AMBERWOODS

ORMOND BEACH, FLORIDA

CALCULATION MANUAL

PREPARED FOR:
U.S. CAPITAL ALLIANCE, LLC
880 AIRPORT ROAD
SUITE 113
ORMOND BEACH, FL 32174

DATE:
SEPTEMBER 19, 2022
REVISED JUNE 7, 2023

Kimberly A. Buck, State of Florida, Professional Engineer, License No. 38565; This item has been electronically signed and sealed by Kimberly A. Buck on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

Kimberly A. Buck,
State of Florida,
Professional Engineer,
License No. 38565
2023.06.09
09:13:30
-04'00'

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I. Project Narrative

Developer:	U.S. CAPITAL ALLIANCE, LLC
Project Name:	**Amberwoods**
Location:	SEC of Airport Rd. and Hunters Ridge Blvd.
Legal Description:	See Boundary Survey
Existing Use:	Wooded
Proposed Use:	Single-family residential

Project Description

The Amberwoods Subdivision will be an 40-lot single family subdivision on 24.26 acres. The project includes the construction of a surface water management system, utility infrastructure, and roadway improvements. The project is located within the limits of the City of Ormond Beach, Florida.

Water Distribution System

The water distribution system has been designed to provide the demand flows needed for each lot in addition to the required fire flow. Potable water demands for the project have been calculated based on the anticipated development program and Equivalent Residential Connection (ERC) factors. The required fire flow of 1,000 gpm has been determined based on the Florida Fire Prevention Code and City requirements.

The potable water distribution system has been designed using WaterCAD v8i to complete a hydraulic model of the system and evaluate design pressures and velocities. The Peak Hourly Flow (PHF) was modeled with the needed fire flow. For model simplicity, the demand for PHF has been divided among modeled nodes for each scenario.

The WaterCAD model showed that all three hydrants can achieve the required 1,000 gpm at 20 PSI during peak hour demands. The minimum residual pressure during the fire flow events was 42 PSI with a maximum velocity of 6.6 fps.

Wastewater Collection System

The wastewater collection system has been designed to collect the wastewater flows generated across the development via one proposed Lift Station. The lift station will discharge to the existing force main in Airport Rd. Right-of-Way.

Wastewater generation rates were calculated based on the anticipated development program and Equivalent Residential Unit (ERU) factors. Peak Design Flows (PDF) utilizing industry accepted peaking factors were used to size the gravity mains across the development and determine the design pumping rates for the lift station.

The lift station is designed to operate at 80 gpm with a TDH of 95′. The selected pump is a Sulzer / ABS Piranha grinder pump. In addition to operating at the desired operating point, the pump can handle a pressure range from 18′ to 161′ TDH. Making this pump ideal for the varying flow condition expected as the area continues to buildout.

APPENDIX A – POTABLE HYDRAULIC CALCULATIONS

1. Domestic Flow Demand
2. WaterCAD
    a. Nodal Diagram
    b. PHF + NFF

Amberwoods Subdivision

Domestic Flow Demand

Building type	Units	ERC FACTOR	Total ERC	ADF (GPD)	TOTAL ADF (GPM)	ADF / Home (GPM)	TOTAL MDF (GPM)	MDF / Home (GPM)	TOTAL PHF (GPM)	PHF / Home (GPM)
Single Famliy	40.00	1.00	40.00	12000	8.33	0.21	16.67	0.42	33.33	0.83
Total			40.00	12,000	8.33		16.67		33.33	

ERC Factors:

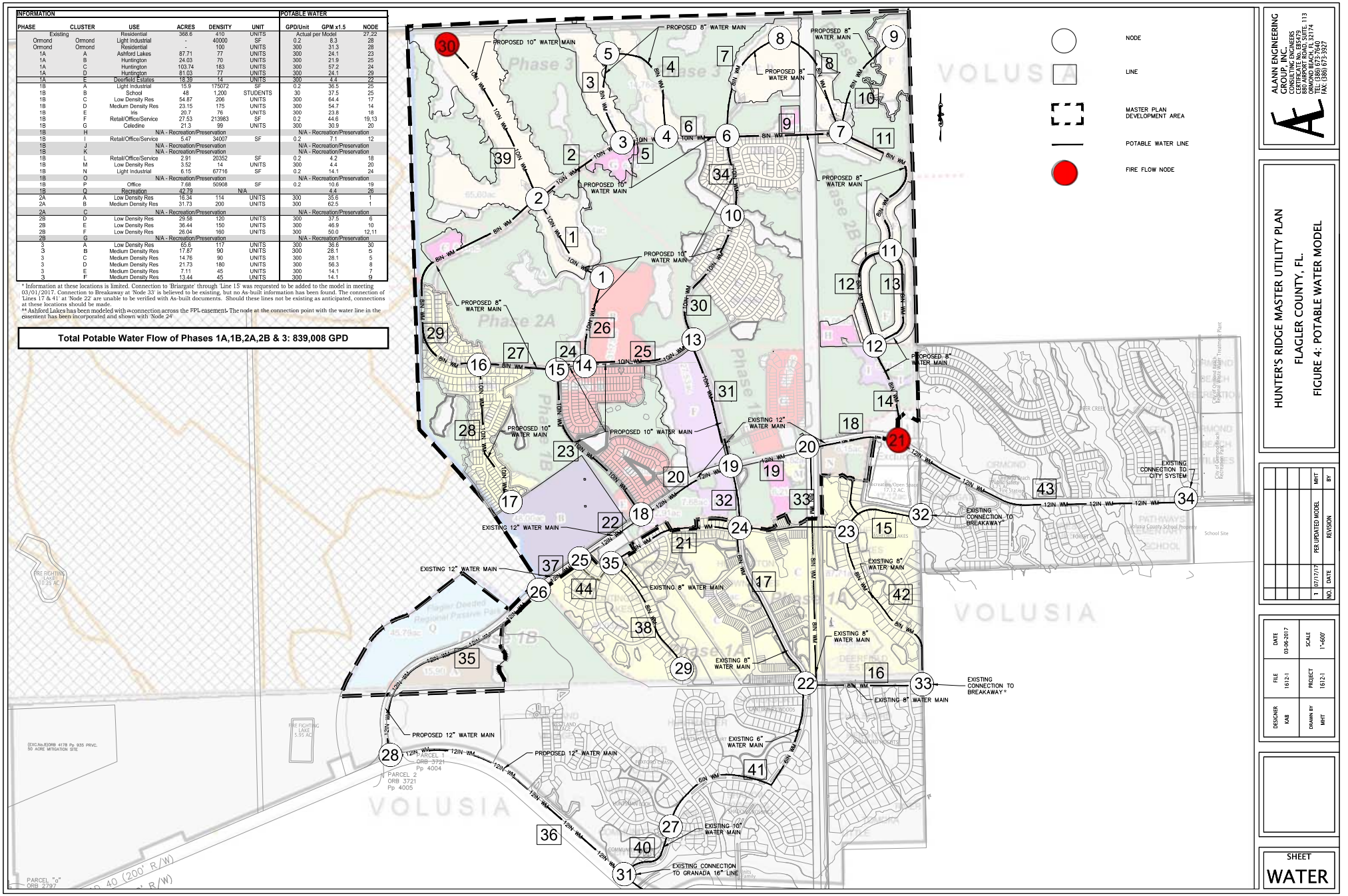
Single-Family Home	1	per Home
1 ERC	300	GPD
MDF Factor	2	
PHF Factor	4	

INFORMATION						POTABLE WATER		
PHASE	CLUSTER	USE	ACRES	DENSITY	UNIT	GPD/Unit	GPM x1.5	NODE
Existing		Residential	366.6	410	UNITS	Actual per Model		27,22
Ormond	Ormond	Light Industrial	-	40000	SF	0.2	8.3	28
Ormond	Ormond	Residential	-	100	UNITS	300	31.3	28
1A	A	Ashford Lakes	87.71	77	UNITS	300	24.1	23
1A	B	Huntington	24.03	70	UNITS	300	21.9	25
1A	C	Huntington	103.74	183	UNITS	300	57.2	24
1A	D	Huntington	81.03	77	UNITS	300	24.1	29
1A	E	Deerfield Estates	18.39	14	UNITS	300	4.4	22
1B	A	Light Industrial	15.9	175072	SF	0.2	36.5	25
1B	B	School	48	1,200	STUDENTS	30	37.5	25
1B	C	Low Density Res	54.87	206	UNITS	300	64.4	17
1B	D	Medium Density Res	23.15	175	UNITS	300	54.7	14
1B	E	Iris	20.7	76	UNITS	300	23.8	18
1B	F	Retail/Office/Service	27.53	213983	SF	0.2	44.6	19,13
1B	G	Celedine	21.3	99	UNITS	300	30.9	20
1B	H	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
1B	I	Retail/Office/Service	5.47	34007	SF	0.2	7.1	12
1B	J	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
1B	K	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
1B	L	Retail/Office/Service	2.91	20352	SF	0.2	4.2	18
1B	M	Low Density Res	3.52	14	UNITS	300	4.4	20
1B	N	Light Industrial	6.15	67716	SF	0.2	14.1	24
1B	O	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
1B	P	Office	7.68	50908	SF	0.2	10.6	19
1B	Q	Recreation	42.79	N/A			4.4	26
2A	A	Low Density Res	16.34	114	UNITS	300	35.6	1
2A	B	Medium Density Res	31.73	200	UNITS	300	62.5	1
2A	C	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
2B	D	Low Density Res	29.58	120	UNITS	300	37.5	6
2B	E	Low Density Res	36.44	150	UNITS	300	46.9	10
2B	F	Low Density Res	26.04	160	UNITS	300	50.0	12,11
2B	G	N/A - Recreation/Preservation				N/A - Recreation/Preservation		
3	A	Low Density Res	65.6	117	UNITS	300	36.6	30
3	B	Medium Density Res	17.87	90	UNITS	300	28.1	5
3	C	Medium Density Res	14.76	90	UNITS	300	28.1	5
3	D	Medium Density Res	21.73	180	UNITS	300	56.3	8
3	E	Medium Density Res	7.11	45	UNITS	300	14.1	7
3	F	Medium Density Res	13.44	45	UNITS	300	14.1	9

* Information at these locations is limited. Connection to 'Briargate' through 'Line 15' was requested to be added to the model in meeting 03/01/2017. Connection to Breakaway at 'Node 33' is believed to be existing, but no As-built information has been found. The connection of 'Lines 17 & 41' at 'Node 22' are unable to be verified with As-built documents. Should these lines not be existing as anticipated, connections at these locations should be made.

** Ashford Lakes has been modeled with a connection across the FPL easement. The node at the connection point with the water line in the easement has been incorporated and shown with 'Node 24'

Total Potable Water Flow of Phases 1A,1B,2A,2B & 3: 839,008 GPD



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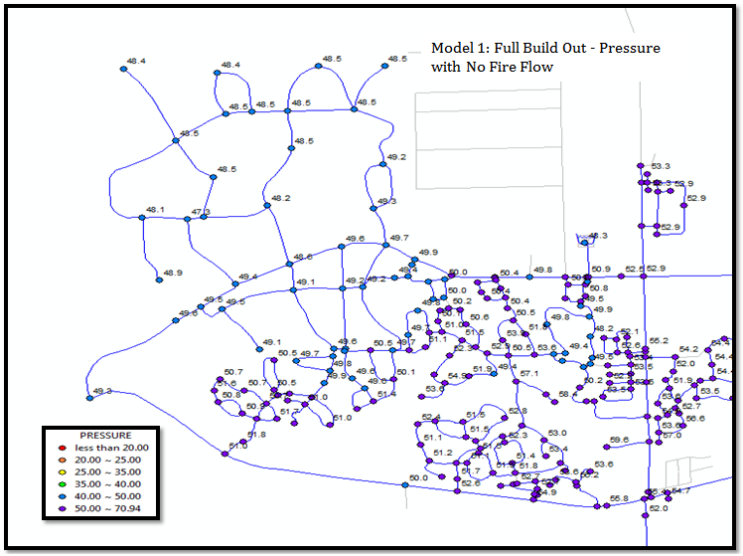
HUNTER'S RIDGE MASTER UTILITY PLAN
FLAGLER COUNTY, FL.
FIGURE 4: POTABLE WATER MODEL

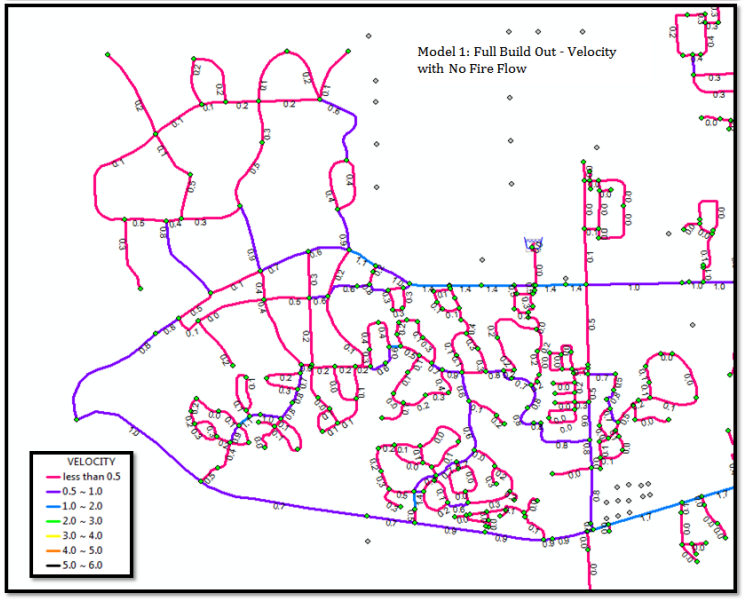
NO.	DATE	REVISION	BY
1	07/17/17	PER UPDATED MODEL	MHT

DESIGNER	KAB	DATE	03-06-2017
DRAWN BY	MHT	FILE	1612-1
		PROJECT	1612-1
		SCALE	1"=600'

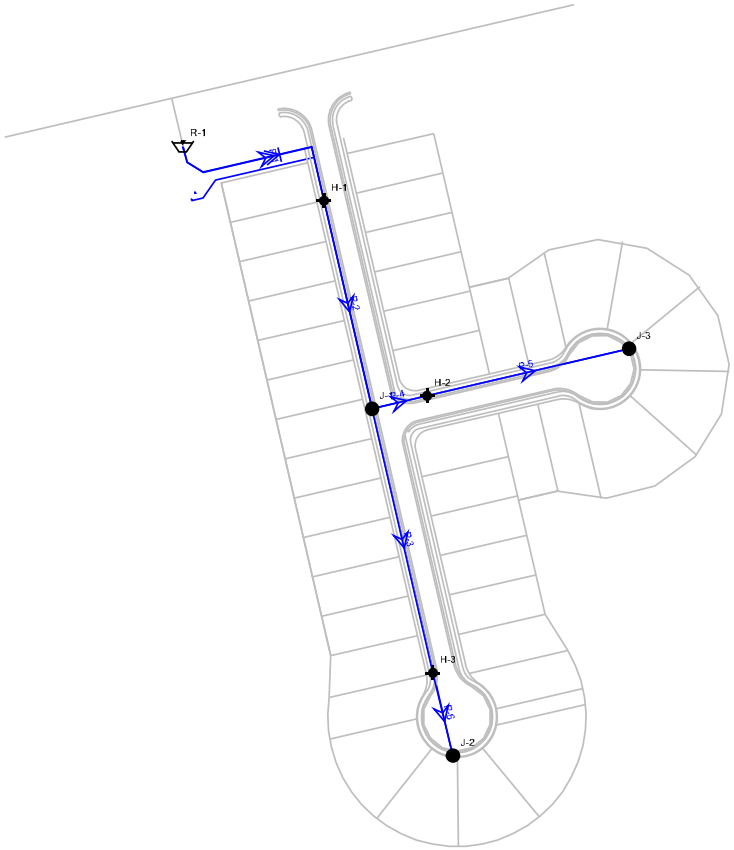
SHEET
WATER

TABLE 3: Scenario 1: Full Build - No Fire Flow (FF)				
Node	Demand (GPM)	Pressure (psi)	Line	Velocity (ft/s)
1	98.0	48.5	1	0.1
2	0.0	48.5	2	0.1
3	0.0	48.5	3	0.2
4	0.0	48.5	4	0.2
5	56.0	48.4	5	0.1
6	38.0	48.5	6	0.2
7	14.0	48.5	7	0.1
8	56.0	48.5	8	0.2
9	14.0	48.5	9	0.2
10	47.0	48.5	10	0.1
11	25.0	49.2	11	0.6
12	32.0	49.3	12	0.4
13	22.0	48.2	13	0.4
14	55.0	47.3	14	0.9
15	0.0	47.3	15	0.6
16	0.0	48.1	16	0.2
17	64.0	48.9	16	0.2
18	28.0	49.4	17	0.4
19	34.0	48.6	18	0.6
20	35.0	49.6	19	0.7
21	0.1	49.7	20	0.1
22	36.4	49.6	21	0
23	24.0	49.2	22	0.5
24	71.0	49.1	23	0.8
25	96.0	49.5	24	0.4
26	4.0	49.6	25	0.3
27	18.8	51.8	26	0.5
28	40.0	49.3	27	0.5
29	24.0	49.1	28	0.3
30	37.0	48.4	29	0.1
31	0.0	51	30	0.5
32	11.7	49.4	31	0.9
33	49.2	49.7	32	0.4
34	1.2	51.2	33	0
35	0.0	49.5	33	0.2
			42	0.1
			44	0.1
			38	0.2
			39	0.2
			33	0.3
			34	0.3
			40	0.4
			40	0.5
			35	0.8
			37	0.8
			41	0.9
			36	1
			41	1
			41	1
			43	1
			41	1.1
			43	1.1
			43	1.4
			43	1.4
			43	1.4





Entire Model



PHF + NFF

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)	Notes
R-1	139.77	33.20	139.77	HGL = 48.6 PSI + 27.5' elevation = 112.27' + 27.5' = 139.77'

PHF + NFF

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	27.25	9.96	139.75	49
J-2	27.50	15.77	139.75	49
J-3	28.40	7.47	139.75	48

PHF + NFF

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Flow (gpm)	Velocity (ft/s)
P-1	250	R-1	H-1	8.0	PVC	130.0	True	33.20	0.21
P-2	264	H-1	J-1	8.0	PVC	130.0	False	33.20	0.21
P-4	70	J-1	H-2	8.0	PVC	130.0	False	7.47	0.05
P-5	257	H-2	J-3	8.0	PVC	130.0	False	7.47	0.05
P-3	335	J-1	H-3	8.0	PVC	130.0	False	15.77	0.10
P-6	105	H-3	J-2	8.0	PVC	130.0	False	15.77	0.10

PHF + NFF

Fire Flow Results Table - Time: 0.00 hours

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Velocity of Maximum Pipe (ft/s)
J-1	(N/A)	0.00	(N/A)	0	(N/A)	(N/A)	(N/A)	(N/A)
J-2	(N/A)	0.00	(N/A)	0	(N/A)	(N/A)	(N/A)	(N/A)
J-3	(N/A)	0.00	(N/A)	0	(N/A)	(N/A)	(N/A)	(N/A)
H-1	True	1,000.00	1,001.00	20	47	46	J-3	6.60
H-2	True	1,000.00	1,001.00	20	44	43	J-3	6.60
H-3	True	1,000.00	1,001.00	20	42	42	J-2	6.60

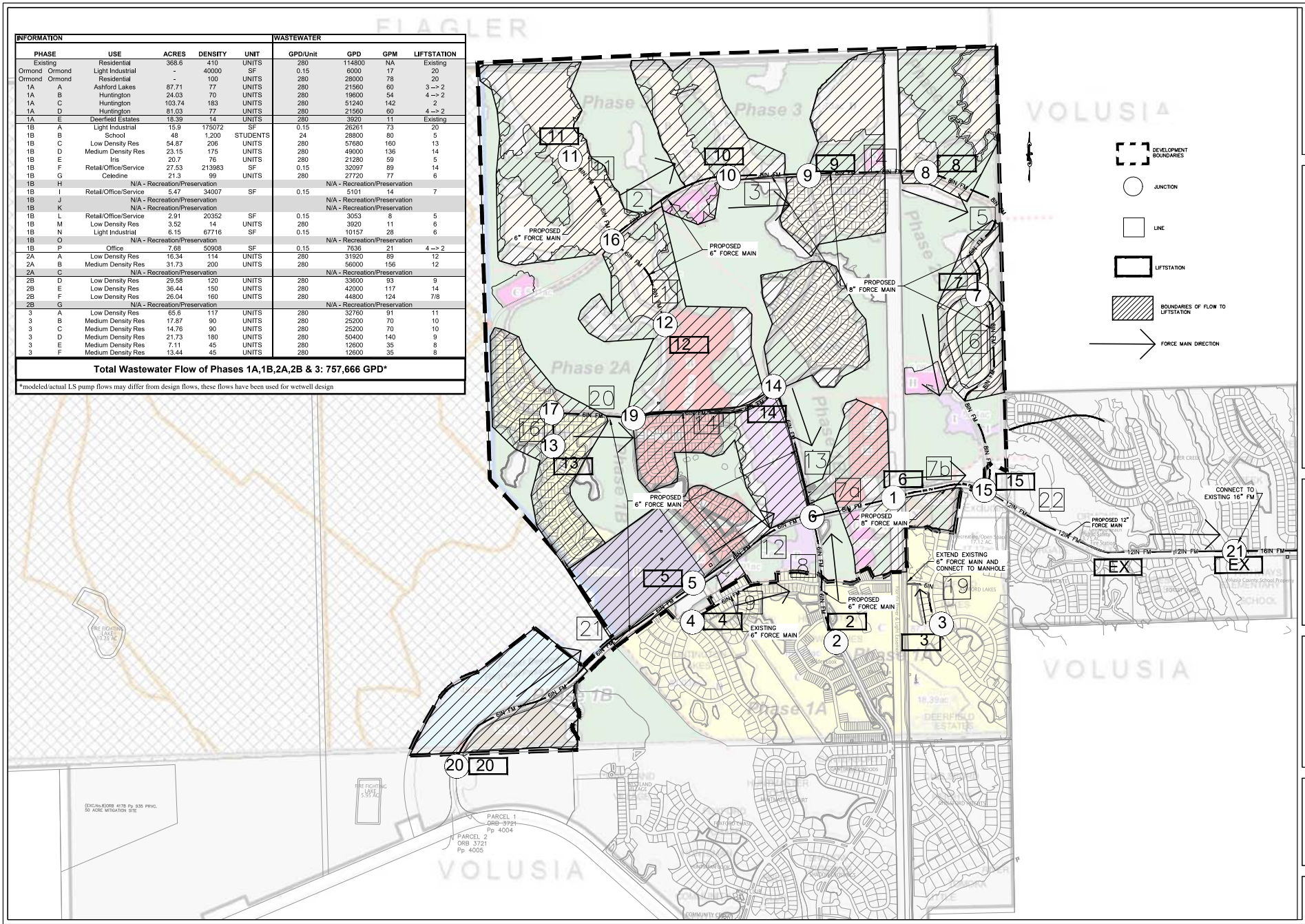
APPENDIX B – LIFT STATION CALCULATIONS

1. Pump Sizing
2. Wet Well Design
3. Buoyance Check
4. Pump Data Sheets

INFORMATION					WASTEWATER			
PHASE		USE	ACRES	DENSITY	UNIT	GPD/Unit	GPD	GPM	LIFTSTATION
Existing		Residential	368.6	410	UNITS	280	114800	NA	Existing
Ormond	Ormond	Light Industrial	-	40000	SF	0.15	6000	17	20
Ormond	Ormond	Residential	-	100	UNITS	280	28000	78	20
1A	A	Ashford Lakes	87.71	77	UNITS	280	21560	60	3 --> 2
1A	B	Huntington	24.03	70	UNITS	280	19600	54	4 --> 2
1A	C	Huntington	103.74	183	UNITS	280	51240	142	2
1A	D	Huntington	81.03	77	UNITS	280	21560	60	4 --> 2
1A	E	Deerfield Estates	18.39	14	UNITS	280	3920	11	Existing
1B	A	Light Industrial	15.9	175072	SF	0.15	26261	73	20
1B	B	School	48	1,200	STUDENTS	24	28800	80	5
1B	C	Low Density Res	54.87	206	UNITS	280	57680	160	13
1B	D	Medium Density Res	23.15	175	UNITS	280	49000	136	14
1B	E	Iris	20.7	76	UNITS	280	21280	59	5
1B	F	Retail/Office/Service	27.53	213983	SF	0.15	32097	89	14
1B	G	Celedine	21.3	99	UNITS	280	27720	77	6
1B	H	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
1B	I	Retail/Office/Service	5.47	34007	SF	0.15	5101	14	7
1B	J	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
1B	K	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
1B	L	Retail/Office/Service	2.91	20352	SF	0.15	3053	8	5
1B	M	Low Density Res	3.52	14	UNITS	280	3920	11	6
1B	N	Light Industrial	6.15	67716	SF	0.15	10157	28	6
1B	O	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
1B	P	Office	7.68	50908	SF	0.15	7636	21	4 --> 2
2A	A	Low Density Res	16.34	114	UNITS	280	31920	89	12
2A	B	Medium Density Res	31.73	200	UNITS	280	56000	156	12
2A	C	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
2B	D	Low Density Res	29.58	120	UNITS	280	33600	93	9
2B	E	Low Density Res	36.44	150	UNITS	280	42000	117	14
2B	F	Low Density Res	26.04	160	UNITS	280	44800	124	7/8
2B	G	N/A - Recreation/Preservation				N/A - Recreation/Preservation			
3	A	Low Density Res	65.6	117	UNITS	280	32760	91	11
3	B	Medium Density Res	17.87	90	UNITS	280	25200	70	10
3	C	Medium Density Res	14.76	90	UNITS	280	25200	70	10
3	D	Medium Density Res	21.73	180	UNITS	280	50400	140	9
3	E	Medium Density Res	7.11	45	UNITS	280	12600	35	8
3	F	Medium Density Res	13.44	45	UNITS	280	12600	35	8

Total Wastewater Flow of Phases 1A,1B,2A,2B & 3: 757,666 GPD*

*modeled/actual LS pump flows may differ from design flows, these flows have been used for wetwell design



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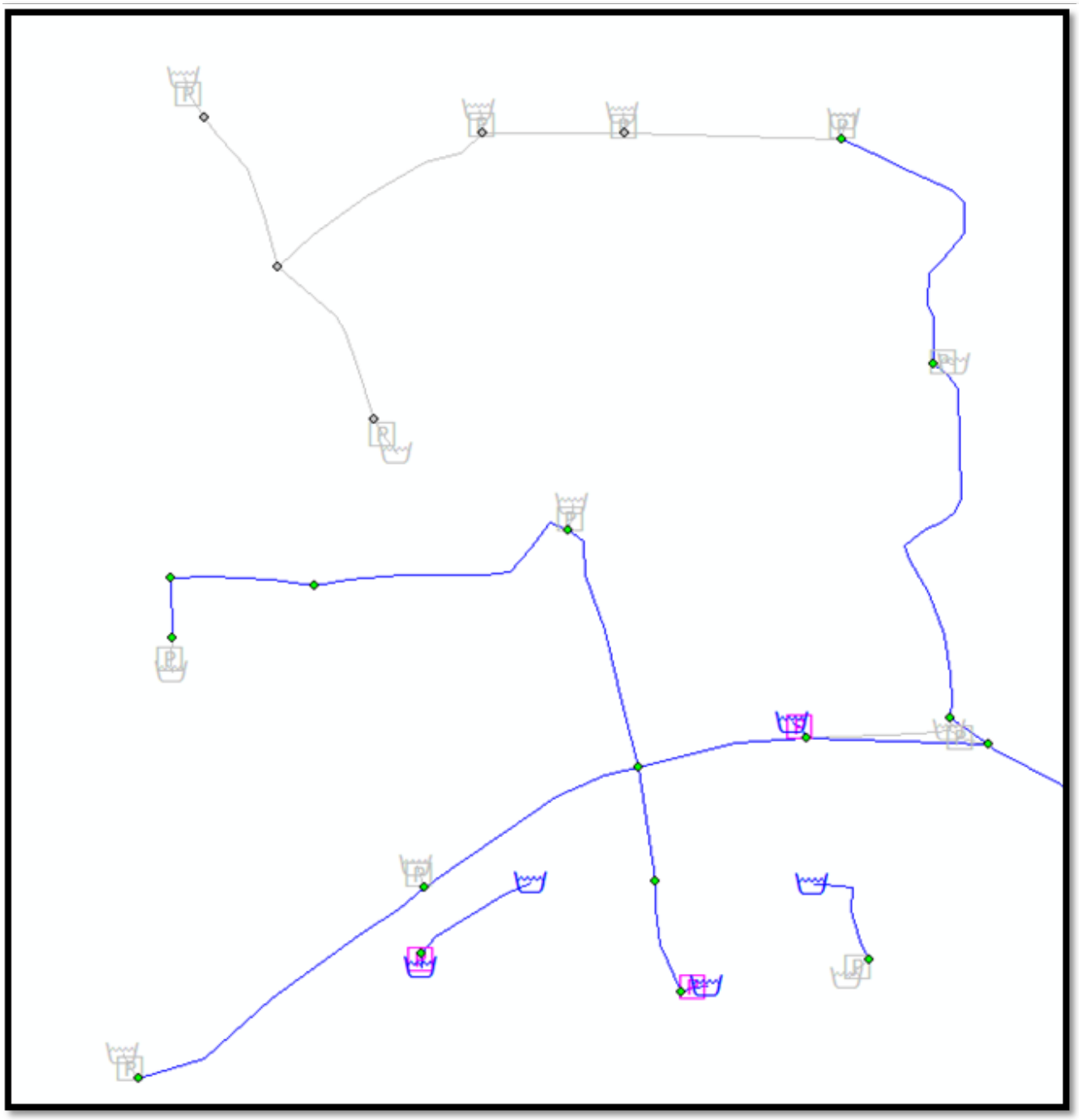
HUNTER'S RIDGE MASTER UTILITY PLAN
FLAGLER COUNTY, FL.
FIGURE 6: WASTEWATER MODEL

NO.	DATE	REVISION	BY

DESIGNER: KAB	FILE: 1612-1	DATE: 03-06-2017	
DRAWN BY: MHT	PROJECT: 1612-1	SCALE: 1" = 600'	

SHEET
SEWER

TABLE 7: SENSITIVITY ANALYSIS - Run 1 (LS 2, 6)					
Location	Design Flow (GPM)	Design Elevation (FT)	Design Head (FT)	Flow @ Pump (GPM)	Downstream Pressure @ Pump (PSI)
LS 2	338	14	100	302.86	47.39
LS 6	197	14	75	192.04	35.98
Breakaway Trails	700	17	118	813.03	41.27
Ormond Green	150	21	70	125.12	26.04
Saddlers Run	150	20	110	211.33	29.47
		Breakaway Trails Connection on Airport Rd. Pressure =24.79 psi			



Pump Sizing

Project Data

Tenant	Unit Type	Units	ERU Factor	ERU's	ERU (GPD)	ADF (GPD)	ADF (GPM)
Single Family	Lot	40	1.000	40	280	11,200	7.78

Average Daily Flow		11,200	GPD
		7.78	GPM
Peaking Factor / Minimizing Factor	4	0.25	
Peak Flow / Minimum Flow	31.11	1.94	GPM
Flow Used For Calcs		**31**	GPM
		0.07	CFS

Effluent Pipe Diameter	**4**	Inches	
Area	0.087	SF	
Velocity	2.0	FPS	5.0
Flow Rate Range	**78**	GPM	**196**

Highest Elev.=			24.00	Feet
Press. @ Conn.=	35.98	PSI =	83.1	feet
1st Pump on Elev.=			20.47	Feet
Pumps Off Elev.=			18.32	Feet
Gravity In =			21.97	Feet
High Head Static Head =			88.77	Feet

Pump Sizing

		Prop. Station Piping		Proposed Forcemain	
Pipe Length (ft)			**25**		**54**
Pipe Size (in)			**3.0**		**4.0**
Inside Diameter (in)			**3.0**		**4.0**
Area (sf)			0.049		0.087
Roughness C		PVC	**130**	PVC	**130**
Fittings:	K	Number	Sub-K	Number	Sub-K
Disch. Conn.					
90 deg.	0.60	3	1.80	0	0.00
45 deg.	0.40	2	0.80	0	0.00
22.5 deg.	0.25	0	0.00	0	0.00
5.625 deg.	0.15	0	0.00	0	0.00
Wye	0.50	1	0.50	0	0.00
Expansion	0.20	0	0.00	0	0.00
Contraction	0.50	0	0.00	0	0.00
Gate Valve	0.40	2	0.80	1	0.40
Check Valve	2.50	1	2.50	0	0.00
			6.40		0.40

5 Q increment

Q (gpm)	Velocity (ft/sec)	Pipe (ft)	Fittings (ft)	Velocity (ft/sec)	Pipe (ft)	Fittings (ft)	High Head Headloss Total (ft)
0	0.00	0.00	0.00	0.00	0.00	0.00	88.77
5	0.23	0.00	0.01	0.13	0.00	0.00	88.78
10	0.45	0.01	0.02	0.26	0.01	0.00	88.81
15	0.68	0.02	0.05	0.38	0.01	0.00	88.86
20	0.91	0.04	0.08	0.51	0.02	0.00	88.92
25	1.14	0.06	0.13	0.64	0.03	0.00	89.00
30	1.36	0.08	0.18	0.77	0.04	0.00	89.09
35	1.59	0.11	0.25	0.89	0.06	0.00	89.20
40	1.82	0.14	0.33	1.02	0.07	0.01	89.32
45	2.04	0.17	0.42	1.15	0.09	0.01	89.47
50	2.27	0.21	0.51	1.28	0.11	0.01	89.62
55	2.50	0.25	0.62	1.40	0.14	0.01	89.80
60	2.72	0.30	0.74	1.53	0.16	0.01	89.98
65	2.95	0.35	0.87	1.66	0.18	0.02	90.19
70	3.18	0.40	1.00	1.79	0.21	0.02	90.41
75	3.41	0.45	1.15	1.92	0.24	0.02	90.64
80	3.63	0.51	1.31	2.04	0.27	0.03	90.89
85	3.86	0.57	1.48	2.17	0.30	0.03	91.15
90	4.09	0.63	1.66	2.30	0.34	0.03	91.43
95	4.31	0.70	1.85	2.43	0.37	0.04	91.73

Wet Well Design

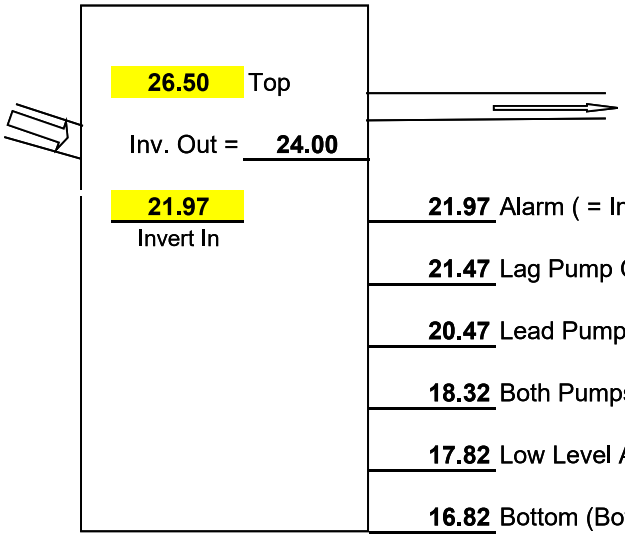
Wet Well Diameter=	4	ft
Area =	12.57	SF
Unit Volume =	94.0	gal/ft

Storage Depth

Tr = Vr/(Q-S) + Vr/S, rearranging this equation, we get: Vr = (-S(S-Q)Tr)/Q			
S = Critical In-Flow =	15.56	gpm	= ADF x 2
Qina = ADF to Wetwell	7.78	gpm	
Pf = Peaking Factor	4.00		
Qinp = PDF to Wetwell	31.11	gpm	
Q = Peak Out-Flow Rate =	80.00	gpm	
Minimum Cycle Time =	**10**	minutes	
Emergency Storage Time =	**0**	minutes	
Tr = Cycle Time Required =	**10**	minutes	
Vr = Volume Required =	200	gallons	= (Q*Tr)/4
Dr = Storage Depth Required =	**2.13**	feet	= Vr / (Unit Volume)
Da = Actual Storage Depth =	**2.15**	**feet**	
Volume Actual (Va) =	**202.1**	**gallons**	= Unit Volume x Da

Total Actual Cycle Time

Influent Condition	ADF	PDF	
T1 = Pump Run Time =	2.8	4.1	minutes $T1 = \frac{Va}{Qout - Qin}$
T2 = Pump Off Time =	26.0	6.5	minutes $T2 = \frac{Va}{Qin}$
Tc = Total Cycle Time =	**28.8**	**10.6**	**minutes** $Tc = T1 + T2$



Wet Well Buoyancy Check

Top Elevation =	26.50	Inside Diameter, d =		4	feet
Groundwater =	26.50	Wall Thickness =		**8.00**	inches
Sump Elevation =	16.82	Outside Diameter =		5.33	feet
		Top Slab	Extension =	**0.00**	feet
			Diameter, D =	5.33	feet
			Thickness, h =	**0.67**	feet
		Bottom Slab	Extension =	**1.00**	feet
			Diameter, D =	7.33	feet
			Thickness, h =	**1.5**	feet

*Groundwater assumed at top elevation for calculation purposes.

Buoyant Forces

	Force = Vol. x 62.4 lb/cf (water) =			Force	
Top Slab:	Volume =	14.9	CF	929.3	lbs.
Bottom Slab:	Volume =	63.4	CF	3,953.3	lbs.
Wet Well Cylinder:	V = [(3.14 x d^2)/4]x(groundwater - bottom)				
	Volume =	216.2	CF	13,493.8	lbs.
			Total Buoyant Force =	**18,376.4**	**lbs.**

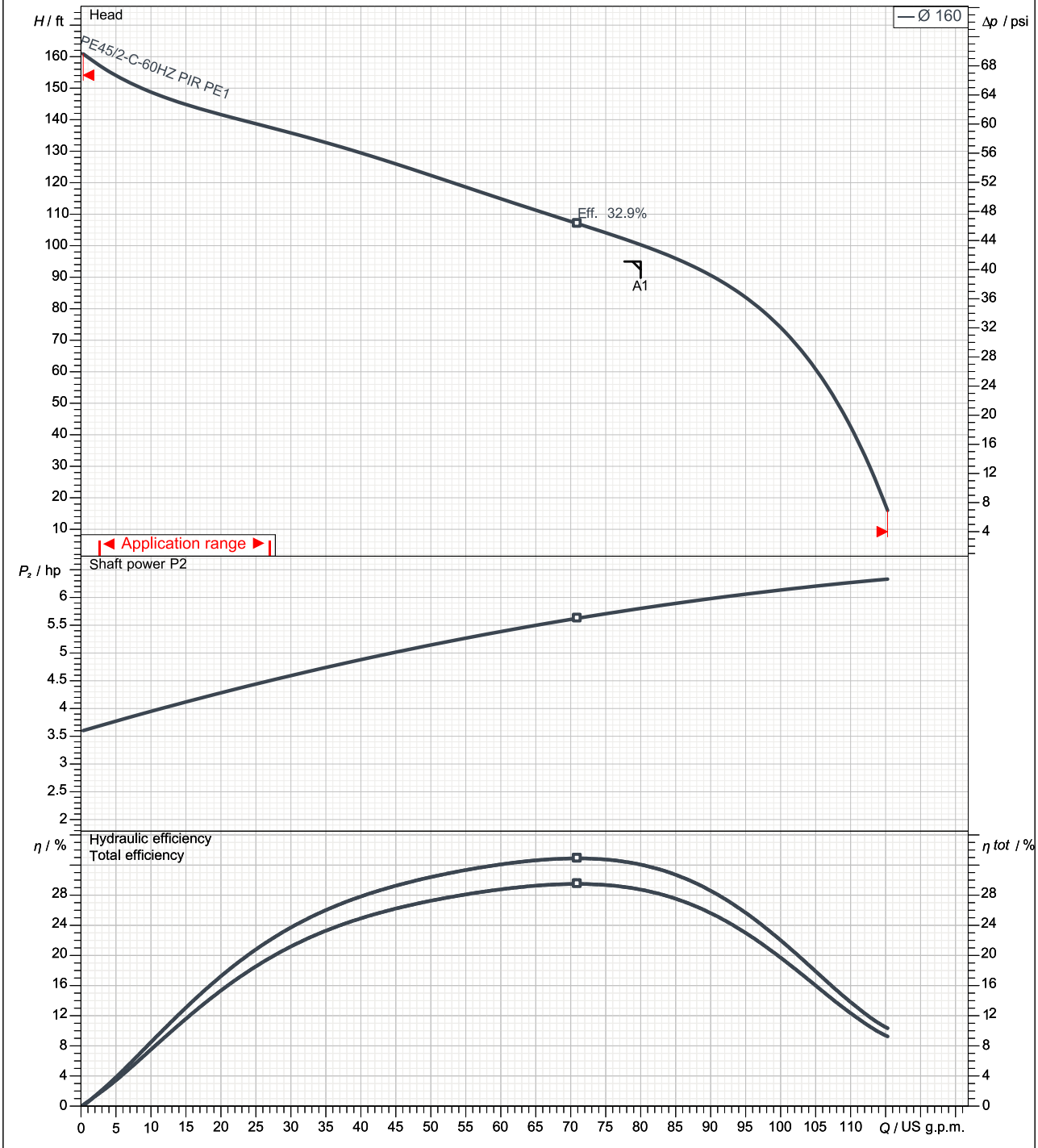
Down Forces

Concrete Weight	Weight =	Volume x 150 lb/cf (reinf. Conc.)		Force	
Bottom Slab:	Volume =	63.4	CF	9,503.0	lbs.
Wet Well Cylinder:	Volume =	94.6	CF	14,191.2	lbs.
			Sub-Total	23,694.2	lbs.
Soil Weight	Weight =	Volume x (115 lb/cf - 62.4 lb/cf)		Force	
Over Bottom Slab Extension					
	Volume =	192.6	CF	10,130.5	lbs.
			Sub-Total	10,130.5	lbs.
			Total Down Force =	**33,824.7**	**lbs.**
			Factor of Safety:	**1.84**	

Note that the weight of the pumps and other equipment is not inlcuded.

Curve number	Pump performance curves	SULZER
Reference curve PIR-PE-C-60HZ	PIR PE1 60 HZ	

					Discharge	Frequency
					DN32	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6≤10kW			3521 rpm	2022-09-06
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
80 US g.p.m.	95 ft			6.71 hp		



Installation wet well

Impeller size	N° of vanes	Impeller	Solid size	Revision
160 mm	5	Macerator		

Spaix® 5-2022.2 - 2022/08/09 (Build 471), 64 bit
Data version June 22.1

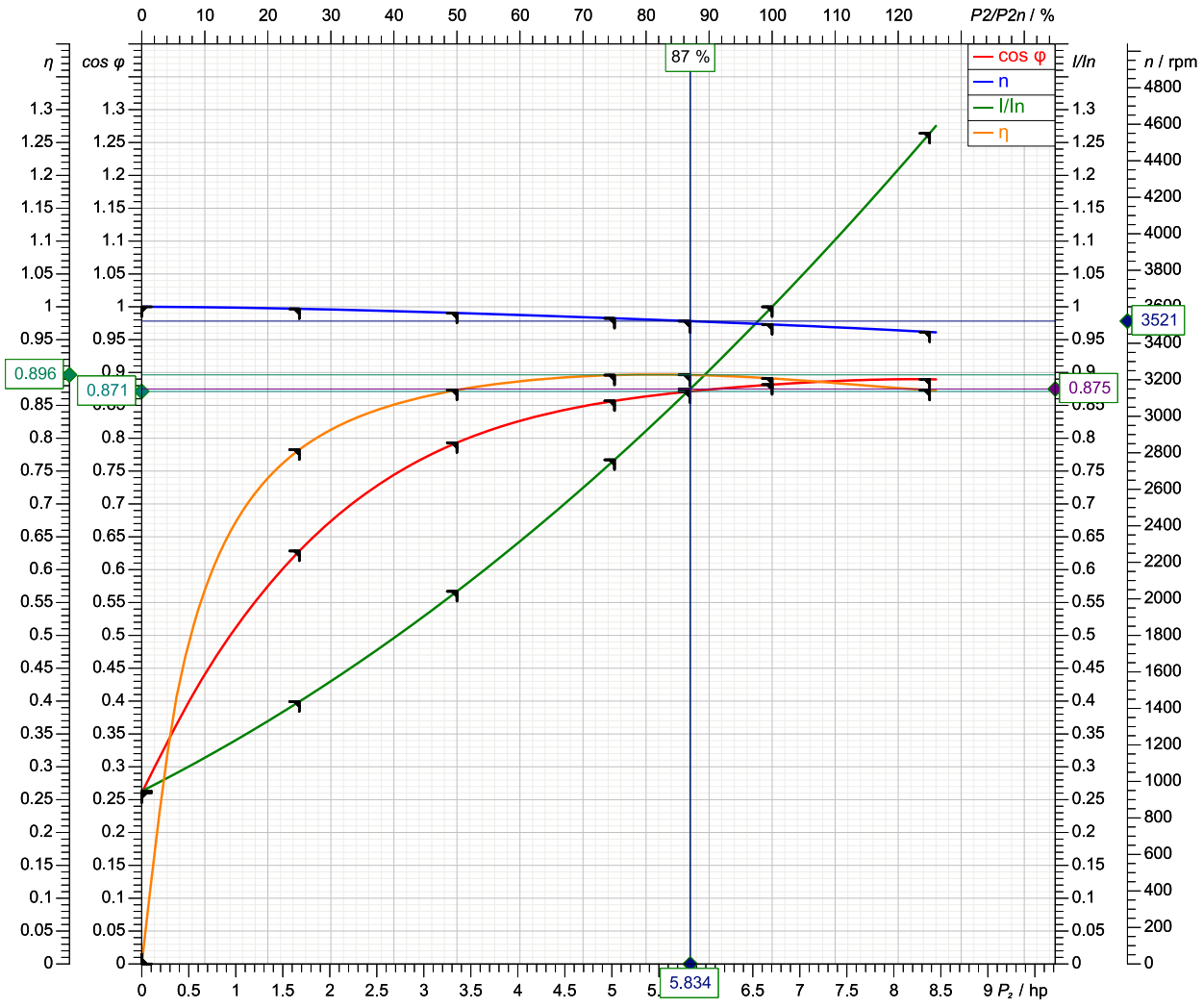
Frequency	PE1
60 Hz	

Motor performance curve

PE45/2-C-60HZ PIR PE1

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
6.71 hp	1.3	3510 rpm	2	230 V	2022-09-06



Symbol	No loac	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	1.676	3.353	5.029	6.705	8.381
P1/ hp	0.584	2.142	3.839	5.612	7.526	9.6
I / A	4.2	6.38	9.06	12.26	15.98	20.2
cos	0.2603	0.6284	0.7932	0.8568	0.8816	0.8897
n / rpm	3600	3589	3566	3537	3503	3462
s / %	0	0.3066	0.9422	1.752	2.693	3.834
M / lbf ft	0	2.453	4.938	7.468	10.05	12.72
/ %	0	78.26	87.33	89.61	89.09	87.3

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
120 A		0.119 lb ft²	15

SULZER

Massblatt PIRANHA PE30/2 Nassinstallation
Dimension sheet WET-WELL Installation
Dimensioni Installazione sommersa
Hoja de dimensiones instalacíon sumergida
Plan d'encombrement Installation noyee

No: AN-M.04.039 -02
Drawn: 25/09/09 D.Whelan
Issue Date: 09/06/2013
Änderungen vorbehalten
Technical changes reserved
Con riserva di modifiche
Con reserva de modificaciones
Sous rèserve de modification

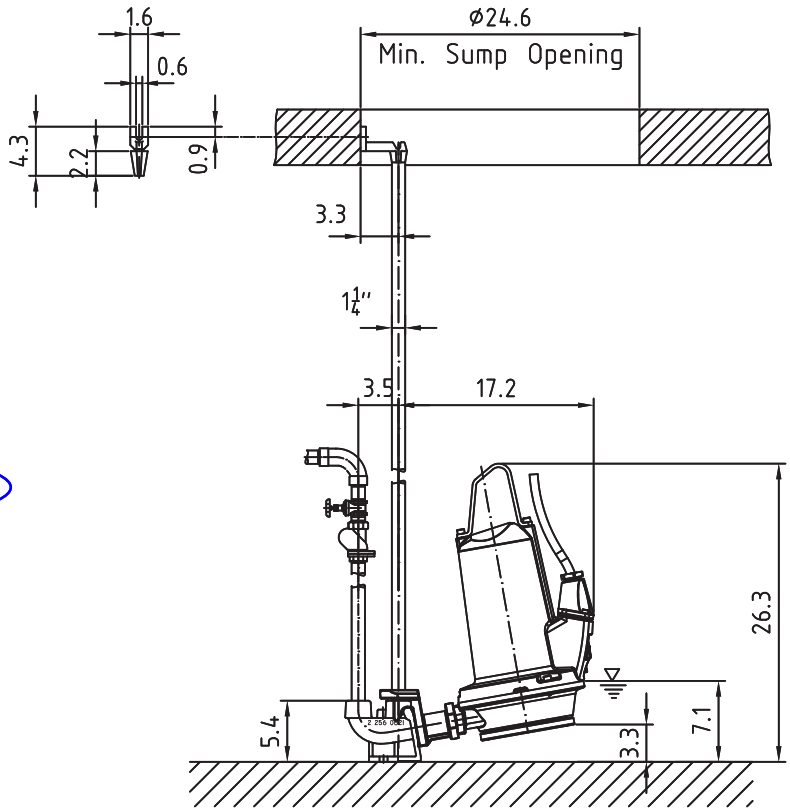
U.S.

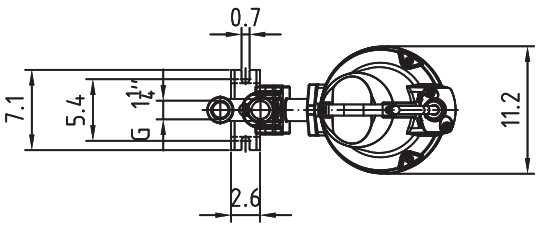
50 Hz

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)
PE 30/2	207

60 Hz

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)
PE 25/2W	207
PE 28/2	207
PE 35/2	207
PE 35/2W	207
PE 45/2	207
PE 45/2W	207





Gewicht: Beinhaltet Pumpe,Halterung(Fussstück) und Kabel (50 Hz = 10 m; 60 Hz = 15 m)
Weight: includes pump, slider bracket and cable (50 Hz = 10 m; 60 Hz = 15 m)
Peso: include pompa, pezzo intermedio a cavo (50 Hz = 10 m; 60 Hz = 15 m)
Peso: Incluye bomba, soporte deslizante y cable (50 Hz = 10 m; 60 Hz = 15 m)
Poids : incluant la pompe, le coulisseau et le câble (50 Hz = 10 m; 60 Hz = 15 m)

Guss-Allgemeintoleranzen nach DIN1680 - GTB16
General tolerances for castings in acc. to DIN1680-GTB16
Tolleranze generali delle fusioni secondo DIN1680-GTB16
Tolerancias generales para la fundición seg. de DIN1680-GTB16
Tolérance générale de la fonderie selon DIN1680-GTB16