Junction Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

120	295	1
121	374	2
122	302	0
123	364	0
124	299	1
125	299	0
126	282	0
127	335	0
128	289	2
129	315	2
130	299	1
131	295	0
132	292	0
133	299	0
134	282	1
135	302	0
136	305	88
137	302	0
138	285	0
139	285	0
140	295	0
141	295	2
142	276	0
143	276	0
144	289	0
145	305	1
146	325	1
147	295	0
148	301	0
149	302	1
150	305	0
151	305	0
152	325	0
153	331	2
154	367	0
156	328	1
157	335	0
158	305	0
159	325	0
160	312	13
161	328	0
162	325	0
163	367	0
164	381	1

165	354	0
167	315	0
169	335	1
170	377	0
171	374	0
172	377	0
173	338	1
174	325	0
175	325	0
176	325	0
177	325	1
180	374	0
181	331	0
182	335	0
183	335	1
184	325	1
185	325	0
186	299	1
187	282	0
188	295	0
189	305	1
192	305	0
193	312	0
194	312	0
195	302	0
196	325	1
197	325	0
198	351	1
199	315	2
200	315	0
201	299	0
202	328	0
203	325	0
204	328	2
206	384	0
207	370	0
208	361	0
209	335	0
210	318	0
211	456	1
212	387	1
213	394	0
214	340	0
215	404	0

Junction Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

216	502	0
217	512	0
413	329	0
423	295	136
426	265	24
433	314	1
439	295	1
440	297	1
441	277	1
445	295	0
448	337	0
451	328	1
454	295	0
457	302	0
459	301	1
460	296	0
462	383	0
465	374	0
466	383	1
467	372	1
483	295	0
486	296	0
490	289	2
493	300	0
497	295	0
501	354	1
504	369	1
508	274	0
509	294	0
514	287	0
520	295	0
524	299	2
529	324	0
531	330	0
533	315	0
534	314	0
537	356	0
538	357	0
539	367	0
550	280	0
551	305	1
555	275	0
556	275	0
559	279	1

Junction Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

562	272	0
564	287	0
567	312	0
569	274	0
570	272	0
573	328	0
582	345	0
584	324	0
587	346	0
589	285	0
601	317	0
602	311	0
604	301	0
605	314	0
612	306	0
623	344	0
J-1	429	0
J-2	354	0
J-3	354	0
J-4	303	0
J-5	298	0
J-6	276	0
J-7	282	0
J-8	320	0
J-9	354	0
J-10	323	0
J-11	295	0
J-12	415	0
J-13	382	0
J-14	269	0
J-15	282	0
J-16	300	0
J-17	295	0
J-18	326	0
J-19	307	0
J-20	317	0
J24	603	0
J28	342	1
J30	370	0
J32	384	0
J34	366	0
J36	390	0
J38	352	0
J40	304	0

Junction Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

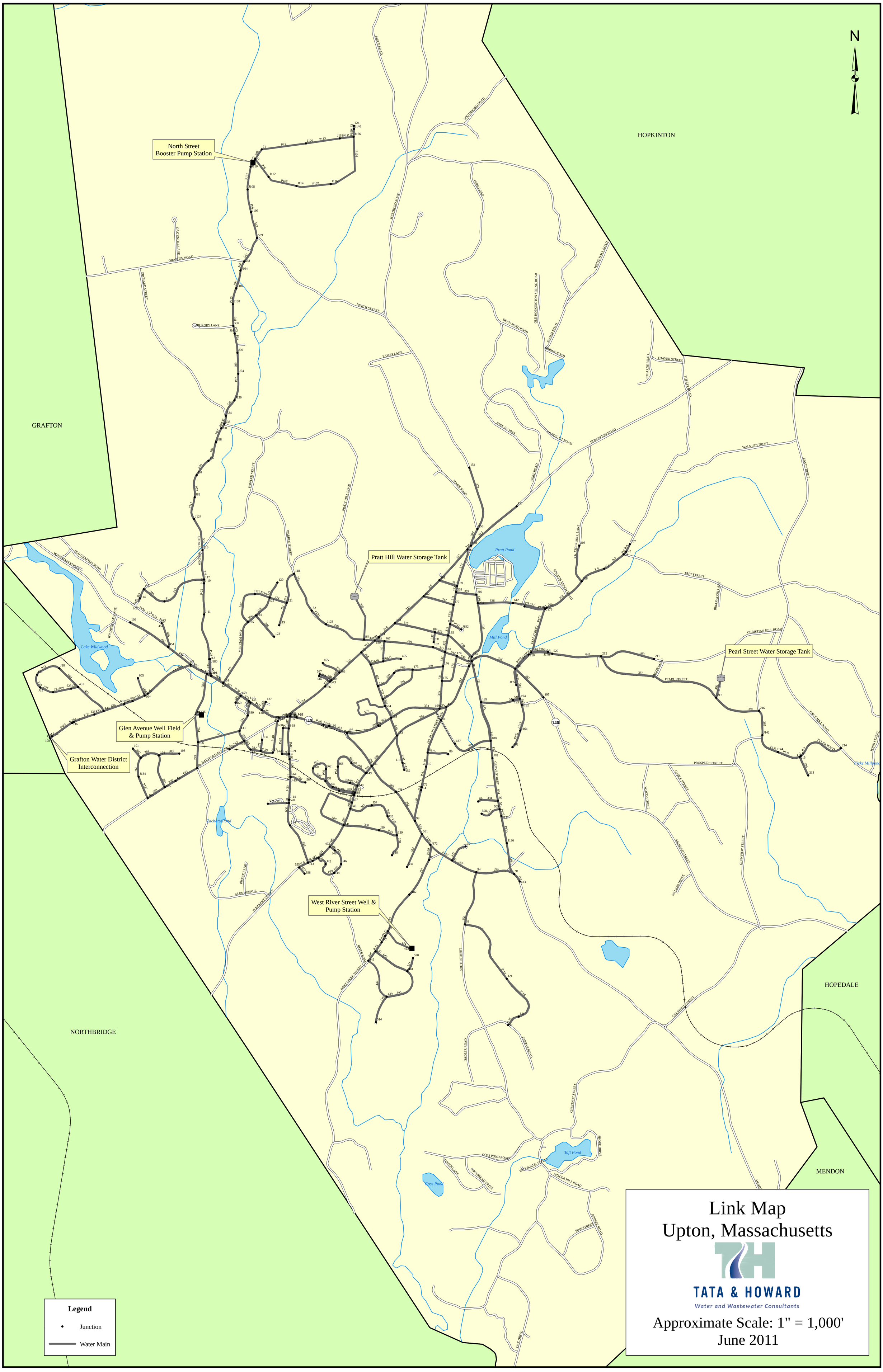
J42	296	0
J44	285	1
J46	284	1
J48	295	1
J50	285	0
J52	285	0
J54	295	0
J56	308	0
J58	311	0
J60	314	1
J62	314	1
J64	312	0
J66	293	0
J68	305	0
J70	295	2
J72	308	0
J74	375	1
J76	334	0
J78	280	0
J82	344	0
J84	330	0
J86	324	0
J88	334	0
J90	324	0
J94	342	0
J96	350	0
J98	355	0
J102	352	0
J104	354	0
J106	384	0
J108	400	0
J110	437	0
J112	500	0
J114	531	0
J116	568	1
J118	605	0
J120	605	1
J124	335	0
J126	354	0
J128	383	0
J130	297	0
J132	287	0
J134	393	0
J136	320	0

Junction Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

J138	366	0
J140	600	0
J142	499	1
J144	488	0
J150	305	1
J152	314	0
J160	324	0
J162	312	0
J164	319	0
J166	589	1
J168	312	1
J170	326	0
J172	275	0
J174	301	0
J176	329	1
J178	324	0
J180	286	0
J182	269	0
J184	296	1
U7000_ND	473	0
U7000_NU	473	0

Tank Input Data
Master Plan and Capital Efficency Plan™
Upton, MA

Label	Height (ft)	Diameter (ft)	Capacity (MG)	Base Elevation (ft)	Overflow Elevation (ft)
Pearl Street Tank	66	51	1.0	514.5	580.5
Pratt Hill Tank	46	44	0.5	534.5	580.5


Link Map
Upton, Massachusetts
TATA & HOWARD
Water and Wastewater Consultants
Approximate Scale: 1" = 1,000'
June 2011
Legend
Junction
Water Main
North Street Booster Pump Station
Pratt Hill Water Storage Tank
Pearl Street Water Storage Tank
Glen Avenue Well Field & Pump Station
Grafton Water District Interconnection
West River Street Well & Pump Station
HOPKINTON
GRAFTON
NORTHBRIDGE
HOPEDALE
MENDON
Pratt Pond
Mill Pond
Lake Wildwood
Zachery Pond
Taft Pond
Goss Pond
Fiske Millpond
N

Appendix C

Tata & Howard, Inc.

Fire Flow Test

Community:___Upton, MA_____

Client: ____Town of Upton_____

Date:____3-9-2011_____ **Time:**_____
Weather:_____ **Inspector:**___PLF/JVH_____
_____

System Conditions: _____
_____

Hydrant Location:	**Test No. _1_**	**Test No. _2_**
Flowing Hydrant:	H-166 (Tyler Road)	H-158 (Pearl Street)
Residual Hydrant:	H-164 (Tyler Road)	H-159 (Pearl Street)
Flowing Hydrant:		
Flow Opening (Inches)	2.5 inches	2.5 inches
No. Butts Flowing	1	1
Static Pressure	100 psi	27 psi
Pitot Reading	63 psi	
Hydrant Coefficient	0.9	0.9
Flow (GPM) (Qf)	1320	
Residual Hydrant:		
Static Pressure (Hs)	59 psi	22 psi
Residual Pressure (Hf)	49 psi	22 psi

Test No. 1 Q = __**1320**__ $Qf\left(\frac{____Hs - _20___}{____Hs - ____Hf}\right)^{.54} =$ __2750____GPM @ __20____ PSI

Test No. 2 Q = ___**X**____ $Qf\left(\frac{____Hs - ____}{____Hs - ____Hf}\right)^{.54} =$ __N/A____GPM @ __20____ PSI

Calculated By:___PLF_____

Checked By:____JVH_____

Tata & Howard, Inc.

Fire Flow Test

Community:___Upton, MA_____

Client: ____Town of Upton_____

Date:____3-9-2011_____ **Time:**_____

Weather:_____ **Inspector:**___PLF/JVH_____

_____

System Conditions: _____

_____

Hydrant Location:	**Test No. _3_**	**Test No. _4_**
Flowing Hydrant:	H-149 (Elm Street)	H-27 (Grove Street)
Residual Hydrant:	H-148 (Elm Street)	H-26 (Grove Street)
Flowing Hydrant:		
Flow Opening (Inches)	2.5 inches	2.5 psi
No. Butts Flowing	1	1
Static Pressure	95 psi	120 psi
Pitot Reading	43 psi	85 psi
Hydrant Coefficient	0.9	0.9
Flow (GPM) (Qf)	1075	1550
Residual Hydrant:		
Static Pressure (Hs)	95 psi	120 psi
Residual Pressure (Hf)	76 psi	120 psi

Test No. 3 Q = **_1075_** $Qf \left(\frac{___Hs - __20__}{___Hs - ___Hf} \right)^{.54} = __2250____GPM$ @ ___20___ PSI

Test No. 4 Q = **___1550___** $\left(Qf \frac{___Hs - _20___}{___Hs - ___Hf} \right)^{.54} = ___N/A___GPM$ @ __20____ PSI

Calculated By:___PLF_____

Checked By:____JVH_____

Tata & Howard, Inc.

Fire Flow Test

Community:___Upton, MA_____

Client: ____Town of Upton_____

Date:____3-9-2011_____ **Time:**_____
Weather:_____ **Inspector:**___PLF/JVH_____
_____

System Conditions: _____
_____

Hydrant Location:	**Test No. _5_**	**Test No. _6_**
Flowing Hydrant:	H-37 (Plain Street)	H-196 (West River Street)
Residual Hydrant:	H-36 (Plain Street)	H-197 (West River Street)
Flowing Hydrant:		
Flow Opening (Inches)	2.5 inches	2.5 inches
No. Butts Flowing	1	1
Static Pressure	115 psi	125 psi
Pitot Reading	60 psi	75 psi
Hydrant Coefficient	0.9	0.9
Flow (GPM) (Qf)	1300	1455
Residual Hydrant:		
Static Pressure (Hs)	117	125 psi
Residual Pressure (Hf)	111	114 psi

Test No. 5 Q = __**1300**__ $Qf\left(\frac{____Hs - _20___}{____Hs - ___Hf}\right)^{.54}$ = __6490____GPM @ ___20___ PSI

Test No. 6 Q = ___**1455**____ $\left(Qf\frac{____Hs - __20__}{____Hs - ___Hf}\right)^{.54}$ = __4910____GPM @ __20____ PSI

Calculated By:_____PLF_____

Checked By:_____JVH_____

Tata & Howard, Inc.

Fire Flow Test

Community:___Upton, MA_____

Client: ____Town of Upton_____

Date:____3-9-2011_____ **Time:**_____
Weather:_____ **Inspector:**___PLF/JVH_____
_____

System Conditions: _____
_____

Hydrant Location:	**Test No. _7_**	**Test No. _8_**
Flowing Hydrant:	H-2 (Church Street)	H-48 (Plumbly Street)
Residual Hydrant:	H-1 (Church Street)	H-49 (Plumbley Street)
Flowing Hydrant:		
Flow Opening (Inches)	2.5 inches	2.5 inches
No. Butts Flowing	1	1
Static Pressure	107 psi	110 psi
Pitot Reading	60 psi	60 psi
Hydrant Coefficient	0.9	0.9
Flow (GPM) (Qf)	1300	1300
Residual Hydrant:		
Static Pressure (Hs)	104 psi	90 psi
Residual Pressure (Hf)	104 psi	68 psi

Test No. 7 Q = ___**1300**___ $\left(Qf \frac{____Hs - _20___}{___Hs - ___Hf}\right)^{.54} = __N/A____GPM$ @ ___20___ PSI

Test No. 8 Q = __**1300**___ $\left(Qf \frac{____Hs - _20___}{___Hs - ___Hf}\right)^{.54} = __2420____GPM$ @ __20____ PSI

Calculated By:____PLF_____

Checked By:_____JVH_____