reporting of Existing, New, and Proposed Industrial Users

1. The Permittee must take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging or proposing to discharge to the Permittee's sewer system (see Appendix C of the fact sheet for definitions).
2. Within 30 days of becoming aware of an unpermitted existing, new, or proposed industrial user who may be a significant industrial user (SIU), the Permittee must notify such user by registered mail that, if classified as an SIU, they must apply to Ecology and obtain a State Waste Discharge Permit. The Permittee must send a copy of this notification letter to Ecology within this same 30-day period.
3. The Permittee must also notify all Potential SIUs (PSIUs), as they are identified, that if their classification should change to an SIU, they must apply to Ecology for a State Waste Discharge Permit within 30 days of such change.

S6.E. Industrial User Survey

The Permittee must complete an industrial user survey listing all SIUs and potential significant industrial users (PSIUs) discharging to the POTW. The Permittee must submit the survey to Ecology with the Permit Renewal Application by September 1, 2018. At a minimum, the Permittee must develop the list of SIUs and PSIUs by means

of a telephone book search, a water utility billing records search, and a physical reconnaissance of the service area. Information on PSIUs must include, at a minimum, the business name, telephone number, address, description of the industrial process(s), and the known wastewater volumes and characteristics.

S7. Solid Wastes

S7.A. Solid Waste Handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

S7.B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S8. Receiving Water Study of Temperature

The Permittee must collect effluent and receiving water information necessary to determine if the effluent has a reasonable potential to cause a violation of the water quality standards for temperature. If reasonable potential exists, Ecology will use this information to calculate effluent limits.

The Permittee must:

1. Conduct the temperature study during the months of July through September in 2015 and 2016.
2. Conduct all sampling and analysis in accordance with the Ecology approved Sampling Quality Assurance Project Plan.
3. Submit the results of the study in a report to Ecology by March 31, 2017. The Permittee must submit electronic copies (in WORD and PDF).

S9. Receiving Water Study of Copper and Zinc

The Permittee must collect effluent and receiving water information necessary to determine if the effluent has a reasonable potential to cause a violation of the water quality standards for copper and zinc. If reasonable potential exists, Ecology will use the study information to calculate effluent limits.

The Permittee must:

1. Submit a sampling and quality assurance plan for Ecology review and approval by June 30, 2014. The Permittee must submit electronic copies (in WORD and PDF).
2. The sampling and quality assurance plan must include, at minimum, sampling and analysis protocols for copper, zinc, total suspended solids, hardness, and pH.

3. Conduct all chemical analysis in accordance with the Ecology approved sampling and quality assurance plan and using the methods and the detection levels identified in Appendix A.
4. Submit the results of the study in a report to Ecology by March 31, 2016. The Permittee must submit electronic copies (in WORD and PDF).

S10. Acute Toxicity

S10.A. Testing when there is no Permit Limit for Acute Toxicity

The Permittee must:

1. Conduct acute toxicity testing on final effluent during the months shown in the following table.
2. Submit the results to Ecology with the permit renewal application.
3. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100% effluent and a control.
4. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method	Test Date	Written Report Submittal Date
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012	August 2017 February 2018	September 1, 2018 - with the next permit renewal application
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*			

S10.B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.
2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in Subsection C and the Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in Section A or pristine natural water of sufficient quality for good control performance.
6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). The ACEC equals 33.3% effluent.
8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

S11. Chronic Toxicity

S11.A. Testing when there is no Permit Limit for Chronic Toxicity

The Permittee must:

1. Conduct chronic toxicity testing on final effluent during the months shown in the following table.
2. Submit the results to Ecology with the permit renewal application.
3. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 33.3% effluent. The series of dilutions should also contain the CCEC of 4.3% effluent July through September, and 4.2% October through June.
4. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.

5. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method	Test Date	Written Report Submittal Date
Fathead minnow survival and growth	*Pimephales promelas*	EPA-821-R-02-013	November 2017; May 2018	September 1, 2018 - with the next permit renewal application
Water flea survival and reproduction	*Ceriodaphnia dubia*			

S11.B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.
2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*
4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in Section C and the Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in Subsection C or pristine natural water of sufficient quality for good control performance.
6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations

that are closest to them in the dilution series or be extra effluent concentrations. The ACEC equals 33.3% effluent. The CCEC equals 4.4% effluent (July through September) and 4.2% (October through June).

8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

S12. Application for Permit Renewal or Modification for Facility Changes

The Permittee must submit an application for renewal of this permit by September 1, 2018. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

The Permittee must also submit a new application or supplement at least one hundred eighty (180) days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

Reclaimed Water Conditions

Beginning on the effective date of this permit and lasting through its expiration date, all water produced by the Permittee for reclamation under this permit must comply with the Special Conditions (S.) and General Conditions (G.) as well as the Reclaimed Water Conditions (R.) of this permit.

R1. Reclaimed Water Limits

All reclaimed water distribution and activities authorized by this permit must be consistent with the terms and conditions of this permit. The distribution of reclaimed water containing any of the following constituents more frequently than, or at a concentration in excess of, that authorized by this permit constitutes a violation of the terms and conditions of this permit.

The Permittee is authorized to produce Class A reclaimed water at its water reclamation facility, and use it on the Permittee's constructed wetland as needed during the plant growing season to provide for wetland functions and maintain wetland vegetation growth. The location of the Permittee's constructed wetland is identified in Condition R5.A of this permit.

The production, distribution, and use of reclaimed water must comply with all specific conditions and requirements of the Washington State Water Reclamation and Reuse Standards, 1997, and is subject to the limits listed in Table 1. The Permittee must operate the system in accordance with the permit conditions to ensure statutory requirements are met including protecting the existing and future beneficial uses of waters of the State.

Table 1. Reclaimed Water Limits

Class A Reclaimed Water Limits – Outfall 002			
Class A Reclaimed Water Prior to Distribution			
BOD_5	**Average Monthly** [a] 30 mg/L	**Average Weekly** [b] 45 mg/L	**Average Annual** [c] 20 mg/L
TSS	**Average Monthly** [a] 30 mg/L	**Average Weekly** [b] 45 mg/L	**Average Annual** [c] 20 mg/L
Turbidity	**Average Monthly** 0.2 NTU [d]		**Instantaneous Maximum** 0.5 NTU [e]
Total Coliform	**7-day Median** [f] 2.2 / 100 ml		**Sample Maximum** [g] 23 / 100 ml
pH [h]	**Minimum** 6.0 standard units		**Maximum** 9.0 standard units

[a]	Average monthly effluent limit is defined as the highest allowable (arithmetic) average of daily discharges over a calendar month.
[b]	Average weekly limits are based on an arithmetic mean of the samples taken during a calendar week.
[c]	Average annual effluent limit is defined as the highest allowable (arithmetic) average of daily discharges over a calendar year.
[d]	Compliance with the average operating turbidity limit of 0.2 NTU is based on arithmetic mean of all measurements read during the month.
[e]	The instantaneous maximum turbidity (NTU) is defined as the value not to be exceeded by a continuous measurement. Turbidity excursions lasting less than 5 minutes are allowed and not considered a permit violation.

f	The median number of total coliform organisms in the reclaimed water after disinfection must not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which reclaimed water was distributed. This value is **NOT** an arithmetic average or geometric average. Median is defined as the middle number of a group of numbers; that is, half the numbers have values that are greater than the median, and half the numbers have values that are less than the median. The 7-day median must include all the analytical results from samples collected the previous 7 days. If there is an even number of values over the 7 days, the Permittee must report the larger of the two median values.
g	The number of total coliform organisms must not exceed 23 per 100 milliliters in any single sample.
h	The Permittee must report the maximum and minimum pH monthly.

The Class A reclaimed water must contain dissolved oxygen.

All Class A reclaimed water must at all times be oxidized, filtered via membranes, and disinfected.

R2. Monitoring Requirements

R2.A. Class A Reclaimed Water Monitoring

The Permittee must monitor the reclaimed water (RW) that will be or is being distributed in accordance with the schedule in Table 2 and the requirements specified in Appendix A.

Table 2. Monitoring Schedule

Parameter	Units	Sample Location Point	Sampling Frequency	Sample Type
Distributed Flow	Gallons per day (GPD)	Reclaimed Water Pump Station	Continuous	Metered
BOD_5	mg/L	Immediately downstream of UV Disinfection System	1/week	24-hr composite [a]
TSS	mg/L		1/week	24-hr composite [a]
Total Coliform	# / 100 mL		1/day	Grab [b]
pH	Standard units		1/day	Grab [b]
Dissolved Oxygen	mg/L		1/day	Grab [b]
Total Ammonia [c]	mg/L as N		1/month	24-hr Composite [a]
Total Kjeldahl Nitrogen [c]	mg/L as N		1/month	24-hr Composite [a]
Total Phosphorus [c]	mg/L as P		1/month	24-hr Composite [a]
Turbidity	NTU		Continuous [d]	On-line analyzer with recorder
UV Dose [e]	mJ / cm^2	UV Disinfection System	1/day	Measure
UV Transmittance [e]	%	UV Disinfection System	1/day	Measure

a	24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample. When the Permittee monitors the effluent for BOD_5 and TSS as a requirement of Permit Condition S2.A, the Permittee does not need to repeat these analyses for the reclaimed water distributed to the wetland.
b	Grab means an individual sample collected over a fifteen (15)-minute, or less, period.
c	Nutrient monitoring conducted for the final effluent discharge to the Stillaguamish River in accordance with Condition S2.A(3) can be used by the Permittee to fulfill this monitoring requirement.

	Parameter	Units	Sample Location Point	Sampling Frequency	Sample Type
[d]	Effluent turbidity analysis must be performed by a continuous recording turbidimeter. "Continuous" means uninterrupted except for brief periods of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. The Permittee must report the maximum value that exceeds five minutes during times of RW production. The Permittee must sample every four hours when continuous monitoring is not possible.				
[e]	The Permittee must report the minimum UV dose and minimum UV transmittance monthly.				

R2.B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501-503]) unless otherwise specified in this permit . Ecology may only specify alternative methods for parameters without permit limits and for those parameters without an EPA approved test method in 40 CFR Part 136.

R2.C. Flow Measurement and Continuous Monitoring Devices

The Permittee must:

1. Select and use appropriate flow measurement and continuous monitoring devices and methods consistent with accepted scientific practices.
2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.
3. Calibrate flow measurement devices at the frequency recommended by the manufacturer and at a minimum frequency of at least one calibration per year.
4. Verify the accuracy of turbidimeters at least once every two weeks during times of reclaimed water production.
5. Maintain calibration records for at least three years.

R2.D. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by Ecology is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* Flow, pH, dissolved oxygen, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for pH if it must receive accreditation or registration for other parameters.

R3. Reporting and Record Keeping Requirements

The Permittee must monitor and report in accordance with the following conditions. The falsification of information submitted to Ecology constitutes a violation of the terms and conditions of this permit.

R3.A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

a. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WQWebDMR. Include data for each of the parameters tabulated in Special Condition R2.A and as required by the form. Report a value for each day sampling occurred and for the summary values (when applicable) included on the electronic form.

   To find out more information and to sign up for WQWebDMR go to:
   http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

b. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.

c. Report single analytical values below detection as "less than the detection level (DL)" by entering < followed by the numeric value of the detection level (e.g. < 2.0) on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments or in the location provided.

d. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A.

e. Calculate average values (unless otherwise specified in the permit) using:

   a. The reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.

   b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample for the reporting period.

   c. Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.

f. Ensure that DMRs for the parameters tabulated in Special Condition R2.(A) are electronically submitted no later than the 15th day of the following month.

g. Submit reports to Ecology online using Ecology's electronic WQWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:

   Water Quality Permit Coordinator
   Department of Ecology
   Northwest Regional Office
   3190 160th Avenue SE
   Bellevue, WA 98008-5452

R3.B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

R3.C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place and time of sampling;
2. The individual who performed the sampling or measurement;
3. The dates the analyses were performed;
4. The individual who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of all analyses.

R3.D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition R2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

R3.E. Reporting Permit Violations

1. The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

    a. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.

    b. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

2. Follow the established protocols for managing the system regarding sampling and wasting of reclaimed waters.

3. Within 24 hours of discovering the noncompliance condition, notify the Department of Ecology (Ecology) of the failure to comply. Notify the local health authorities of any discharge of inadequately treated reclaimed water. The Permittee must notify:

- Ecology by calling Ecology's ERTS (Environmental Reporting Tracking System) at 425-649-7000.
- Snohomish Health District, Environmental Health Division by calling 425-339-5200 (business hours).

4. Submit a detailed, written report to Ecology with that month's DMR submittal, unless requested earlier by Ecology, describing the nature of the violation, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of the resampling, and any other pertinent information.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

R3.F. Other Reporting

The Permittee must report all instances of noncompliance, not required to be reported immediately or within 24 hours, at the time that monitoring reports for R3.A ("Reporting") are submitted. The reports must contain the information listed in paragraph E4, above.

R3.G. Reclaimed Water Operational Records

The Permittee must:

1. Keep maintenance records for a minimum of three (3) years, on all major electrical and mechanical components of the water reclamation facility, distribution, and use areas. Records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed. These maintenance records must be available for inspection at all times.

2. Maintain operating records at the water reclamation facility or within a central depository within the Permittee's operating agency for a minimum of three (3) years. These records must include records of all analyses performed, records of operational problems, unit process and equipment breakdowns, and diversions to emergency storage or disposal; and all corrective or preventative action taken.

3. Record and maintain separate record files of process or equipment failures triggering an alarm that is key to maintaining reliability of reclaimed water quality. The recorded information must include the time and cause of failure and corrective action taken.

4. Cross Connection Control Coordination: Beginning June 1, 2014 and annually thereafter, the Permittee must provide to the Departments of Health and Ecology a letter confirming that the Permittee has contacted all the public water supplier(s) where reclaimed water is being used in their service area. The letter must indicate where reclaimed water is used and for what purpose, and remind the water suppliers(s) of their duty to comply with the cross connection control report requirements from the Department of Health.

R3.H. Maintaining a Copy of this Permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

R4. Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes keeping a daily operation logbook (paper or electronic), adequate laboratory controls, and appropriate quality assurance procedures. This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.

R4.A. Certified Operator

When producing and distributing Class A reclaimed water, this permitted facility must be operated by an operator certified by the state of Washington for at least a Class III plant. An operator certified for at least a Class III plant must be in charge during all regularly scheduled shifts, and in responsible charge of the day-to-day operation of the water reclamation facility.

R4.B. O & M Program

The Permittee must:

1. Institute an adequate operation and maintenance program for the entire water reclamation system.
2. Keep maintenance records on all major electrical and mechanical components of the reclaimed water facility. Such records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed.
3. Make maintenance records available for inspection at all times.
4. Maintain, at all times, the water reclamation facility, Permittee-owned distribution system, and keep all equipment in a reliable operating condition.

R4.C. Electrical Power Failure

The Permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the water reclamation facility. The power supply must be provided with one of the following reliability features to assure that inadequately treated wastewater is not discharged to distribution or use areas:

1. An alarm and a standby power source.
2. An alarm and automatically actuated alternative disposal provisions.

R4.D. Decontamination of Reclaimed Water Conveyance System

The Permittee must:

1. Have a procedure contained in the Operations and Maintenance Manual, to decontaminate reclaimed water piping and other appurtenances following incidents when the permit limits, as listed in Table 1, are exceeded.
2. Monitor, and if necessary disinfect, the reclaimed water pipelines and other appurtenances that were exposed to reclaimed water that exceeds the permit limits.
3. Ensure that reclaimed water piping and other appurtenances are decontaminated prior to returning the facilities to reclaimed water service.

R4.E. Operations and Maintenance (O&M) Manual

a. O&M Manual Submittal and Requirements

The Permittee must:

1. Review the O&M Manual at least annually.
2. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual. The Permittee must submit an electronic copy (preferably as a PDF).
3. Keep the approved O&M Manual at the permitted facility.
4. Follow the instructions and procedures of this manual.

b. O&M Manual Components

When the Permittee updates the O&M manual for the permitted facility, the updated manual must meet the content requirements of WAC 173-240-080 (4) and be consistent with the guidance in Table G1-3 in the *Criteria for Sewage Works Design* (Orange Book), 2008 Version. The O&M Manual must include:

1. Emergency procedures for plant shutdown and cleanup in event of reclaimed water system upset or failure.
2. Reclaimed water system maintenance procedures and the proper handling of any associated wastewater as a result of these procedures (i.e. pipeline flushing, disinfection of conveyance lines, etc.).
3. Reclaimed water system maintenance procedures that generate wastewater.
4. Procedures to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the reclaimed water system.
5. Reclaimed water facility process control monitoring schedule.

6. Reclaimed water sampling protocols and procedures for compliance with the sampling and reporting requirements in the reclaimed water permit.
7. Adequate staffing levels to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.
8. Alarm condition response plan to ensure that no untreated or inadequately treated wastewater will be delivered to reclaimed water use areas.
9. Discussion of the cross-connection control and inspection program, including who will be responsible for compliance and testing of the cross connection control devices.
10. Operational Control Strategies for reclaimed water use under the Permittee's control.

R5. Reclaimed Water Distribution and Use

R5.A. Authorized Uses and Locations

The Permittee is authorized to distribute reclaimed water in accordance with the terms and conditions of this permit for authorized uses.

The distribution of reclaimed water by the Permittee that does not meet the treatment, water quality and monitoring requirements established in this permit or the use of reclaimed water other than for the uses specified in this permit is a violation of the terms and conditions of this permit.

The Permittee may produce Class A reclaimed water at its water reclamation facility, and distribute it to the Permittees' constructed wetland as needed during the plant growing season at the location listed in Table 3. The Permittee may also use the reclaimed water at new locations as described in Condition R7.B of this permit.

Table 3. Reclaimed Water Uses and Locations

Customer	Use	Location
The City of Arlington (the Permittee)	To provide water during the plant growing season for wetland functions and maintain wetland vegetation growth.	Permittee's Constructed Wetlands adjacent to the Stillaguamish River, near SR 9, Arlington. Latitude: 48.200824° Longitude: -122.130125°

R5.B. Authorization for New Non-potable Uses of Reclaimed Water

The Permittee may provide reclaimed water for all irrigation, and commercial and industrial uses as listed in the 1997 Washington State Water Reclamation and Reuse Standards at additional locations not listed in Condition R5.A.

The Permittee must document new locations for irrigation, and commercial and industrial use sites in the Reclaimed Water Use Summary Plan required by Condition R5.C of this permit. In accordance with the terms and conditions of this permit, the Permittee must meet the following conditions:

1. The Permittee must submit a Water Rights Impairment Analysis to Ecology for review and comments prior to distributing the reclaimed water to new locations.
2. For proposed new irrigation uses, the Permittee must submit a Water Balance Analysis to Ecology for review and approval prior to distributing the reclaimed water to new locations. The Permittee must not distribute the reclaimed water to new irrigation use locations until after approval of the Water Balance Analysis by Ecology.
3. Beneficial use areas and requirements for use must comply with the Washington State Water Reclamation and Reuse Standards. The class of reclaimed water provided must meet or exceed the minimum requirements for the proposed use, and irrigation uses must not exceed agronomic rates of application.
4. The reclaimed water must meet all applicable requirements of this permit for the approved class of reclaimed water, including source control, treatment, water quality limits, monitoring, reporting, record keeping, operation and maintenance, distribution, and use.
5. The Permittee must list the new use areas in the next annual Reclaimed Water Use Summary Plan and must submit a copy of the revised plan to Ecology as described in Condition R5.C of this permit.
6. The Permittee must submit to Ecology, the Sale and Distribution of Reclaimed Water Agreement (if applicable) which is the contract between the Permittee and the water purveyor, and/or the Service and Use Area Agreement which is the contract between the Permittee and the end user.

Groundwater recharge and streamflow augmentation as beneficial uses are not authorized by this permit. A new "type" of use (i.e. groundwater recharge, streamflow augmentation, etc.) will require the approval of an engineering report or amendments to the existing engineering report and reopening of this permit for review and public comment prior to implementation of the new type of use.

R5.C. Reclaimed Water Use Summary Plan

The Permittee must prepare a Water Use Summary Plan, which contains a summary description of the reclaimed water distribution system. The Permittee must review and update the plan annually and submit updates to Ecology. The annual updates are due March 31st of each year, and cover the previous calendar year. The first submittal is due on March 31, 2015. The plan must, at a minimum:

1. Describe the current reuse distribution system.
2. Identify all current water purveyors, end users, uses, and location of reuse sites.
3. Provide for the existing reuse sites: Evaluation of the reuse sites, estimated volume of reclaimed water use at each site, means of application, purpose of application (e.g., irrigation), the application rates, and water and nutrient balances (for agronomic uptake analysis).

4. Provide for the new reuse sites: Evaluation of the reuse sites, estimated volume of reclaimed water use at each site, means of application, purpose of application (e.g., irrigation), application rates, water and nutrient balances, and expected agronomic uptake at irrigation sites.

R5.D. Sale and Distribution Agreements

Where the reclaimed water distribution system or additional treatment system to maintain reclaimed water quality is not under direct control of the Permittee:

1. The entity that provides additional treatment, distributes, owns, or otherwise maintains control over the reclaimed water use area is responsible for reuse facilities and activities inherent to the distribution and use of the reclaimed water to ensure that the system operates as approved by Ecology in accordance with this permit.

2. A binding Sale & Distribution Agreement among the parties involved is required to ensure that distribution, operation, maintenance, and monitoring meet all requirements of the Departments of Health and Ecology. The Sale & Distribution Agreement must be consistent with the requirements of the *Water Reclamation and Reuse Standards*, 1997. A standard Sale & Distribution Agreement must be reviewed and approved by Ecology prior to implementation. A copy of each site-specific Sale & Distribution Agreement must be provided to Ecology prior to use.

3. The Sale & Distribution Agreements must provide the Permittee with authority to terminate service of reclaimed water to a customer violating the *Water Reclamation and Reuse Standards* and restrictions outlined in the Sale & Distribution Agreement.

4. The Permittee must maintain all Sale & Distribution Agreements for the duration of the permit. The Permittee must inform Ecology in writing of any proposed changes to the approved, standard Sale & Distribution Agreement.

R5.E. Service and Use Area Agreements

Where the reclaimed water use area is not under direct control of the Permittee:

1. The entity that owns or otherwise maintains control over the reclaimed water use area is responsible for on-site reclaimed water facilities, infrastructure, and activities inherent to the use of the reclaimed water to ensure that the system operates as approved by Ecology, and in accordance with this permit.

2. Reclaimed water use, including runoff and spray, must be confined to the designated and approved use areas.

3. A binding Service and Use Area Agreement among the parties involved is required to ensure that construction, operation, maintenance, and monitoring meet all requirements of the Departments of Health and

Ecology. This Service and Use Area Agreement must be consistent with the requirements of the *Water Reclamation and Reuse Standards*, 1997. A standard Service and Use Area Agreement must be reviewed and approved by Ecology prior to implementation. A copy of each site-specific Service and Use Area Agreement must be provided to Ecology prior to use.

4. The Service and Use Area Agreement must provide the Permittee with authority to terminate service of reclaimed water to a customer violating the *Water Reclamation and Reuse Standards* and restrictions outlined in the reclaimed water use agreement.

5. The Permittee must maintain all Service and Use Area Agreements for the duration of the permit. The Permittee must inform Ecology in writing of any proposed changes to the approved, standard Service and Use Area Agreement.

R5.F. Use Area Responsibilities

1. The Permittee must develop general language, symbols, and colors to be used for notification signs and have it approved by Ecology. The signs must be used in all reclaimed water use areas, consistent with the *Water Reclamation and Reuse Standards*.

2. All reclaimed water valves, storage facilities, and outlets must be tagged or labeled to warn the public or employees that the water is not intended for drinking. The signage or advisory notification must be colored purple with white or black lettering.

3. Reclaimed water use, including runoff and spray, must be confined to the designated and approved use area.

4. Precautions must be taken to assure that reclaimed water will not be sprayed on people or any facility or area not designated for reuse, including but not limited to buildings, passing vehicles, and drinking water fountains.

5. There must be no hose bibs on reclaimed irrigation lines unless approved by Ecology.

6. Where the reclaimed water production, distribution, and use areas are under direct control of the Permittee, the Permittee must maintain control and be responsible for all facilities and activities inherent to the production, distribution, and use of the reclaimed water. The Permittee must ensure that the reuse system operates as approved by the Departments of Health and Ecology.

7. The Permittee must assure that all customers or authorized personnel using reclaimed water have completed training in the requirements for appropriate use of the water, including signage, cross connection control requirements, public health, and environmental protection.

R5.G. Net Environmental Benefit Report

The Permittee must submit a Net Environmental Benefit (NEB) Report that analyzes whether an NEB can be claimed for the reclaimed water use on the Permittee's constructed wetland. In order to demonstrate NEB, the report must show at a minimum that the use of reclaimed water provides full and uninterrupted protection of all significant beneficial uses. The report must evaluate total ammonia, total nitrogen, and total phosphorus loading the reclaimed water provides to create new or enhances the existing beneficial uses. In addition, the report must show that the annual average hydraulic loading of the reclaimed water does not exceed the moisture requirement of the wetland to maintain its functions and vegetation growth. The Permittee must submit this report with the next permit renewal application.

R5.H. Irrigation Uses

1. For any future irrigation use of reclaimed water, the hydraulic loading rate of reclaimed water must be applied at agronomic rates and be determined based on a water balance analysis or other methods such as moisture sensors, rain sensors, or hand inspections.

2. There must be no runoff of reclaimed water applied to land by spray irrigation to any surface waters of the state or to any land not authorized by approved Service and Use Area Agreement.

3. There must be no application of reclaimed water for irrigation purposes when the ground is saturated or frozen during the winter months.

4. The reclaimed water must not be applied to the irrigation lands in quantities that:

    a. Significantly reduce or destroy the long-term infiltration rate of the soil.

    b. Cause long-term anaerobic conditions in the soil.

    c. Cause ponding of reclaimed water and produce objectionable odors or support insects or vectors.

R5.I. Commercial and Industrial Uses

Commercial and industrial uses must conform to the state Water Reclamation and Reuse Standards for Class A reclaimed water. Any wastewater discharged from commercial or industrial uses is regulated as wastewater and subject to waste discharge permit requirements.

R5.J. Other Uses of Reclaimed Water

Water reclamation facility effluent used for sewage treatment purposes within the bounds of the wastewater treatment facility and other Permittee-owned facilities (not subject to public exposure) is not required to meet the state Water Reclamation and Reuse Standards for Class A reclaimed water, except in areas where there is potential public exposure as determined by Ecology.

R5.K. Reliability

The Permittee must maintain the highest reliability class as described in the Water Reclamation and Reuse Standards, which require one of the following features for turbidity and disinfection:

1. Alarms and standby power source.

2. Alarms and automatically actuated disposal provisions.

R5.L. Bypass Prohibited

The Permittee must not bypass untreated or partially treated wastewater from the water reclamation facility or any intermediate unit processes to the distribution system or point of use at any time. All reclaimed water distributed for beneficial use must meet Class A requirements at all times. The Permittee must retain water not meeting Class A Reclaimed Water Standards for additional treatment by diversion to a bypass storage structure or discharged back to the sewer system or headworks for additional treatment or discharge to the Stillaguamish River through the permitted NPDES outfall.

The Permittee must notify Ecology by telephone within 24 hours of any discharge not meeting Class A entering the distribution system. The Permittee must not discharge substandard reclaimed water to the reclaimed water use areas.

R5.M. Revocation of Authorization

Ecology may revoke authorization to provide service if the Permittee fails to comply with any requirement in this permit. Ecology will base its determination to revoke authorization on the risk to public health and safety or threat to waters of the state. Ecology may revoke the authorization for any or all reclamation facilities and use areas located within a specific geographic area if, due to a geologic or hydrologic condition, the cumulative effect of the water reclamation facilities and use areas causes the violation of state water quality standards. Before revoking the authorization, Ecology will notify the Permittee in writing and provide a reasonable opportunity and time frame to correct the noncompliance.

General Conditions

G1. Signatory requirements

1. All applications, reports, or information submitted to Ecology must be signed and certified.

   a. In the case of corporations, by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

      - A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or
      - The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   b. In the case of a partnership, by a general partner.

   c. In the case of sole proprietorship, by the proprietor.

   d. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

      Applications for permits for domestic wastewater facilities that are either owned or operated by, or under contract to, a public entity shall be submitted by the public entity.

2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to Ecology.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph G1.2, above, is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph G1.2, above, must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section must make the following certification:

   "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G2. Right of inspection and entry

The Permittee must allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

1. To enter upon the premises where a discharge is located or where any records must be kept under the terms and conditions of this permit.
2. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.
3. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.
4. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G3. Permit actions

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon Ecology's initiative. However, the permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 40 CFR 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

1. The following are causes for terminating this permit during its term, or for denying a permit renewal application:
   a. Violation of any permit term or condition.
   b. Obtaining a permit by misrepresentation or failure to disclose all relevant facts.
   c. A material change in quantity or type of waste disposal.
   d. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination.

e. A change in any condition that requires either a temporary or permanent reduction, or elimination of any discharge or sludge use or disposal practice controlled by the permit.

f. Nonpayment of fees assessed pursuant to RCW 90.48.465.

g. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.

2. The following are causes for modification but not revocation and reissuance except when the Permittee requests or agrees:

a. A material change in the condition of the waters of the state.

b. New information not available at the time of permit issuance that would have justified the application of different permit conditions.

c. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.

d. Promulgation of new or amended standards or regulations having a direct bearing upon permit conditions, or requiring permit revision.

e. The Permittee has requested a modification based on other rationale meeting the criteria of 40 CFR Part 122.62.

f. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.

g. Incorporation of an approved local pretreatment program into a municipality's permit.

3. The following are causes for modification or alternatively revocation and reissuance:

a. When cause exists for termination for reasons listed in 1.a through 1.g of this section, and Ecology determines that modification or revocation and reissuance is appropriate.

b. When Ecology has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer (General Condition G7) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new Permittee.

G4. Reporting planned changes

The Permittee must, as soon as possible, but no later than one hundred eighty (180) days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in:

1. The permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b)

2. A significant change in the nature or an increase in quantity of pollutants discharged.

3. A significant change in the Permittee's sludge use or disposal practices. Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G5. Plan review required

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with chapter 173-240 WAC. Engineering reports, plans, and specifications must be submitted at least one hundred eighty (180) days prior to the planned start of construction unless a shorter time is approved by Ecology. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with other laws and statutes

Nothing in this permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this permit

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee must notify the succeeding owner or controller of the existence of this permit by letter, a copy of which must be forwarded to Ecology.

1. Transfers by Modification

   Except as provided in paragraph (2) below, this permit may be transferred by the Permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

2. Automatic Transfers

   This permit may be automatically transferred to a new Permittee if:

   a. The Permittee notifies Ecology at least thirty (30) days in advance of the proposed transfer date.

   b. The notice includes a written agreement between the existing and new Permittees containing a specific date transfer of permit responsibility, coverage, and liability between them.

   c. Ecology does not notify the existing Permittee and the proposed new Permittee of its intent to modify or revoke and reissue this permit. A modification under this subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

G8. Reduced production for compliance

The Permittee, in order to maintain compliance with its permit, must control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G9. Removed substances

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

G10. Duty to provide information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. Other requirements of 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. Additional monitoring

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G13. Payment of fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology.

G14. Penalties for violating permit conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars ($10,000) and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit may incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars ($10,000) for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is deemed to be a separate and distinct violation.

G15. Upset

Definition – "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limits if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that the Permittee can identify the cause(s) of the upset.
2. The permitted facility was being properly operated at the time of the upset.
3. The Permittee submitted notice of the upset as required in Special Condition S3.E.
4. The Permittee complied with any remedial measures required under S3.E of this permit.

In any enforcement action the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G16. Property rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

G17. Duty to comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G18. Toxic pollutants

The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G19. Penalties for tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two (2) years per violation, or by both.

If a conviction of a person is for a violation committed after a first conviction of such person under this condition, punishment shall be a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

G20. Compliance schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than fourteen (14) days following each schedule date.

G21. Service agreement review

The Permittee must submit to Ecology any proposed service agreements and proposed revisions or updates to existing agreements for the operation of any wastewater treatment facility covered by this permit. The review is to ensure consistency with chapters 90.46 and 90.48 RCW as required by RCW 70.150.040(9). In the event that Ecology does not comment within a thirty-day (30) period, the Permittee may assume consistency and proceed with the service agreement or the revised/updated service agreement.

Appendix A

LIST OF POLLUTANTS WITH ANALYTICAL METHODS, DETECTION LIMITS AND QUANTITATION LEVELS

The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for permit and application required monitoring unless:

- Another permit condition specifies other methods, detection levels, or quantitation levels, OR
- The method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136.

If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a quantitation limit (QL) to Ecology with appropriate laboratory documentation.

Ecology added this appendix to the permit in order to reduce the number of analytical "non-detects" in permit-required monitoring and to measure effluent concentrations near or below criteria values where possible at a reasonable cost.

CONVENTIONAL PARAMETERS

Pollutant & CAS No. *(if available)*	**Recommended Analytical Protocol**	**Detection Level (DL)[1]** *µg/L unless specified*	**Quantitation Level (QL)[2]** *µg/L unless specified*
Biochemical Oxygen Demand	SM5210-B		2 mg/L
Total Suspended Solids	SM2540-D		5 mg/L
Total Ammonia (as N)	SM4500-NH3-B/C/D/E		20
Dissolved oxygen	SM4500-OC/OG		0.2 mg/L
pH	SM4500-H^+ B	N/A	N/A

NONCONVENTIONAL PARAMETERS

Pollutant & CAS No. *(if available)*	**Recommended Analytical Protocol**	**Detection Level (DL)[1]** *µg/L unless specified*	**Quantitation Level (QL)[2]** *µg/L unless specified*
Fecal Coliform	SM9221E and 9222	N/A	1 MF, and 1.1 MPN
Nitrate-Nitrite (as N)	SM4500-NO3- E/F/H		100
Nitrogen, Total Kjeldahl (as N)	SM4500-N_{org}-B/C, and SM4500-NH3-B/C/D/E		300
Soluble Reactive Phosphorus (as P)	SM4500-PE/PF	3	10
Phosphorus, Total (as P)	SM 4500 PB followed by SM4500-PE/PF	3	10
Oil and Grease (HEM)	1664 A or B	1,400	5,000
Total dissolved solids	SM2540 C		20 mg/L
Total Hardness (as $CaCO_3$)	SM2340B		200 as CaCO3

PRIORITY POLLUTANTS

Pollutant & CAS No. *(if available)*	**Recommended Analytical Protocol**	**Detection Level (DL)[1]** *µg/L unless specified*	**Quantitation Level (QL)[2]** *µg/L unless specified*
METALS, CYANIDE & TOTAL PHENOLS			
Antimony, Total (7440-36-0)	200.8	0.3	1.0
Arsenic, Total (7440-38-2)	200.8	0.1	0.5
Beryllium, Total (7440-41-7)	200.8	0.1	0.5
Cadmium, Total (7440-43-9)	200.8	0.05	0.25
Chromium, Total (7440-47-3)	200.8	0.2	1.0
Copper, Total (7440-50-8)	200.8	0.4	2.0
Lead, Total (7439-92-1)	200.8	0.1	0.5
Mercury, Total (7439-97-6)	1631E	0.0002	0.0005
Nickel, Total (7440-02-0)	200.8	0.1	0.5
Selenium, Total (7782-49-2)	200.8	1.0	1.0
Silver, Total (7440-22-4)	200.8	0.04	0.2
Thallium, Total (7440-28-0)	200.8	0.09	0.36
Zinc, Total (7440-66-6)	200.8	0.5	2.5
Cyanide, Total (57-12-5)	335.4	5	10

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection Level (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Total Phenolic Compounds	EPA 420.1		50
VOLATILE ORGANIC COMPOUNDS			
Acrolein (107-02-8)	624	5	10
Acrylonitrile (107-13-1)	624	1.0	2.0
Benzene (71-43-2)	624	1.0	2.0
Bromoform (75-25-2)	624	1.0	2.0
Carbon tetrachloride (56-23-5)	624/601 or SM6230B	1.0	2.0
Chlorobenzene (108-90-7)	624	1.0	2.0
Chlorodibromo-methane (124-48-1)	624	1.0	2.0
Chloroethane (75-00-3)	624/601	1.0	2.0
2-Chloroethylvinyl Ether (110-75-8)	624	1.0	2.0
Chloroform (67-66-3)	624 or SM6210B	1.0	2.0
Dichlorobromo-methane (75-27-4)	624	1.0	2.0
1,1-Dichloroethane (75-34-3)	624	1.0	2.0
1,2-Dichloroethane (107-06-2)	624	1.0	2.0
1,2-Trans-Dichloroethylene (156-60-5)	624	1.0	2.0
1,1-Dichloroethylene (75-35-4)	624	1.0	2.0
1,2-Dichloropropane (78-87-5)	624	1.0	2.0
1,3-dichloroproppylene (542-75-6)	624	1.0	2.0
Ethylbenzene (100-41-4)	624	1.0	2.0
Methyl bromide (74-83-9)	624/601	5.0	10.0
Methyl chloride (74-87-3)	624	1.0	2.0
Methylene chloride (75-09-2)	624	5.0	10.0
1,1,2,2-Tetrachloroethane (79-34-5)	624	1.9	2.0
Tetrachloroethylene (127-18-4)	624	1.0	2.0
Toluene (108-88-3)	624	1.0	2.0
1,1,1-Trichloroethane (71-55-6)	624	1.0	2.0
1,1,2-Trichloroethane (79-00-5)	624	1.0	2.0

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection Level (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Trichloroethylene (79-01-6)	624	1.0	2.0
Vinyl chloride (75-01-4)	624/SM6200B	1.0	2.0
ACID-EXTRACTABLE COMPOUNDS			
Parachlorometa cresol (59-50-7)	625	1.0	2.0
2-Chlorophenol (95-57-8)	625	1.0	2.0
2,4-Dichlorophenol (120-83-2)	625	0.5	1.0
2,4-Dimethylphenol (105-67-9)	625	0.5	1.0
4,6-dinitro-o-cresol (534-52-1)	625/1625B	1.0	2.0
2,4 dinitrophenol (51-28-5)	625	1.0	2.0
2-Nitrophenol (88-75-5)	625	0.5	1.0
4-nitrophenol (100-02-7)	625	0.5	1.0
Pentachlorophenol (87-86-5)	625	0.5	1.0
Phenol (108-95-2)	625	2.0	4.0
2,4,6-Trichlorophenol (88-06-2)	625	2.0	4.0
BASE-NEUTRAL COMPOUNDS			
Acenaphthene (83-32-9)	625	0.2	0.4
Acenaphthylene (208-96-8)	625	0.3	0.6
Anthracene (120-12-7)	625	0.3	0.6
Benzidine (92-87-5)	625	12	24
Benzo(*a*)anthracene (56-55-3)	625	0.3	0.6
Benzo(*a*)pyrene (50-32-8)	610/625	0.5	1.0
3,4 Benzo-fluoranthene (205-99-2)[3]	610/625	0.8	1.6
Benzo(*ghi*)Perylene (191-24-2)	610/625	0.5	1.0
Benzo(k)fluoranthene (207-08-9)[3]	610/625	0.8	1.6
Bis (2- *chloroethoxy)* methane (111-91-1)	625	5.3	21.2
Bis (2-*chloroethyl*) ether (111-44-4)	611/625	0.3	1.0
Bis (2- *chloroisopropyl*) ether (39638-32-9)	625	0.3	0.6
Bis (2-*ethylhexyl*) phthalate (117-81-7)	625	0.1	0.5

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection Level (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
4-Bromophenyl phenyl ether (101-55-3)	625	0.2	0.4
Butyl benzyl phthalate (85-68-7)	625	0.3	0.6
2-Chloronaphthalene (91-58-7)	625	0.3	0.6
4-Chlorophenyl phenyl ether (7005-72-3)	625	0.3	0.5
Chrysene (218-01-9)	610/625	0.3	0.6
Di-n-butyl phthalate (84-74-2)	625	0.5	1.0
Di-n-octyl phthalate (117-84-0)	625	0.3	0.6
Dibenzo(a,*h*)anthracene (53-70-3)	625	0.8	1.6
1,2-Dichlorobenzene (95-50-1)	624	1.9	7.6
1,3-Dichlorobenzene (541-73-1)	624	1.9	7.6
1,4-Dichlorobenzene (106-46-7)	624	4.4	17.6
3,3-Dichlorobenzidine (91-94-1)	605/625	0.5	1.0
Diethyl phthalate (84-66-2)	625	1.9	7.6
Dimethyl phthalate (131-11-3)	625	1.6	6.4
2,4-dinitrotoluene (121-14-2)	609/625	0.2	0.4
2,6-dinitrotoluene (606-20-2)	609/625	0.2	0.4
1,2-Diphenylhydrazine (122-66-7)	1625B	5.0	20
Fluoranthene (206-44-0)	625	0.3	0.6
Fluorene (86-73-7)	625	0.3	0.6
Hexachlorobenzene (118-74-1)	612/625	0.3	0.6
Hexachlorobutadiene (87-68-3)	625	0.5	1.0
Hexachlorocyclopentadiene (77-47-4)	1625B/625	0.5	1.0
Hexachloroethane (67-72-1)	625	0.5	1.0
Indeno(*1,2,3-cd*)Pyrene (193-39-5)	610/625	0.5	1.0
Isophorone (78-59-1)	625	0.5	1.0
Naphthalene (91-20-3)	625	0.3	0.6
Nitrobenzene (98-95-3)	625	0.5	1.0

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection Level (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
N-Nitrosodi-n-propylamine (621-64-7)	607/625	0.5	1.0
N-Nitrosodimethylamine (62-75-9)	607/625	2.0	4.0
N-Nitrosodiphenylamine (86-30-6)	625	0.5	1.0
Phenanthrene (85-01-8)	625	0.3	0.6
Pyrene (129-00-0)	625	0.3	0.6
1,2,4-Trichlorobenzene (120-82-1)	625	0.3	0.6

Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

Quantitation Level (QL) also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency, December 2007).

Total Benzofluoranthenes – Because Benzo(b)fluoranthene, Benzo(j)fluoranthene and Benzo(k)fluoranthene co-elute you may report these three isomers as total benzofluoranthenes.

General Permit for Biosolids Management

Current permit holders who have submitted a Notice of Intent and properly applied for coverage under this permit are provisionally approved to manage biosolids in accordance with this permit. Ecology may impose additional or more stringent requirements when issuing final coverage under this permit.

General Permit Issuance Date: ##, 2015

General Permit Effective Date: ##, 2015

General Permit Expiration Date: ##, 2020

Laurie G. Davies, Program Manager
Waste 2 Resources Program
Washington Department of Ecology

Table of Contents

1. Overview of the General Permit for Biosolids Management

1.1 Introduction

The biosolids program in the State of Washington is based on Chapter 173-308 WAC, Biosolids Management. The state program, including this General Permit for Biosolids Management (permit), is intended to comply with all applicable federal rules adopted pursuant to the federal Clean Water Act as it existed on February 4, 1987, and Chapter 90.48 RCW, Water Pollution Control. Authority for administering a state biosolids management program is granted to Ecology in Chapter 70.95J RCW, Municipal Sewage Sludge-Biosolids.

The State program regulates biosolids (including septage) applied to the land for beneficial uses, biosolids being stored, sewage sludge disposed in a municipal solids waste landfill and biosolids transferred from one facility to another.

Although the state program does not regulate surface disposal or incineration, the transfer of biosolids from a wastewater treatment plant to an incineration facility or surface disposal site is an activity covered under this permit.

1.2 Use of the terms "Sewage Sludge", "Biosolids", and "Septage"

Sewage sludge is the solids, semisolids, or liquid residue generated during the treatment of domestic sewage in a treatment works. Biosolids are produced by treating sewage sludge to meet certain quality standards that allow it to be beneficially used. Septage is a class of biosolids that comes from septic tanks and similar systems receiving domestic wastes.

In this permit:
Sections 8, 9, and 10 apply only to biosolids or "septage managed as biosolids originating from sewage sludge".

Section 6 applies only to sewage sludge being disposed in a municipal waste landfill.
Section 11 applies only to septage being applied to the land.
All other section apply to biosolids, septage and sewage sludge unless the context requires otherwise.

1.3 Geographical Area Covered

This permit applies to facilities and biosolids management activities that occur on lands under the jurisdiction of the State of Washington.

Any treatment works located outside of the jurisdiction of the State and exporting biosolids into the State must do so in accordance with WAC 173-308-130.

1.4 Persons Required to Apply for Coverage under this Permit

Unless you are obtaining an individual permit in accordance with WAC 173-308-310, you must apply for coverage under this permit if you own or operate any of the following facilities:

- Facilities designated by Ecology as a treatment works treating domestic sewage in accordance with WAC 173-308-310(1)(b).
- Publicly owned treatment works.
- Privately owned treatment works treating only domestic sewage.

- Industrial facilities that treat domestic sewage separately from the industrial waste stream and generate biosolids regulated by Chapter 173-308 WAC.
- Beneficial use facilities.
- Composting facilities that compost non-exceptional quality biosolids that do not have a permit meeting state program requirements as determined by Ecology.
- Facilities that mix non-exceptional quality biosolids with other material, including other biosolids.
- Septage Management facilities.

1.5 Activities Subject to Coverage under this Permit

Coverage under this permit is based on activities related to the use or disposal of biosolids. These activities include, but are not limited to, the following:

- Applying bulk biosolids to the land, including, but not limited to, agricultural lands, forest lands, public contact sites, and land reclamation sites.
- Applying septage to the land.
- Disposing sewage sludge in municipal solids waste landfills.
- Selling or giving away biosolids in bags or other containers.
- Storing biosolids.
- Transferring biosolids from one facility to another.
- Composting non-exceptional quality biosolids.

1.6 Local Health Jurisdiction Involvement

Ecology may delegate authority to a Local Health Jurisdiction (LHJ) to implement and assist in the administration of Chapter 173-308 WAC and this permit. Delegation is accomplished through an instrument of mutual consent (for example, a Memorandum of Agreement) that is acceptable to both Ecology and the LHJ. When applying for coverage under this permit, contact Ecology to find out the status of delegation agreements in the areas where you treat, store, transfer, or apply biosolids to the land.

1.7 Role of EPA

EPA has a responsibility for implementing a national biosolids management program. EPA Region 10 and Ecology work cooperatively on program implementation. EPA provides periodic technical assistance to the state; in return the state provides certain information on request to EPA regarding biosolids management in Washington.

All applicable facilities in the state must meet requirements set forth by both the state and the federal programs; satisfaction of the state program requirements does not necessarily satisfy federal obligations.

2. Applying For Coverage under this Permit

2.1 When to Apply

All existing facilities required to be covered under this permit must submit a complete application within 90 days of the effective date of this permit unless you have received approval from your regional biosolids coordinator to submit your application within 180 days of the effective date in accordance with WAC 173-308-310(4)(a).

All new facilities must submit a complete application (subsection 2.4) at least 180 day in advance of engaging in biosolids management activities.

2.2 Complying With the State Environmental Policy Act

The act of applying for coverage under this permit triggers a requirement for review under the State Environmental Policy Act (SEPA) Chapter 197-11 WAC.

It may be possible to use previous SEPA documents to comply with the SEPA requirements. For this to be the case, the SEPA lead agency must be able to conclude that possible site specific environmental impacts of applying biosolids have been adequately considered in existing SEPA documents. As part of approving coverage under this permit, you must provide written documentation from the SEPA Lead Official showing that the SEPA requirements have been met.

You may be able to overlap the public notice period of SEPA with the public notice requirements of this permit. If you combine both public notice requirements, you must ensure that comments are directed to both the responsible SEPA and regulatory officials.

2.3 Submitting a Notice of Intent

The biosolids General Permit is reissued every five years. A Notice of Intent is written notification to Ecology that you intend to maintain coverage under the next permit. Failure to submit an NOI will result in loss of coverage and the need to reapply and pay an initial application fee.

Notices of Intent must be submitted on Ecology forms. You can obtain the current version of the Notice of Intent from Ecology's biosolids forms webpage at: http://www.ecy.wa.gov/programs/swfa/biosolids/forms.html , or you can obtain one from your regional biosolids coordinator.

In accordance with WAC 173-308-310(5)(a), you must submit a Notice of Intent form no less than 180 days before the expiration date of the General Permit for Biosolids Management.

You must submit copies of your Notice of Intent as follows:

- The signed original to the biosolids coordinator in the Ecology region where your facility is located.
- A copy to the biosolids coordinator at Ecology headquarters office.
- A copy to the Local Health Jurisdiction in each county where your biosolids will be treated, stored, disposed, or applied to the land.

You are encouraged to submit copies to Ecology regions and headquarters by email. Contact information for Ecology biosolids staff can be found on the biosolids contacts webpage at: http://www.ecy.wa.gov/programs/swfa/biosolids/contacts.html.

2.4 Submitting a Permit Application

You can obtain the current version of the Application for Coverage form from Ecology's biosolids webpage at: http://www.ecy.wa.gov/programs/swfa/biosolids/forms.html, or from your regional biosolids coordinator.

To apply for coverage under this permit you must submit a Complete Application for Coverage package that includes, but is not limited to, the following:

- A vicinity map of the facility.
- A vicinity map of any associated treatment or storage facilities.
- A treatment facility schematic.
- Confirmation that the SEPA requirements have been met (see Subsection 2.2 for more details).
- Confirmation that the public notice requirements have been met if appropriate (see Subsection 2.5 for more details).
- Land application plans if appropriate (see Subsection 2.6 for more details).
- Monitoring data if appropriate.
- A biosolids sampling plan if appropriate (see Section 8 for more details).
- A contingency plan for handling biosolids.
- A temporary disposal plan (see Subsection 6.2 for more details).
- A spill prevention/response plan if appropriate (see Subsection 4.1 for more details).

You must submit copies of your final permit application as follows:

A signed original to the biosolids coordinator in the Ecology regional office where your facility is located.

A copy to any other Ecology regional office where your biosolids will be treated, stored, disposed, or applied to the land.

A copy to the biosolids coordinator at Ecology headquarters office.

A copy to the Local Health Jurisdiction in each county where your biosolids will be treated, stored, disposed, or applied to the land.

Submit any copies to Ecology regions and headquarters by email. You are also encouraged to submit any copies to LHJs by email if the LHJ allows electronic submittal.

Contact information for Ecology biosolids staff can be found on the biosolids contacts webpage at: http://www.ecy.wa.gov/programs/swfa/biosolids/contacts.html.

2.5 Public Notice Requirements When Applying for Coverage

When you apply for coverage under this permit, you must conduct public notice in accordance with this subsection. Follow the steps within the category that applies to your facility.

Note*: If you are a wastewater treatment plant that sends all of your biosolids to a Beneficial Use Facility, you do* ***not*** *land apply biosolids.*

2.5.1 Wastewater Treatment Plants that DO NOT land apply biosolids

If your facility met the public notice requirements under the previous general permit (and you have documentation to show this) and you do not land apply biosolids, you are **not** required to conduct additional public notice.

If you are a new facility or for some reason had a lapse in coverage under the General Permit of August 20, 2010 and do not land apply biosolids, you must conduct public notice in the following manner:

- Issue one notice in a newspaper of general circulation in the county where you are located. The minimum required content of the notice can be found in Appendix 1.
- Submit your official interest parties list to the biosolids coordinator at Ecology headquarters office AND any other Ecology regional office where your biosolids will be treated, stored, disposed, or applied to the land.
- Send notification to all persons on your approved interested parties list, plus Ecology headquarters and regional office(s), at the same time or before notice is run in the newspaper.
- Provide a 30-day public comment period following the publication of a newspaper notice.

2.5.2 Wastewater Treatment Plants that Land Apply Biosolids

If you land apply biosolids you must conduct public notice in the following manner:

- Issue one notice in a newspaper of general circulation in the county where you are located, in each county where you land apply biosolids, and all additional counties that may be covered by a General Land Application Plan you have submitted. The minimum required content of the notice can be found in Appendix 1.
- If proposing a new land application site or to expand an existing site, post notices at the new site(s) or expanded area of the existing site.
- Submit your official interest parties list to the biosolids coordinator at Ecology headquarters office AND any other Ecology regional office where your biosolids will be treated, stored, disposed, or applied to the land.
- Send notification to all persons on your approved interested parties list, plus Ecology headquarters and regional office(s), at the same time or before notice is run in the newspaper.
- Provide a 30-day public comment period following the newspaper posting.

2.5.3 Beneficial Use Facilities

All Beneficial use facilities must conduct public notice when applying for coverage initially **and** when reapplying for coverage when a new general permit is issued. Public notice must be conducted in the following manner:

- Issue one notice in a newspaper of general circulation in the county where you are located, in each county where you land apply biosolids, and all additional counties that may be covered by a General Land Application Plan you have submitted. The minimum required content of the notice can be found in Appendix 1.
- If proposing a new land application site or to expand an existing site, post notices at the new site(s) or expanded area of the existing site.
- Submit your official interest parties list to the biosolids coordinator at Ecology headquarters office AND any other Ecology regional office where your biosolids will be treated, stored, disposed, or applied to the land.

- Send notification to all persons on your approved interested parties list, plus Ecology headquarters and regional office(s), at the same time or before notice is run in the newspaper.
- Provide a 30-day public comment period following the newspaper posting.

2.6 Land Application Plans

2.6.1 Site Specific Land Application Plans

You must submit a Site Specific Land Application Plan (SSLAP) for every site where non-exceptional biosolids are applied to the land. The minimum required content of a SSLAP can be found in Appendix 3.

2.6.2 General Land Application Plans

You must submit a General Land Application Plan (GLAP) if you intend to develop other land application sites during the life of your permit coverage. The minimum required content of a GLAP can be found in Appendix 2.

2.6.3 Exemption for Biosolids Going to Permitted Beneficial Use Facilities

When your biosolids are sent to a permitted beneficial use facility, you do not have to prepare land application plans if the conditions in WAC 173-308-310(8)(g) have been met.

2.6.4 Exemption for Exceptional Quality Biosolids

You are not required to submit land application plans for the management of exceptional quality biosolids unless Ecology requires a plan in accordance with WAC 173-308-310(8)(a)(ii-iii).

2.7 Ecology Review of Submitted Plans

All plans submitted in the permit application process will be reviewed by Ecology prior to the issuance of Final Coverage. During that review process, Ecology may determine that changes and/or additions are necessary to effectively meet the plans' intended purpose.

Ecology will rely on several reference documents when reviewing plans. https://fortress.wa.gov/ecy/publications/publications/9380.pdf.

In addition, Ecology has prepared some sample plans that are available on its biosolids forms webpage at: http://www.ecy.wa.gov/programs/swfa/biosolids/forms.html. You can use these plans as guidance.

3. Requirements Applicable to all Permittees

3.1 Duty to Comply

You must comply with all conditions of this permit, all applicable requirements of Chapter 173-308 WAC, all applicable requirements of 40 CFR Part 503, and all applicable requirements of any other state, federal, or local laws, rules, or ordinances.

You must also comply with any provisions in your permit application, including those in any plans, unless those provisions are modified through the permit review and final coverage issuance process.

You must also comply with any additional or more stringent requirements developed as a condition of final coverage under this permit.

Ecology may modify, revoke and reissue, or terminate coverage under this permit for cause. Permit conditions remain in effect even if you file a request to modify, revoke and reissue, or terminate coverage under this permit or notify Ecology of planned changes or anticipated noncompliance.

Ecology may modify or revoke and reissue your coverage under this permit in accordance with WAC 173-308-310(23).

Ecology may terminate your coverage under this permit in accordance with WAC 173-308-310(24).

3.2 Continuing Coverage and Duty to Reapply

If you wish to continue an activity regulated by this permit after its expiration date, you must submit a Notice of Intent at least 180 days in advance of its expiration date and subsequently apply for coverage under a new permit in accordance with WAC 173-308-310(3)-(5). If you fail to submit a timely and sufficient Notice of Intent, your coverage under this permit will cease on its expiration date.

3.3 Need to Halt or Reduce Activity Not a Defense

Other permit compliance requirements, due to enforcement actions, shall not be a defense for non-compliance with this permit.

3.4 Duty to Mitigate

You must take all reasonable steps to minimize or prevent biosolids use or disposal that may adversely affect human health or the environment. This includes, but is not limited to, the proper operation and maintenance of equipment, adequate laboratory controls and appropriate quality assurance procedures.

3.5 Duty to Provide Information to Ecology

You must furnish any information requested by Ecology to determine compliance with this permit, or to determine whether cause exists for modifying, revoking and reissuing, or terminating coverage. Any and all records required to be kept by Chapter 173-308 WAC must be furnished to Ecology upon request.

3.6 Inspection and Entry

You must allow Ecology, or an authorized representative of Ecology, upon the presentation of credentials and other documents as may be required by law, to:

- Enter the premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit.
- Have access to and copy, during reasonable times, any records that must be kept under the conditions of this permit.
- Inspect during reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit.
- Sample or monitor during reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by state law, Chapter 70.95J RCW, and the Clean Water Act, any substances, parameters, or practices at any location.

3.7 Monitoring and Records

You must monitor and report monitoring results as specified in Section 8 of this permit and in accordance with your NPDES permit or State Waste Discharge Permit, if applicable.

You must retain all records and data used to complete the application for this permit for a period of at least 5 years from the date of the application or longer as required by other applicable laws or regulations.

3.8 Signatory Requirements

All applications, notices of intent, reports, or information submitted to Ecology must be signed and certified in accordance with WAC 173-308-310(10).

3.9 Reporting of Changes, Noncompliance, Compliance Schedules, and Other Information

3.9.1 Planned Changes

You must notify your regional biosolids coordinator and any participating delegated LHJ of significant changes in your biosolids management practices or planned physical alterations or additions to your facility.

3.9.2 Noncompliance

You must report to your regional biosolids coordinator any noncompliance which may endanger human health or the environment within 24 hours of learning of the situation. Unless waived by Ecology, you must also submit a written explanation of the noncompliance within 5 days. The written explanation must include the following:

- A description of the noncompliance and its cause.
- The period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.
- Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- Submit report no later than 14 calendar days following the incident.

3.9.3 Other Information

If you become aware that you failed to submit any relevant facts or you submitted incorrect information in a permit application or a report, you must promptly submit such facts or information to your regional biosolids coordinator.

3.10 Transferring Permits

Coverage under this permit is not transferable to any person except as provided in WAC 173-308-310(22).

3.11 Penalties

If you violate this permit, you are subject to a penalty of up to $5,000 per day per violation. In the case of a continuing violation, each day of violation is a separate violation. An act of commission or omission that procures, aids, or abets in the violation is considered a violation under this subsection.

If you willfully violate any of the provisions of this permit, you are guilty of a gross misdemeanor. Willful violation of this permit or orders issued pursuant to Chapter 70.95J RCW is a gross misdemeanor punishable by a fine of up to $10,000 per day per violation and costs of prosecution, or by imprisonment for up to 1 year, or both.

3.12 Obtaining and Providing Information

If you prepare biosolids, you must provide information needed to comply with this permit to any person who receives your biosolids.

If you apply bulk biosolids to the land, you must:

- Obtain information needed to comply with the requirements of this permit.
- Obtain written approval of the landowner prior to applying any Class B quality biosolids to the land for the first time.
- Provide information to the landowner or leaseholder needed to comply with this permit.

3.13 Final Coverage: Additional or More Stringent Requirements

On a case-by-case basis, Ecology may impose requirements that are in addition to or more stringent than the requirements in this permit. All such requirements will be provided in writing along with Ecology's notice of final coverage under this permit.

All additional or more stringent requirements become a part of the permit and are fully enforceable. Additional or more stringent requirements may be appealed as described in Subsection 3.18.

3.14 Compliance Schedules

A schedule may be established leading to compliance with requirements of this permit and Chapter 173-308 WAC. A compliance schedule may not extend deadlines established under the Clean Water Act or Chapter 70.95J RCW. Compliance schedules must be established in accordance with the requirements of WAC 173-308-310(16).

3.15 Annual Report

You must submit an annual report to Ecology by March 1 of each year. All requested information that is required under Chapter 173-308 WAC or this permit must be submitted. The current annual report form?? is at: http://www.ecy.wa.gov/biblio/ecy070125.html.

Any required reporting to the EPA must be submitted by February 19 of each year.

3.16 Permit Fees

You must pay an annual biosolids permit fee to Ecology. Fees are determined and issued in accordance with WAC 173-308-320.

3.17 Record Keeping Requirements

You must keep records and certification statements in accordance with WAC 173-308-290.

3.18 Appeals

Any person may appeal this permit as provided by applicable law including, but not limited to, Chapter 43.21B RCW and Chapter 34.05 RCW. Appeals of this permit must be made within 30 days of the issuance date listed on the cover page.

Any person aggrieved by an Ecology decision made in accordance with this permit may appeal that decision as provided by applicable law including, but not limited to, Chapter 43.21B RCW and Chapter 34.05 RCW.

4. Requirements for Transporting Biosolids

If you transport biosolids, you must ensure that the transportation vehicle is properly cleaned prior to use of the vehicle for the transportation of food crops, feed crops, or fiber crops.

4.1 Spill Prevention/Response Plan

A spill prevention/response plan from a facility with coverage under this permit must be in place for all biosolids transfers. The plan may be from either the sending or receiving facility, whichever has responsibility for the transfer.

You must submit a spill prevention/response plan to Ecology that describes how you will attempt to prevent and respond to any spills. The spill prevention/response plans must include the following:

- The main route traveled and any possible alternate routes
- Spill prevention measures
- Equipment needed to respond appropriately to a spill that will be carried on the vehicle transporting biosolids
- Spill response measures should a spill occur
- Contact information for Ecology, Jurisdictional Health Department(s) and Washington Department of Transportation.

Note: *The transportation of biosolids is otherwise subject to regulation by the Washington State Utilities and Transportation Commission under Title 81 RCW.*

5. Requirements for Storing Biosolids

Storage of biosolids must be conducted in a manner that is not likely to result in harm to human health and/or the environment and with approval from the regional coordinator.

5.1 Exemptions

- If you store biosolids in a manner that will not result in harm to human health and/or the environment, your storage is exempt from the provisions of Subsections 5.2 and 5.3 if either of the following applies:

- You are storing in accordance with a current local, state, or federal water pollution control permit or other environmental permit.
- You utilize temporary, small scale storage for no more than 30 days in a tank holding no more than 10,000 gallons with a total on-site maximum volume of no more than 20,000 gallons.

5.2 Surface Impoundments (Lagoons)

If you store your biosolids in a surface impoundment that was constructed and used for that purpose prior to July 1, 2007, the surface impoundment must meet the requirements for the design, construction, and operation of surface impoundments in Chapter 173-304 WAC or a higher standard.

If you store your biosolids in a surface impoundment that was constructed or upgraded since July 1, 2007, or you are proposing to use a surface impoundment for biosolids storage for the first time, the surface impoundment must meet the requirements for the design, construction, and operation of surface impoundments in Chapter 173-350 WAC or a higher standard.

5.3 Tanks

If you store biosolids in a tank, the following must be reviewed by a licensed Professional Engineer and approved by Ecology:

- All tanks must be structurally sound.
- All tanks must be sited in a stable location.
- No tanks may be sited in an area where the seasonal ground water may come into contact with the tank unless otherwise approved by Ecology.
- If tanks are above ground, secondary containment may be required as part of the approval process.
- If tanks are below ground, leak detection tests may be required as part of the approval process.

6. Requirements for Disposal of Sewage Sludge in a Municipal Solid Waste Landfill

6.1 Disposal on an Emergency Basis

If you want to dispose of biosolids or sewage sludge on an emergency basis you must do the following:

- Obtain written approval from Ecology that disposal is an acceptable option.
- Obtain a written determination from the LHJ where the biosolids or sewage sludge is proposed for disposal

The LHJ must notify Ecology in writing of its findings and the basis for its determination. In its written notification, the LHJ must include the following:

- The date on which disposal is approved to begin.
- Any conditions of approval.
- The date after which disposal is prohibited.

6.2 Disposal on a Temporary Basis

If you want to dispose of biosolids or sewage sludge on a temporary basis you must do the following:

- Obtain written approval from Ecology that disposal is an acceptable option.
- Obtain written approval for disposal from the LHJ where the biosolids or sewage sludge is proposed for disposal.
- Provide a copy of the LHJ approval to Ecology.
- Submit a plan for approval to Ecology. The plan must include the following information:
    - The conditions that make disposal necessary.
    - The steps that will be taken to correct the conditions that make disposal necessary so that disposal will not become a long-term management option.
    - Submit a timetable for implementing the steps to be taken to correct the conditions that make disposal necessary.
    - Provide Ecology with written approval for disposal from the local health jurisdiction and the receiving health jurisdiction.

6.3 Disposal on a Long-term Basis

Disposal of biosolids or sewage sludge on a long-term basis requires:

- Authorization in a valid NPDES or state waste discharge permit issued under chapter 90.48 RCW or a permit issued under this chapter
- You must submit, for Ecology approval, an evaluation of the various management options that demonstrates to the satisfaction of Ecology that options for beneficial use are economically infeasible.

Written approval for disposal from the local health jurisdiction in the receiving jurisdiction must be submitted to Ecology

7. Requirements for Transferring Biosolids

Coverage under this permit includes authorization for transferring biosolids from one facility to another for treatment or management if the following conditions are met:

- Nothing in the permit for either the sending or the receiving facility prohibits the transfer of biosolids.
- Both the sending and the receiving facility exchange adequate information needed to comply with this permit and Chapter 173-308 WAC. This may include, but is not limited to, information on biosolids quality and the permit status of each facility.
- Approval from Ecology

8. Requirements for Analyzing Biosolids and Monitoring Processes

This section contains the minimum requirements for biosolids analysis and process monitoring that are applicable when you prepare biosolids for land application or sale/give away.

You must submit a biosolids sampling plan that addresses how you intend to meet the requirements in this section. As part of the approval process, Ecology may require biosolids analysis and/or process monitoring beyond the minimum requirements in this section.

8.1 Representative Sampling

Samples collected for analysis and monitoring locations must be representative of the biosolids or the treatment process used to prepare the biosolids.

8.2 Frequency of Biosolids Analysis

At a minimum, you must analyze your biosolids at the frequency listed in Table 1. Ecology may require additional sampling and analysis. The frequency of biosolids analysis is based on the dry weight tonnage of biosolids applied to the land or prepared for sale/give away per 365-day period. For facilities that compost or mix Class B quality biosolids with other materials, the frequency of analysis is based on the dry weight tonnage of the total amount of material, not just the biosolids.

Table 1 applies to the pollutants in WAC 173-308-160, the pathogen density requirements in WAC 173-308-170, the vector attraction reduction standards in WAC 173-308-180, and the nitrogen concentrations and percent solids needed to support agronomic rate determinations. It does not apply to process monitoring, which is described in Subsection 8.3.

Table 1 Minimum Frequency of Biosolids Analysis (adapted from WAC 173-308-150)

Metric tons per Year	Frequency*
<1 - 290 (<1 - 320 U.S. tons)	once per year (1X per year)
290 - 1,500 (320 - 1,653 U.S. tons)	once per quarter (4X per year)
1,500 - 15,000 (1,653 - 16,535 U.S. tons)	once per 60 days (6X per year)
>15,000 (>16,535 U.S. tons)	once per month (12X per year)
* = after 2 years of analyzing at this frequency, analysis for the pollutant concentrations may be reduced, but it must not be less than once per year	

8.3 Frequency of Process Monitoring

Monitoring of the processes used to prepare biosolids that are land applied or sold/given away must be conducted at a frequency that will ensure that the process meets the applicable requirements. This applies to the pathogen reduction processes in WAC 173-308-170 and the vector attraction reduction processes in WAC 173-308-180. As an example, Table 2 provides the minimum expectations for monitoring temperatures for a specific composting process.

Table 2 Minimum Process Monitoring Requirements for Meeting the Pathogen and Vector Attraction Reduction Requirements by the Static Aerated Pile Composting Method

Process	Required Process Monitoring*
Pathogen reduction via WAC 173-308-170(3)(b)(i)(A)	Monitor pile temperatures for at least 3 continuous days
Vector attraction reduction via WAC 173-308-180(3)	Monitor pile temperatures for at least an additional 11 continuous days (a total of 14 days)
** = applies to each composting pile*	

8.4 Point of Compliance

The point of compliance for a sample is the date on which the sample is taken, not the date on which results are subsequently reported.

You may distribute biosolids based on the most recent analytical results. However, if subsequent results show that you distributed biosolids that failed to meet the appropriate standards, you will be in violation of this permit.

8.5 Requirement for Analysis by an Accredited Laboratory

An accredited laboratory is a laboratory accredited under Chapter 173-50 WAC, Accreditation of Environmental Laboratories, for a specific analyte using a specific analytical method.

All required biosolids analyses must be performed by a laboratory that is accredited by Ecology for the respective method used if an accreditation protocol for the method exists. Accreditation must be under the "Solids and Chemical Materials" matrix, unless otherwise approved

8.6 Analytical Methods

Unless another method is approved by Ecology, the methods in Table 3 must be used for biosolids analysis. In addition, the basic preservation and maximum holding times listed in Table 3 must be met.

Table 3 Analysis Methods, Preservation and Holding Times (adapted from WAC 173-308-140)

Parameter	Methods	Basic Preservation	Maximum Holding Time
Arsenic	SW-846 6010 SW-846 6020 SW-846 7010 SW-846 7061	Cool to ~4° C	6 months
Cadmium	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Chromium VI	SW-846 7195 SW-846 7196 SW-846 7197 SW-846 7198	Cool to ~4° C	28 days
Copper	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Lead	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Mercury	SW-846 7470 SW-846 7471	Cool to ~4° C	28 days
Molybdenum	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Nickel	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Selenium	SW-846 6010 SW-846 6020 SW-846 7010 SW-846 7741	Cool to ~4° C	6 months
Zinc	SW-846 6010 SW-846 6020 SW-846 7000 SW-846 7010	Cool to ~4° C	6 months
Total Kjeldahl Nitrogen (TKN)	SM 4500, N_{org} B SM 4500, N_{org} C ASTM D3590-89 ASTM D3590-02	Cool to ~4° C	28 days
Nitrate-nitrogen	EPA 353.2 SM 4500-NO_3 E, F, or H	Cool to ~4° C	28 days
Ammonia-nitrogen	SM 4500-NH_3 B + C, D, E, or G	Cool to ~4° C	28 days
Organic Nitrogen	Calculated: TKN minus NH_3-N	Not applicable	Not applicable
Total Phosphorus	EPA 365.1 EPA 365.3 SM 4500-P B + E or F	Cool to ~4° C	28 days
PCBs	EPA 1668	Cool to ~4° C	1 year

Parameter	Methods	Basic Preservation	Maximum Holding Time
	SW-846 8082		
Dioxins and Furans	EPA 1613 SW-846 8280 SW-846 8290	Freeze at -10° C	1 year
Semi-volatile Organic Compounds	SW-846 8270	Cool to ~4° C	14 days
Volatile Organic Compounds	SW-846 8260	Cool to ~4° C Freeze at -7° C or preserve with methanol	48 hours 14 days
Total Solids, Fixed Solids, or Volatile Solids	SM 2540 G	Cool to ~4° C	7 days
Volatile Solids Reduction	EPA/625/R-92/013 (Appendix C)	Not applicable	Not applicable
Additional Volatile Solids Reduction for Anaerobically Digested Solids	EPA/625/R-92/013 (Appendix D.1)	Hold at temperature of digester Maintain anaerobic conditions	6 hours
Additional Volatile Solids Reduction for Aerobically Digested Solids	EPA/625/R-92/013 (Appendix D.3)	Cool to 20° C Maintain aerated conditions	As soon as possible
Specific Oxygen Update Rate (SOUR)	EPA/625/R-92/013 (Appendix D.2) SM 2710 B	Hold at temperature of digester (10-30° C) Maintain aerobic conditions	As soon as possible
pH	SW-846 9040 (if <80% solids) SW-846 9045 (if >80% solids)	Not applicable	15 minutes
Fecal Coliform	EPA 1680 EPA 1681 EPA/625/R-92/013 (Appendix F) SM 9221 C and E SM 9222 D	Cool to ~4° C	Analysis within 8 hours from time of collection. Extended to 24 hours if using EPA 1680 or EPA 1681 for Class A compost or Class B from a digester SM 9222 D is not recommended and may only be used for Class B
Salmonella bacteria	EPA 1682 SM 9260 D EPA/625/R-92/013 (Appendix G)	Cool to ~4° C	6 hours
Helminth Ova	EPA/625/R-92/013 (Appendix I)	Cool to ~4° C	1 month
Enteric Viruses	ASTM D4994-89 EPA/625/R-92/013 (Appendix H)	Cool to ~4° C Freeze at -18° C	<24 hours 2 weeks

8.7 Records of Analytical and Monitoring Information

Records of analytical and monitoring information must include all of the following:

- The date, place, and time of sampling or measurement.
- The individuals who performed the sampling or measurement.
- The date analysis was performed.
- The individual who performed the analysis.
- The analytical technique or method used.
- The results of the analysis or measurement, including Quality Assurance and Quality Control (QA/QC) results.

9. Requirements for Biosolids Applied to Agricultural Land, Forest Land, Public Contact Sites, or Land Reclamation Sites

9.1 Removing Manufactured Inerts

The biosolids must meet the requirements for removal of manufactured inerts in WAC 173-308-205. Minimally, the following conditions must be met:

- The biosolids must contain <1% by volume recognizable manufactured inerts.
- Material must be screened through a bar screen with a maximum 3/8 inch aperture or an Ecology-approved equivalent process is required. Screening (or an approved equivalent process) may occur at any time in the wastewater treatment or biosolids manufacturing process, but it must occur before grinding or similar processes.

9.2 Soil Testing

All new land application sites must test for the pollutants listed in WAC 173-308-160 Table 3 to determine background levels.

Soil nutrient levels must be tested prior to each land application event. Background nutrient levels will be used to calculate the agronomic rate in accordance with WAC 173-308-190, except as allowed for certain land reclamation sites or research projects approved in accordance with WAC 173-308-190(3) and WAC 173-308-192, respectively.

9.3 Agronomic Rate

The biosolids must be applied at an agronomic rate in accordance with WAC 173-308-190, except as allowed for certain land reclamation sites or research projects approved in accordance with WAC 173-308-190(3) and WAC 173-308-192, respectively.

The person who prepares the biosolids is responsible for providing information necessary to determine an agronomic rate to the person who receives the biosolids.

9.4 Pollutants

The biosolids must not exceed the ceiling concentration limits in WAC 173-308-160 Table 1. In addition, the biosolids must either not exceed the pollutant concentration limits in WAC 173-308-160 Table 3 or be applied at a rate that will not exceed the cumulative pollutant loading rates in WAC 173-308-160 Table 2.

If the biosolids are subject to the cumulative pollutant loading rates in WAC 173-308-160 Table 2, the person who proposes to apply the biosolids must obtain approval from Ecology in accordance with the process prescribed in WAC 173-308-160(2) prior to application. Table 4 provides a summary of WAC 173-308-160 Tables 1, 2, and 3.

Table 4 Allowable Biosolids Pollutants and Loading Rates (adapted from WAC 173-308-160)

Pollutant	WAC 173-308-160 Table 1 Ceiling Limits	WAC 173-308-160 Table 2 Cumulative Loading Rates	WAC 173-308-160 Table 3 Pollutant Limits
Arsenic	75 mg/kg	41 kg/ha	41 mg/kg
Cadmium	85 mg/kg	39 kg/ha	39 mg/kg
Copper	4300 mg/kg	1500 kg/ha	1500 mg/kg
Lead	840 mg/kg	300 kg/ha	300 mg/kg
Mercury	57 mg/kg	17 kg/ha	17 mg/kg
Molybdenum	75 mg/kg	Not applicable	Not applicable
Nickel	420 mg/kg	420 kg/ha	420 mg/kg
Selenium	100 mg/kg	100 kg/ha	100 mg/kg
Zinc	7500 mg/kg	2800 kg/ha	2800 kg

9.5 Pathogens

The biosolids must meet one of the Class A processes in WAC 173-308-170(1)-(4) or one of the Class B processes in WAC 173-308-170(5)-(7).

9.6 Vector Attraction Reduction

The biosolids must meet either one of the vector attraction reduction process in WAC 173-308-180 or be managed to reduce vector attraction in the field as described in WAC 173-308-210(4)(a) and (b).

9.7 Site Management and Public Access Restrictions for Class B Biosolids

The site management and public access restrictions in this subsection apply to biosolids that are Class B for pathogens when they are applied to the land.

9.7.1 Crop Harvest Waiting Periods

The time between the last application of Class B biosolids and crop harvesting must adhere to the waiting periods in Table 5.

Table 5 Crop Harvesting Restrictions for Class B Biosolids

Crop Type	Examples	Does the harvested part of plant contact biosolids?	Length of time the biosolids remain on soil surface	Waiting period until harvest is allowed
Above ground food crops	Cherries, wheat	No	Not applicable	30 days
Above ground food crops	Lettuce, cucumbers	Yes	Not applicable	14 months
Root food crops	Onions, potatoes	Yes	≥4 months	20 months
Root food crops	Onions, potatoes	Yes	<4 months	38 months
Feed crops	Range land, pasture	Not applicable	Not applicable	30 days
Fiber crops	Trees, cotton	Not applicable	Not applicable	30 days
Turf	Lawn grass	Not applicable	Not applicable	1 year*
** = unless a different waiting period is approved by Ecology*				

9.7.2 Public Access Restrictions

Public access must be restricted following the application of Class B biosolids. Minimally, sites must be posted during the entire time site access is restricted in accordance with the requirements in Table 6. Exceptions to these requirements must have approval by Ecology.

Table 6 Site Posting Requirements for Class B Biosolids

Where	Notice Content*	How Long
All significant points of access to the site Every ½ mile (805 meters) around the perimeter of the site	The name and address or phone number of the generator and, if different, the person who applies the biosolids The names, addresses, and phone numbers of the regulatory and permitting authorities The material that is being applied Notice that access is restricted and, if desired, the date after which access is no longer restricted If applicable, a notice on limitations regarding the harvesting of edible plants from the site	Sites with a "high" potential for public exposure: 1 year Sites with a "low" potential for public exposure: 30 days
** = unless the use of "No Trespassing" signs has been approved by Ecology for this purpose*		

9.7.3 Additional Site Management Restrictions

Table 7 contains additional site management restrictions that must be met when Class B biosolids are land applied.

Table 7 Additional Site Management Restrictions for Class B Biosolids

Feature	Restriction
Surface waters	No application within 100 feet*
Wells	No application within 100 feet (30.5 meters)*
Wetlands	No application allowed**
Waters of the state	No application allowed**
Flooded, frozen, or snow-covered sites	No application allowed**
** = unless a different buffer is approved or required by Ecology* *** = unless approved by Ecology; applies to any Class B quality biosolids*	

10. Requirements for Biosolids Sold/Given Away in Bags or Other Containers

Any biosolids sold or given away must meet the pollution concentration limits in Table 3 of WAC 173-308-160, one of the Class A pathogen reduction requirements in WAC 173-308-170 and one of the vector attraction reduction requirements in WAC 173-308-180.

10.1 Labeling Requirements

The biosolids must have a label or accompanying information sheet. The label or information sheet must contain the following information:

- The name, address, and phone number of the person who prepared the biosolids.
- A statement or information indicating that the product complies with applicable regulations for biosolids or that the product has been prepared to meet standards that make it safe for its intended use when used in accordance with the directions provided by the manufacturer.
- A statement or information that encourages proper use of the product and protection of public health and the environment. This may include information on product storage, hygiene, and protection of surface or ground water resources.
- Agronomic rates for typical applications or guidance on how to determine the agronomic rate of application.
- A statement or information indicating that the product contains or is derived from biosolids.
- Unless registered as a fertilizer by the Washington State Department of Agriculture, a disclaimer stating that the product is not a commercial fertilizer and that all nutrient claims are estimates or averages and not guaranteed.

11. Requirements for Septage Applied to the Land

This section contains the requirements for the land application of septage. It does not apply to "septage managed as biosolids originating from sewage sludge".

11.1 Removing Manufactured Inerts

The septage must meet the requirements for removal of manufactured inerts in WAC 173-308-205. Minimally, the following conditions must be met.

- The septage must contain <1% by volume recognizable manufactured inerts.
- Screening through a bar screen with a maximum 3/8 inch opening or an Ecology-approved equivalent process.

11.2 Soil Testing

All new land application sites must test for pollutants to determine background levels.

Soil nutrient levels must be tested prior to each land application event. Background nutrient levels will be used to calculate the agronomic rate in accordance with WAC 173-308-190.

11.3 Application Rates

The septage must be applied at a rate not exceeding the rate determined by *Equation 1.* To determine the distance *(in feet*) over which a load of liquid septage should be spread to meet the application rate, use Equation 2.

Equation 1 – Annual Application Rate for Septage

AAR = N ÷ 0.0026

Where:

AAR = annual application rate in gallons per acre per 365-day period
N = amount of nitrogen in pounds per acre per 365-day period needed by the crop or vegetation grown on the land (subtract any nitrogen supplied by other sources—for example, commercial fertilizers or manures)

Equation 2 – Spreader Drive Length for Septage

Drive length (in feet) = gallons ÷ spread width (in feet) x 43,560 ÷ AAR

Where:
AAR = annual application rate in gallons per acre per 365-day period determined by Equation 1

11.4 Pollutants

The septage application rate formula in Equation 1 was developed by EPA. EPA included acceptable pollutant loading from septage into the formula. Testing for pollutants in WAC 173-308-160 is not required for septage applied to land. Ecology may require additional or more stringent testing requirements developed as a condition of final coverage under this permit.

11.5 Pathogen Reduction and Vector Attraction Reduction

The requirements for pathogen and vector attraction reduction for septage are based on the percent by volume of septage from households.

11.5.1 Loads with >75% from Households

For loads of septage composed of >75% septage from households, one of the following requirements must be met.

1. The septage must be injected so that no significant amount of the septage is on the surface within 1 hour after injection, or
2. The septage must be incorporated into the soil within 6 hours after application, or
3. The septage must be stabilized by raising the pH to ≥ 12 and held at this pH for ≥ 30 minutes. The following standards apply to this pH stabilization process:

    - Samples collected or monitoring locations must be representative of the septage that will be applied.
    - A minimum of 2 tests for pH must be conducted.

- The first test must occur after lime or an alkali has been added and a pH of ≥ 12 has been attained.
- The second test must occur ≥ 30 minutes after the first test to show that a pH of ≥ 12 has been retained.
- If the pH is <12 when the second test is conducted, the process must be restarted.

11.5.2 Loads with <75% from Households

For loads of septage composed of <75% septage from households, the septage must be stabilized by raising the pH to ≥12 and held at this pH for ≥30 minutes.

The following standards apply to this pH stabilization process:

- Samples collected or monitoring locations must be representative of the septage that will be applied.
- A minimum of 2 tests for pH must be conducted.
- The first test must occur after lime or an alkali has been added and a pH of ≥12 has been attained.
- The second test must occur >30 minutes after the first test to show that a pH of ≥12 has been retained.
- If the pH is <12 when the second test is conducted, the process must be restarted.

11.6 Sites where Septage Cannot be Applied

Septage cannot be applied to a public contact site, a lawn, or a home garden. A "public contact site" is land with a high potential for public exposure, including, but not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, golf courses, and reclamation sites in a city.

11.7 Site Management and Public Access Restrictions

The site management and public access restrictions in this subsection apply when septage is applied to the land.

11.7.1 Crop Harvest Waiting Periods

The time between the last application of septage and crop harvesting must adhere to the waiting periods in Table 8.

Table 8 Crop Harvesting Restrictions for Septage

Crop Type	Examples	Does the harvested part of plant contact septage?	Length of time the septage remains on soil surface	Waiting period until harvest is allowed
Above ground food crops	Cherries, wheat	No	Not applicable	30 days
Above ground food crops	Lettuce, cucumbers	Yes	Not applicable	14 months
Root food crops	Onions, potatoes	Yes	>4 months	20 months
Root food crops	Onions, potatoes	Yes	<4 months	38 months
Feed crops	Range land, pasture	Not applicable	Not applicable	30 days
Fiber crops	Trees, cotton	Not applicable	Not applicable	30 days

11.7.2 Public Access Restrictions

Public access must be restricted following the application of septage. Minimally, sites must be posted during the entire time site access is restricted in accordance with the requirements in Table 9.

Table 9 Site Posting Requirements for Septage

Where	Notice Content*	How Long
• **All significant points of access to the site** • **Every ½ mile (805 meters) around the perimeter of the site**	• **The name and address or phone number of the generator and, if different, the person who applies** • **The names, addresses, and phone numbers of the regulatory and permitting authorities** • **The material that is being applied** • **Notice that access is restricted and, if desired, the date after which access is no longer restricted** • **If applicable, a notice on limitations regarding the harvesting of edible plants from the site**	**30 days**
**** = unless the use of "No Trespassing" signs has been approved by Ecology for this purpose***		

11.7.3 Additional Site Management Restrictions

Table 10 contains additional site management restrictions that must be met when septage is applied.

Table 10 Additional Site Management Restrictions for Septage

Feature	Restriction
Surface waters	**No application within 100 feet (30.5 meters)***
Wells	**No application within 100 feet (30.5 meters)***
Wetlands	**No application allowed****
Waters of the state	**No application allowed****
Flooded, frozen, or snow-covered sites	**No application allowed****

**** = unless a different buffer is approved by Ecology***
***** = unless approved by Ecology***

APPENDIX 1 - PUBLIC NOTICE CONTENT

1) Name and address of the facility and the name of the contact person for the facility.
2) Name and address of Ecology person responsible for the permit.
3) Name and address of the local health jurisdiction person responsible for the permit if the local health jurisdiction has been delegated this responsibility.
4) A description of the proposal.
   - Proposals for coverage under this permit must cite the General Permit for Biosolids Management.
   - Proposals for land application plans must contain information on the location of the proposed land application sites and, if applicable, the sources of biosolids that may be applied.
   - Proposals for general land application plans must provide information on how the public will be notified when specific sites are identified.
5) A brief statement describing the applicant's biosolids management practices.
6) A statement describing an interested person's opportunity to comment or request a public hearing or meeting on the proposal, including the last date for comments or requests and the contact person to whom comments or requests must be directed.

   The period for comments and requests must be at least 30 days following the posting. Comments and requests should be directed to the responsible Ecology contact or the responsible local health jurisdiction contact if the authority is delegated.

   The following is an example: "*Any person who wants to comment on this proposal or wants to request a public hearing or meeting must do so in writing within 30 days of this notice. Comments should be addressed to* (insert either 'the Ecology contact listed' or 'the local health jurisdiction contact listed')*.*"
7) The statement, "*If you wish to be included on an interested parties list to receive notification of activities relating to this project, please notify, in writing, the* (insert facility name) *contact listed.* (Insert facility name) *will provide written confirmation by certified mail, return receipt requested, to each interested person or organization that their name has been placed on the list.*"
8) Any additional information considered necessary or proper.

APPENDIX 2 - GENERAL LAND APPLICATION PLAN CONTENT

1) Describes the geographical area covered by the plan, including the names of all counties and water resource inventory areas where biosolids may be applied.
2) Identifies site selection criteria.
3) Describes how sites will be managed.
4) Provides for not less than 30 days advance notice to Ecology of new or expanded land application sites, including those subject to provisional approval under WAC 173-308-310(18), to allow time for Ecology to object prior to the biosolids application.
5) Provides for advance public notice as required in WAC 173-308-310(13), and that is reasonably calculated to reach potentially interested adjacent and abutting property owners.

APPENDIX 3 - SITE SPECIFIC LAND APPLICATION PLAN CONTENT

1) Whether or not it is known or can be determined that biosolids containing pollutants in excess of the values

- WAC 173-308-160 Table 3 have ever been applied to the site, and if so:
- The date(s) when the biosolids were applied (if known). The amount of biosolids applied (if known).
- The concentrations of the pollutants in the biosolids (if known).
- The area(s) of the site to which the biosolids were applied (if known).

2) A discussion of the types of crops grown or expected to be grown, their intended end use (for example, pasture grass for a feed crop, corn as a food crop), and the current distribution of crops on the site.

3) An explanation of how agronomic rates will be determined during the life of the site, along with any currently available calculations. Whenever agronomic rates or the method used to determine agronomic rates change, an update of the agronomic rate calculations must be filed with Ecology.

4) Method(s) of application.

5) Seasonal and daily timing of biosolids applications.

6) Provisions for conducting any soils, surface waters, or ground water sampling and any available data collected from the site within the last 2 years.

7) The name of the county and water resource inventory area where biosolids will be applied.

8) A description of how biosolids will be stored at the site that also addresses related off-site storage.

9) Map(s) for the site(s) must be submitted. Maps must be of an appropriate scale to show the detail necessary for evaluation of the proposed application areas, and so that a person may reasonably be able to locate the sites and any application units within a site (for example, 1:7,920 [8 inches to the mile] for detailed information with an overview map at 1:63,360 [1 inch to the mile]).
Minimally, maps must provide the following information:

- A legend.
- The location and means of access.
- Specific areas of the site where biosolids may be applied. If there is more than one site or more than one application unit within a site, a site or unit ID number should be included.
- The number of acres in the site or in any distinct application unit within a site.
- Location and extent of any wetlands on the site.
- A topographic relief of the application site and surrounding area.
- Adjacent properties and uses, and their zoning classification.
- Any seasonal surface water bodies located on the site.
- Any perennial surface water bodies located on or within 1/4 mile (402 meters) of the site.
- The location of any wells located on or within 1/4 mile (402 meters) of the site that are listed in public records or otherwise known to the applicant, whether for domestic, irrigation, or other purposes.
- Buffer zones to features such as surface waters, wells, property boundaries, and roadways and the width of the buffer zones.
- The presence and extent of any threatened or endangered species or related critical habitat.
- The location of any critical areas on site, as required to be identified under Chapter 36.70A RCW in the county's growth management plan.
- The location and size of any areas that will be used to store biosolids.

10) If the seasonal ground water is 3 feet (0.91 meters) or less below the surface, a management plan describing how you will protect ground water. For example, you may propose to limit applications to the time of year when ground water has receded to more than 3 feet (0.91 meters) below the surface.

11) A description of how access to the site will be restricted (for example, signs posted around the site or other approved method of access restriction).
12) A copy of the landowner agreement required under WAC 173-308-120(6).
13) Any additional information requested by Ecology that is needed to evaluate the appropriateness of the site for biosolids application.

GLOSSARY OF TERMS

The following definitions cover many of the terms used in this permit.

"Accredited laboratory" is a laboratory accredited under Chapter 173-50 WAC for a specific analyte using a specific analytical method.

"Administrator" means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

"Aerobic digestion" is the biochemical decomposition of organic matter in biosolids into carbon dioxide and water by microorganisms in the presence of air. Aerobic digestion does not include composting.

"Agricultural land" is land on which a food crop, feed crop, or fiber crop is grown. This includes range land and land used as pasture.

"Agronomic rate" is the biosolids application rate that provides the amount of nitrogen necessary for the optimum growth of targeted vegetation, and that will not result in the violation of applicable standards or requirements for the protection of ground or surface water as established under Chapter 90.48 RCW and related rules including Chapters 173-200 WAC and Chapter 173-201A WAC.

"Anaerobic digestion" is the biochemical decomposition of organic matter in biosolids into methane gas and carbon dioxide by microorganisms in the absence of air. Anaerobic digestion does not include composting.

"Apply biosolids or biosolids applied to the land" means the land application of biosolids for the purpose of beneficial use.

"Beneficial use facility" means a receiving-only facility consisting of a site or sites where biosolids from other treatment works treating domestic sewage are applied to the land for beneficial use, which has been permitted as a treatment works treating domestic sewage in accordance with WAC 173-308-310, and that has been designated as a beneficial use facility through the permitting process.

"Beneficial use of biosolids" means the application of biosolids to the land for the purposes of improving soil characteristics including tilth, fertility, and stability to enhance the growth of vegetation consistent with protecting human health and the environment.

"Biosolids sold/given away in a bag or other container" means biosolids sold/given away to the general public in a bag or other container holding less than 1 metric ton (1.1 U.S. tons).

"Biosolids" means municipal sewage sludge that is a primarily organic, semisolid product resulting from the wastewater treatment process that can be beneficially recycled and meets all applicable requirements under this permit. Biosolids includes a material derived from biosolids, and septic tank sludge, also known as septage, that can be beneficially recycled and meets all applicable requirements under this permit. For the purposes of this permit, semisolid products include biosolids or products derived from biosolids ranging in character from mostly liquid to fully dried solids.

"Bulk biosolids" means biosolids that are not sold/given away in a bag or other container for application to the land.

“Ceiling concentration” means the maximum concentration of a pollutant in any biosolids sample, beyond which level the biosolids would be classified as sewage sludge not suitable for application to the land. Ceiling concentrations are established in Table 1 of WAC 173-308-160.

“Class I biosolids management facility” is any publicly owned treatment works (POTW), as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local program responsibilities under 40 CFR 403.10(e)), and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class I biosolids management facility by the EPA Regional Administrator, or in the case of approved state programs, the Regional Administrator in conjunction with the state director, because of the potential for its biosolids use or disposal practice to affect public health and the environment adversely.

“Clean Water Act” or “CWA” means the Clean Water Act or Federal Clean Water Act (FCWA) (formerly referred to as either the Federal Water Pollution Act or the Federal Water Pollution Control Act Amendments of 1972), Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, Public Law 97-117, and Public Law 100-4.

“Complete application” includes but, is not limited, to the following: a completed Application for Coverage, a vicinity map of the facility, a vicinity map of any associated treatment or storage facilities, a treatment facility schematic, confirmation that the SEPA requirements have been met, confirmation that public notice requirements have been met, land application plans if required, monitoring data if required, a biosolids sampling plan if required, a contingency plan for exceptional quality biosolids if required, a temporary disposal plan if required, a spill prevention/ response plan if required, and a signature by an appropriate official.

“Composting” means the biological degradation of organic materials under controlled conditions designed to promote aerobic decomposition. This does not include the treatment of sewage sludge in a digester at a wastewater treatment plant.

“Cumulative pollutant loading rate” is the maximum amount of a pollutant that can be applied to an area of land from biosolids that exceed the pollutant concentration limits established in Table 3 of WAC 173-308-160.

“Density of microorganisms” is the number of microorganisms per unit mass of total solids (dry weight) in the biosolids.

“Department” means the Washington state department of ecology and, within the scope of its delegation, a local health jurisdiction that has been delegated authority under WAC 173-308-050.

“Director” means the director of the department of ecology or his or her authorized representative.

“Disposal on a long-term basis” means to adopt disposal as a preferred method of management for at least 5 years, or for an indefinite period of time with no expectation for pursuing other management alternatives.

“Disposal on a temporary basis” means a period of more than 1 but less than 5 years. Generally, situations requiring the temporary use of disposal facilities will normally occur as a result of deficiencies in the wastewater or biosolids treatment process, or economic, administrative, or contractual constraints which cannot be resolved in less than 1 year.

"Disposal on an emergency basis" means a period up to but not exceeding 1 year. Generally, emergency situations requiring the use of disposal facilities will normally occur as a result of inclement weather conditions at a beneficial use site, contractual or technical difficulties in the treatment, transportation, or application of the biosolids, or as a result of short term economic or administrative barriers, any and all of which are expected to be resolved within a period of 1 year.

"Domestic sewage" is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

"Dry weight basis" means calculated on the basis of having been dried at 105C (221°F) until reaching a constant mass (in other words, essentially 100% solids content).

"EPA" means the United States Environmental Protection Agency.

"Exceptional quality biosolids" means biosolids that meet the pollutant concentration limits in Table 3 of WAC 173-308-160, and at least one of the Class A pathogen reduction requirements in WAC 173-308-170, and at least one of the vector attraction reduction requirements in WAC 173-308-180.

"Facility" means a treatment works treating domestic sewage as defined in this permit, unless the context of the permit requires otherwise. For the purposes of this permit a facility is considered to be new if it has not been previously approved for the treatment, storage, use, or disposal of biosolids or sewage sludge.

"Feed crops" are crops produced primarily for consumption by animals.

"Fiber crops" are crops such as flax and cotton including, but not limited to, those whose parts or by-products may be consumed by humans or used in the production or preparation of food for human consumption.

"Food crops" are crops consumed by humans. These include, but are not limited to, fruits, vegetables, grains, and tobacco.

"Forest" is an area of land that is managed for the production of timber or other forest products, or for benefits such as recreation and watershed protection, and that is or will be dominated by trees under the current system of management. For the purposes of this permit, other areas of land that are not regulated as agricultural land, public contact sites, land reclamation sites, or lawns or home gardens are considered forest land.

"General permit" means a permit issued by Ecology in accordance with the procedures established in this permit, to be effective in a designated geographical area, that authorizes the application of biosolids to the land or the disposal of sewage sludge in a municipal solid waste landfill, under which multiple treatment works treating domestic sewage may apply for coverage.

"Geometric mean" means the antilogarithm of the arithmetic average of the logarithms of the sample values, or the nth root of the product of n sample values.

"Ground water" means water in a saturated zone or stratum beneath the surface of land or below a surface water body.

"Health jurisdiction" or "local health jurisdiction" means city, county, city-county, or district public health jurisdiction as defined in Chapter 70.05 RCW, Chapter 70.08 RCW, and Chapter 70.46 RCW.

"Individual permit" means a permit issued by Ecology to a single treatment works treating domestic sewage in accordance with WAC 173-308-310, which authorizes the management of biosolids or sewage sludge.

"Industrial septage" or "commercial septage" is the contents from septic tanks or similar systems that receive wastewater generated in a commercial or industrial process. This definition includes, but is not limited to, grease trap wastes generated at restaurants and similar food service facilities.

"Industrial wastewater" or "commercial wastewater" is wastewater generated in a commercial or industrial process.

"Incineration" means the firing of sewage sludge as a means of disposal.

"Land application" is the application of biosolids to the land surface by means such as spreading or spraying, the injection of biosolids below the land surface, or the incorporation of biosolids into the soil, for the purpose of beneficial use.

"Land with a high potential for public exposure" is land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (for example, a construction site located in a city).

"Land with a low potential for public exposure" is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (for example, a strip mine located in a rural area).

"Local health jurisdiction" see definition of health jurisdiction.

"Manufactured inerts" means wastes such as plastic, metals, ceramics and other manufactured items that remain relatively unchanged during wastewater or biosolids treatment processes.

"Monthly average" is the arithmetic mean of all measurements taken during the month.

"Municipal sewage sludge" means sewage sludge generated from a publicly owned treatment works. For the purposes of this permit, sewage sludge generated from the treatment of only domestic sewage in a privately owned or industrial treatment facility is considered municipal sewage sludge.

"Municipality" means a city, town, borough, county, parish, district, association, or other public body (including an inter-municipal agency of two or more of the foregoing entities) created by or under state law, or a designated and approved management agency under Section 208 of the Clean Water Act, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201(e) of the Clean Water Act, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of biosolids.

"Nonexceptional quality biosolids" means biosolids that do not meet the criteria of "exceptional quality biosolids" as defined in this section.

"Other container" is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of 1 metric ton (1.1 U.S. tons) or less.

“Owner” means any person with ownership interest in a site or facility, or who exercises control over a site or facility, but does not include a person who, without participating in management of the site or facility, holds indicia of ownership primarily to protect the person's security interest.

“Pasture” is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

“Pathogenic organisms” are disease causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

“Permit” means an authorization, license, or equivalent control document issued by the director to implement the requirements of this permit. Unless the context requires differently, the use of the term in this permit refers to individual permits, general permits, and coverage under general permits.

“Person who prepares biosolids” is either the person who generates biosolids during the treatment of domestic sewage in a treatment works or the person who derives a material from biosolids.

“Person” is an individual, association, partnership, corporation, municipality, state or federal agency, or an agent or employee thereof.

“pH” means the logarithm of the reciprocal of the hydrogen ion concentration.

“Place sewage sludge” or “sewage sludge placed” means to dispose of sewage sludge.

“Pollutant limit” is a numerical value that describes the amount of a pollutant allowed per unit amount of biosolids (for example, milligrams per kilogram of total solids), the amount of a pollutant that can be applied to a unit area of land (for example, kilograms per hectare), the volume of a material that can be applied to a unit area of land (for example, gallons per acre), or the number of pathogens or indicator organisms per unit of biosolids. Pollutant limits are established in Tables 1 - 3 of WAC 173-308-160, in WAC 173-308-170, and in WAC 173-308-270.

“Pollutant” is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or a pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms.

“Public contact site” is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

“Publicly owned treatment works” means a treatment works treating domestic sewage that is owned by a municipality, the state of Washington, or the federal government.

“Range land” is generally open, uncultivated land dominated by herbaceous or shrubby vegetation that may be used for grazing or browsing, either by wildlife or livestock.

“Receiving-only facility” means a treatment works treating domestic sewage that only receives sewage sludge or biosolids from other sources for further treatment and/or application to the land, and which does not generate any biosolids from the treatment of domestic sewage.

“Reclamation site” is drastically disturbed land that is reclaimed using biosolids. This includes, but is not limited to, strip mines and construction sites.

“Regional administrator" means the Regional Administrator of Region 10 of the Environmental Protection Agency or his/her authorized representative.

“Residential equivalent value” means the number of residential equivalents determined for a facility under Chapter 173-224 WAC or a value similarly obtained under WAC 173-308-320.

“Restrict public access” means to minimize access of nonessential personnel to land where biosolids are applied, through the use of natural or artificial barriers, signs, remoteness, or other means.

“Saturated zone” means the zone below the water table in which all interstices are filled with water.

“Septage managed as biosolids originating from sewage sludge” means septage managed as if it had originated from a sewage treatment process at a wastewater treatment facility including, but not limited to, meeting the sampling requirements in WAC 173-308-140, the monitoring requirements in WAC 173-308-150, the pollutant limits in WAC 173-308-160, the pathogen reduction requirements in WAC 173-308-170, and the vector attraction reduction requirements in this permit.

“Septage management facility” means a person who applies septage to the land or one that treats septage for application to the land.

“Septage” or “domestic septage” is liquid or solid material removed from septic tanks, cess pools, portable toilets, type III marine sanitation devices, vault toilets, pit toilets, RV holding tanks, or similar systems that receive only domestic sewage. Septage may also include commercial or industrial septage mixed with domestic septage if approved in accordance with WAC 173-308-020(3)(g).

“Sewage sludge” is solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

“Significant change in biosolids management practices” means, but is not limited to, the following: a change in the quality of biosolids that are applied to the land, either from class A to class B for pathogens, or from Table 3 to Table 1 of WAC 173-308-160 for pollutant limits; the addition of a new area to which biosolids will be applied which was not previously disclosed during a required public notice process; for class B biosolids only, a change from nonfood crops to food crops, a change from crops where the harvestable portions do not contact the biosolids/soil mixture to crops where the harvestable portions contact the biosolids/soil mixture, or a change in site classification from land with a low potential for public exposure to land with a high potential for public exposure; or any change or deletion of a requirement established in an approved land application plan or established as a condition of coverage under a permit that would result in a decrease in buffer size, site monitoring, or facility reporting requirements, which was not otherwise provided for in the permit or plan approval process.

“Site” means all areas of land, including buffer areas, which are identified in the scope of an approved Site Specific Land Application Plan. A site is considered to be new or expanded when biosolids are

applied to an area not approved in a Site Specific Land Application Plan or that was not previously disclosed during a required public notice process.

“Specific oxygen uptake rate (SOUR)” is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the biosolids.

“State” means the state of Washington.

“Store or storage of biosolids” is the placing of biosolids on land or in surface impoundments or other containment devices in which the biosolids remain for 2 years or less, except where a greater time period has been approved by Ecology. This does not include the placing of biosolids on land or in surface impoundments or other containment devices for treatment or disposal.

“Stover” is the non-grain, above-ground part of a grain crop, often corn or sorghum.

“Surface Disposal” is the placing of active sewage sludge into an area of land that contains one or more sewage sludge units.

“Surface impoundment” means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), and which is designed to hold an accumulation of liquids or sludges. The term includes holding, storage, settling, and aeration pits, ponds, or lagoons, but does not include injection wells.

“Surface waters of the state” means surface waters of the state as defined in WAC 173-201A-020.

“Tank” means a stationary device designed to contain an accumulation of liquid or semisolid materials and which is constructed primarily of nonearthen materials to provide structural support.

“Temporary, small-scale storage” is the storage of biosolids for no more than 30 days in a tank holding no more than 10,000 gallons with a total on-site maximum volume of no more than 20,000 gallons.

“Total solids” are the materials in biosolids that remain as residue when the biosolids are dried at 103 to 105C (217.4 to 221°F).

“Treat or treatment of biosolids” is the preparation of biosolids for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of biosolids. This does not include storage of biosolids.

“Treatment works treating domestic sewage” means a publicly owned treatment works or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage or sewage sludge, including land dedicated for the disposal of sewage sludge. Treatment works treating domestic sewage also includes beneficial use facilities and septage management facilities as defined in this section, and a person, site, or facility designated as a treatment works treating domestic sewage in accordance with WAC 173-308-310(1)(b). This definition does not include septic tanks or similar devices or temporary, small-scale storage as defined in this section.

“Treatment works” is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

“Unstabilized solids” are organic materials in biosolids that have not been treated in either an aerobic or anaerobic treatment process.

“Vector attraction” is the primarily odorous characteristic of biosolids that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

“Volatile solids” is the amount of the total solids in biosolids that are lost when the biosolids are combusted at 550C (1,022°F) in the presence of excess air.

“Waters of the state” means waters of the state as defined in RCW 90.48.020.

J AGENCY REVIEW COMMENTS AND RESPONSES

J.1 WASHINGTON DEPARTMENT OF ECOLOGY APPROVAL LETTER (PENDING)

J.2 ECOLOGY-CITY OF ARLINGTON EMAIL CORRESPONDENCE

J.3 WASHINGTON DEPARTMENT OF ECOLOGY REVIEW COMMENTS 9/14/2015 WITH CITY OF ARLINGTON RESPONSES 10/6/2015

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From:	Eleuterio, Lazaro (ECY)
To:	Mike Wolanek
Cc:	Karla Kasick; Kenny Schonberger (kschonberger@rh2.com); James Kelly; Fred Rapelyea
Subject:	RE: City of Arlington GSP
Date:	Tuesday, September 29, 2015 7:34:57 AM

Mike:

Thank you for your responses. No further details are required. Please, send two (2) hard copies of each page of the plan that were revised. I will replace the existing pages with the ones that were revised. One copy of the plan will be filed at Ecology's Central Records and the other I will send back to you.

Best regards,
Laz

Lazaro Eleuterio, Ph.D., CDT, PE
Municipal Facility Manager - Environmental Engineer 3
Washington State Department of Ecology | Water Quality Program
lele461@ecy.wa.gov
Phone: 425.649.7027

From: Mike Wolanek [mailto:mwolanek@arlingtonwa.gov]
Sent: Monday, September 28, 2015 3:32 PM
To: Eleuterio, Lazaro (ECY)
Cc: Karla Kasick; Kenny Schonberger (kschonberger@rh2.com); James Kelly; Fred Rapelyea
Subject: RE: City of Arlington GSP

Laz, I am in the process of implementing the revisions identified in the attached file in response to your comments. If you have any questions or desire more detail for any particular response, please do not hesitate to let me know.

One additional change we would like to implement is an Approvals page immediately behind the inside cover and in front of the Engineering Certifications by the City and RH2. The Approvals page would provide one place to record (and demonstrate) the acceptance (or adoption) of the Comp Plan by Ecology (with your signature and date), by the Planning Commission (with the chair's signature and date, and the date of the public hearing), and by the City Council (with Mayor's signature and date).

Any comments and correspondence that Ecology and other reviewers issue will go in Appendix J, Agency Review. The City's responses will also be recorded there. But we like the trust inspired up front in a well-vetted Plan by numerous signatures (State, local, and engineering). We're not expecting that you will change Ecology's review process, but we are

requesting that you will simply add your signature to what for us is a new format for an existing procedure. Look for this in our formal response to your comments.

Thanks, Mike

Mike Wolanek
Water Resources Planner
City of Arlington Public Works
360-403-3541 (Desk)

154 W. Cox Avenue
Arlington, WA 98223

From: Eleuterio, Lazaro (ECY) [mailto:LELE461@ECY.WA.GOV]
Sent: Monday, September 14, 2015 11:34 AM
To: James Kelly <jkelly@arlingtonwa.gov>; Mike Wolanek <mwolanek@arlingtonwa.gov>
Cc: Eleuterio, Lazaro (ECY) <LELE461@ECY.WA.GOV>
Subject: City of Arlington GSP

James and Mike:

Thank you for the opportunity to review the City of Arlington General Sewer Plan. Please, find enclosed my comments. I will issue an approval letter once Ecology's comments are fully addressed. Resubmit only the pages that will require editing and further clarification. Electronic PDF copies are acceptable.

Please, let me know if you have any questions or concerns.
Best regards,

Lazaro Eleuterio, Ph.D., CDT, PE
Municipal Facility Manager - Environmental Engineer 3
Washington State Department of Ecology | Water Quality Program
lele461@ecy.wa.gov
Phone: 425.649.7027

Review Phase:	Agency Review Draft Revised to Final based on thes Responses to Ecology's Comments							
Contact:	James Kelly and Mike Wolanek (City)					**Ecology Comment Date:**	**9/14/2015**	
	Karla Kasick (RH2 Engineering)					**COA Responses to Comments:**	**10/6/2015**	

No.	Page No.	Section Paragraph No.	Comment	Reviewer (Last Name, First Name)	Response (text revisions in red font)	Responder	Reviewer Check Off	Implementation Date	Implementation Initials
1	1-1	Chapter 1, Introduction	Under section 1.1 Wastewater Utility Ownership and Management, Ecology suggests the following language: "The City of Arlington (City) is a municipal corporation that **owns, operates and maintains** a public wastewater utility under NPDES Permit WA0022560."	Ecology (Eleuterio)	Agree. Changed "owns and operates" to "owns, operates and maintains" (page 1-1).	MW	JXK	29-Sep	MW
2	2-9	Chapter 2, Wastewater System Description	Under section 2.8.3 Lift Stations, Ecology recommends the following language: "The City currently **owns, operates and maintains** 12 wastewater lift stations." LS # 13 is equipped with 2 grinder pumps and below is the Ecology's position in regards to grinder pumps. Ecology's position on privately-owned and maintained grinder pumps: Per WAC 173-240-104, domestic sewage facilities will not be approved unless ownership and responsibility for operation and maintenance is by a public entity. If a waste discharge permit is required it must be issued to the public entity. Nothing in this rule precludes a public entity from contracting operation and maintenance of domestic sewage facilities. The exception is that ownership by nonpublic entities may be approved if the department determines the ownership in the public interest. To date, Ecology has not been presented with a case in which private ownership would be clearly in the public interest and therefore has not approved private ownership of grinder pumps. Ecology's mission is to protect water quality. History has shown that many homeowners do not take the initiative to properly maintain their on-property sewage systems. Any repair that is negleted by the homeowner can result in a significant health hazard and potential water quality deterioration. In addition, private facilities are not eligible for financial assistance from state or federal funding agencies. It is recommended that the District provide for public ownership and maintenance of the individual grinder pump stations so that Ecology can approve the Sewer Plan.	Ecology (Eleuterio)	The City owns and maintains 12 lift stations, numbers extend to 13 because LS-10 was abandoned. On page 2-9, the first sentence has been changed to read "The City currently owns, operates, and maintains 12 wastewater lift stations numbered 1 through 13, excluding 10." Later in Section 2.8.3, a 4th level header was added to clarify that the Cedar Stump lift station (#10) was abandoned in 2001. The City does not permit private sewage facilities except in unusual circumstances with specific limitations. Arlington Municipal Code 20.60 Part II A appears consistent with WAC 173-240-104 in this regard--see the link to the AMC below. Text for LS #13 under 2.8.3 has been revised to clarify the City's response during power outages. See also response to Comments #4 and 9 below. Link to: AMC 20.60 Part II A	MW	JXK	29-Sep	MW
3	2-9	Chapter 2, Wastewater System Description	Please, indicate whether Lift Station # 1 has or does not have backup power. If not, how will the City address this issue?	Ecology (Eleuterio)	LS #1 is served by the same backup generator as the entire WRF. This has been clarified in the text on about page 2-11. Also, the source areas to LS#1 are further described as: "...stormwater runoff from the site, associated public works' offices, ...".	MW	JXK	29-Sep	MW
4	2-11	Chapter 2, Wastewater System Description	On Table 2-3, please add a column "Standby Power" and describe for each lift station whether it is equipped with Portable Generator or On-site Generator.	Ecology (Eleuterio)	Table 2-3 has been modified to a landscape format to include a Stand-by Power description. (~page 2-10).	MW	JXK	29-Sep	MW

No.	Page No.	Section Paragraph No.	Comment	Reviewer (Last Name, First Name)	Response (text revisions in red font)	Responder	Reviewer Check Off	Implementation Date	Implementation Initials
5	2-14	Chapter 2, Wastewater System Description	Please add a brief discussion to the plan on the following topic: **Bypass:** State whether or not any of the 12 lift stations have a bypass to waters of the State. If so, list the strategies to eliminate any bypass due to power outage, mechanical failure, or unusual flow regime. For instance, bypass will be eliminated by flow storage, standby generator, or a combination of both.	Ecology (Eleuterio)	The first paragraph under 2.8.3 on page 2-9 has been revised to include the following sentence: "A description of each lift station, the telemetry system, pump control logic, and potential for sewage overflows or bypass at lift stations follows." A 4th level header "Risk of Bypasses..." has been added at the end of Section 2.8.3 (approximately page 2-15) to address Overflow and Bypass Potential. Briefly, there is no potential (or extremely small potential) for sewage releases at lift stations to reach waters of the State. Table 2-3 has also been modified to include a Risk of Bypass description for each lift station.	MW	JXK	29-Sep	MW
6	2-14	Chapter 2, Section 2-3 Existing Sewer Facilities	Please, add a brief discussion to the plan on pump station operations, including level control and pumping strategies. For example, how do the pumps turn on and off? Is the water level in the wet well that dictates the pump operation runs?	Ecology (Eleuterio)	The section under 4th level header Telemetry and Supervisory Control has been revised to specifically address the logic controlling pump station operations. It has been moved to before the discussion of the individual lift stations within the same subsection (2.8.3) on about page 2-11.	MW	JXK	29-Sep	MW
7		Chapter 2, Wastewater System Description	Please, list all industrial wastewater sources, quantity, periods of production, and their characteristics. If no industrial wastewater has been not identified in the last months, please state that on the report.	Ecology (Eleuterio)	A brief source characterization section has been added as subsection 2.2.4. It distinguishes residential from commercial and industrial customers, and identifies the several industrial customers targeted in the City's pretreatment program.	MW	JXK	29-Sep	MW
8	7-6	Chapter 7, Sewer System Improvements	Chapter 2 does not describe whether Lift Station (LS) # 1 has backup power, and Chapter 7 does not describe any improvements to LS # 1. How will the City address power failure at this lift station?	Ecology (Eleuterio)	As described in the response to comment No. 3, LS#1 is served by the same back up generator as the WRF. No improvement is necessary & no changes have been made.	MW	JXK	29-Sep	MW

No.	Page No.	Section Paragraph No.	Comment	Reviewer (Last Name, First Name)	Response (text revisions in red font)	Responder	Reviewer Check Off	Implementation Date	Implementation Initials
9	7-7	Chapter 7, Sewer System Improvements	Chapter 2 indicates that Lift Station # 13 is not equipped with a backup generator. How will the City address power failure at this lift station?	Ecology (Eleuterio)	No improvements are proposed for this "mild" deficiency (see response to Comment 2 above), & no changes have been made. Text for LS #13 under 2.8.3 has been revised to clarify the City's response during power outages as follows. During power outages, staff check all facilities, then re-check on a defined schedule. LS #13 would be serviced at an interval no greater than 48 hours. For extended outages, the City has three alternatives to assure successful backup operations. The simplest (and the one used the only time an extended outage required it) is the use of the utility's trash pump to pump the LS reservoir's contents to the adjacent manhole on the gravity line just 6 feet away. Two other alternatives are the use of either a portable generator or the vactor truck.	MW	JXK	29-Sep	MW
10	7-11	Chapter 7, Sewer System Improvements	Are both Interim and Permanent Improvement costs included in the Facilities Improvement costs? If so, would it be possible to show both costs before adding up?	Ecology (Eleuterio)	Yes. Although interim improvements were primarily identified for Project F2 at LS#4 and Project F3 at LS#7, where smaller single-year "early investments" were adequate to delay larger single-year expenditures by 3 to 5 years. These totals are easy to see without the need for a subtotals column. Where other projects include multi-year expenditures over the course of 2 or more consecutive years, this reflects the City's cost-basis (annual) accounting cycle, and a construction strategy to distribute funding requirements over more than one year. Totals for these permanent projects are already provided. *continued*	MW	JXK	29-Sep	MW
					In summary, it seems unnecessary to provide two additional columns (Perm. and Int. subtotals) for the two projects, especially when the table size is already 11x17". To help convey the above explanation, the text under 7.3.2 for projects F2 and F3 is revised to specify the years when the interim and permanent components of the projects are implemented. The reader will be able to track the scheduling and costs in Table 7-2.		JXK	29-Sep	MW

No.	Page No.	Section Paragraph No.	Comment	Reviewer (Last Name, First Name)	Response (text revisions in red font)	Responder	Reviewer Check Off	Implementation Date	 Initials
In addition to responses and revisions initiated by Ecology's comments above, the Final CWP also includes the following revisions to the Agency Review Draft CWP. All necessary replacement pages will be provided to recipients of the Agency Review Draft.									
11	Cover	Top center Lower right	Change "Agency Review Draft" to "Final"; Change "July 2015" to "October 2015"	COA	Done	MW	JXK	5-Oct	MW
12	Behind Cover	Bottom Citation	Change "Agency Review Draft" to "Final"; Change "July 2015" to "October 2015"	COA	Done	MW	JXK	5-Oct	MW
13	iii to iv	Signatures	Create "Approvals" page in front of engineering certifications	COA	Done	MW	JXK	2-Oct	MW
14	v to vi	Signatures	James Kelly signature and stamp	COA	Done. Replace page into final pdf document.	MW	JXK	29-Sep	MW
15	vii to xiii	Signatures	Three RH2 signatures and stamps	COA	Done. Replace page into final pdf document.	MW	JXK	29-Sep	MW
16	xi to end	TOC	Regenerate Tables of Contents, etc.	COA	Done	MW	JXK	5-Oct	MW
17	ES1 to ES6	Executive Summary	Correct headers confirmed for all sections of document	COA	Done	MW	JXK	5-Oct	MW
18	All	Footers	Regenerate the final file name in all footers (does not require reprinting for currently circulating copies)	COA	Done	MW	JXK	5-Oct	MW
19	3-12	below last paragraph near bottom of page	Extraneous sentence regarding formatting	COA	Deleted "This page blank…."	MW	JXK	6-Oct	MW
20	8-3	8.2.2	Inaccurate description of duties.	COA	Delete "Enters side sewer permit data in the sewer database." from under Utilities Administrative Specialist.	MW	JXK	6-Oct	MW
21	8-12	8.5	Position name inconsistent with org chart.	COA	Insert Administrative to read "Utilities Administrative Specialist".	MW	JXK	6-Oct	MW
22	Chapt 9	Financial Plan	Based on a request from the City's Executive Department, the City will not be instituting a **Rate Stabilization Fund.** The chapter has been edited and fund balance spreadsheets adjusted to reflect this change. As stated earlier in this chapter, a rate stabilization fund is a tool that is primarily used to show security to loan or bonding agencies. The City already sets up separate bond reserve funds for each debt secured and will continue to do so in the future.	COA Executive Dept	Revisions made. Chapter 9 has been edited and fund balance spreadsheets adjusted to remove references to a Rate Stabilization Fund. Inserted into Final.	JXK	JXK	5-Oct	MW, FCS
23	After G-2	SEPA DNS	Added signed DNS (2 pages) to completed SEPA checklist	COA	Inserted DNS (one sheet; 2 pgs)	MW	JXK	6-Oct	MW
24	J-1	Apdx J cover	Reprint without placeholder notes	COA	Deleted "Empty until…." Created placeholder for Ecology approval letter.	MW	JXK	6-Oct	MW
25	After J-2	Comments/responses	Missing from Agency Review Version	COA	Inserted comment/response spreadsheet and email correspondence.	MW	JXK	6-Oct	MW