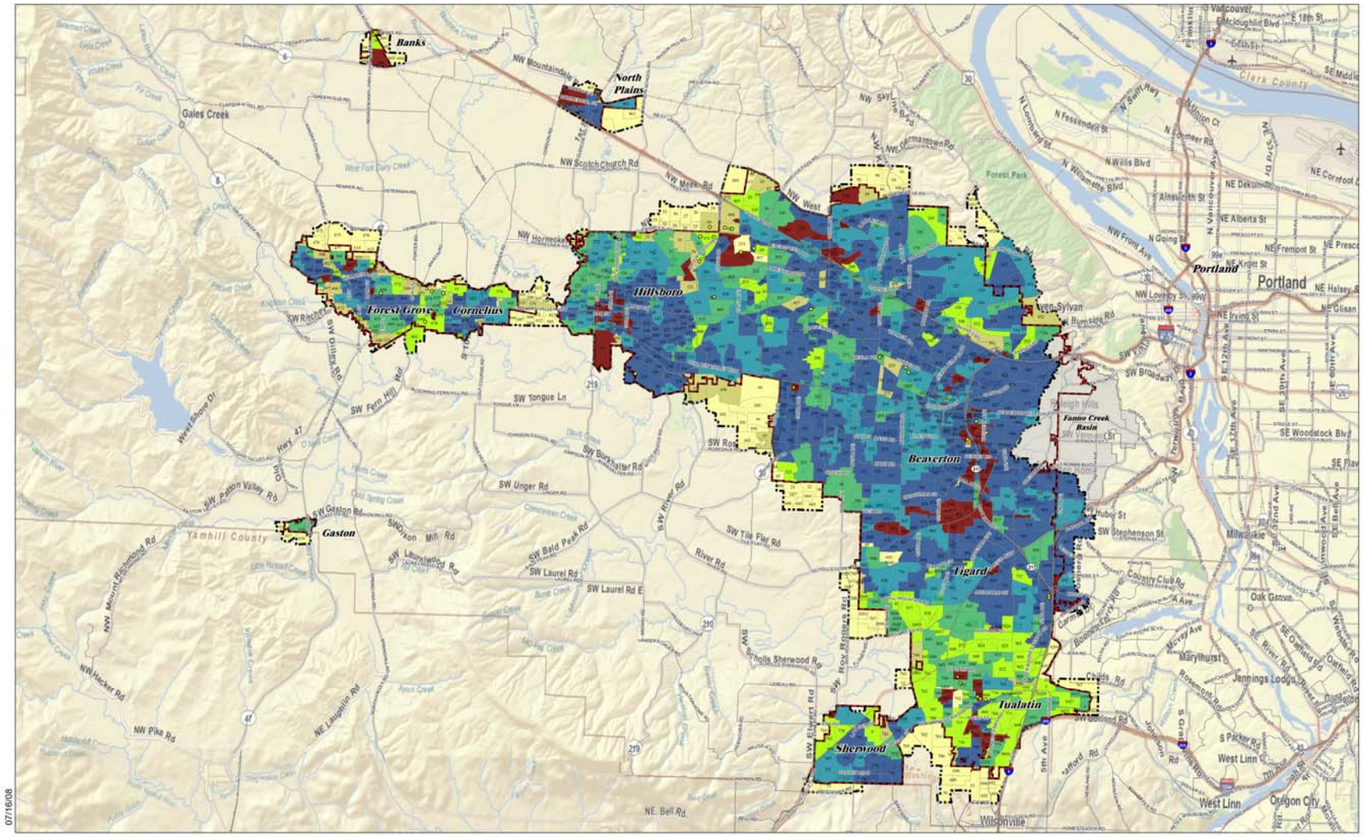
Clean Water Services
Our commitment is clear.



Sanitary Sewer Master Plan Update

March 2009

APPENDIX O

Gravity Sewer Capacity Projects – Existing Sewers

WEST YOST ASSOCIATES
Consulting Engineers

PROJECT - Tualatin Sherwood Rd Trunk

Project ID: D-010

Base Construction Cost	1,660,000
Contingency (30%)	498,000
Construction Budget Amount	2,160,000
Engineering & Administration (25%)	540,000
Capital Improvement Cost Total[1]:	**2,700,000**

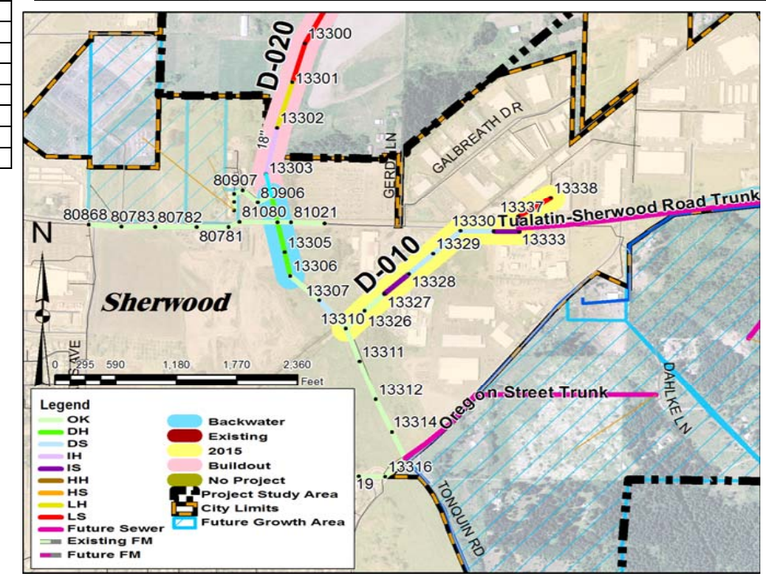
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Need for, and timing of project is sensitive to flow predictions. The tributary area is occupied by industrial/commercial uses so actual flows may vary substantially from modeled flows. Flows should be monitored to verify need/timing of project. In addition, modeled distribution of flows is coarse. A refined modeled flow distribution and flow study of existing and anticipated businesses could be used to better predict existing and future flows.

Location:	Extends from north of the Edy Rd. Trunk (north of Tualatin Sherwood Rd.) to the Onion Flat Trunk.
Treatment Plant Basin:	LS
Jurisdiction:	Sherwood
Local/Regional:	-
Brief Description:	Upsize ~2,620 ft of 8-inch and 10-inch diameter sanitary sewer to 12-inch and 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
7944	13338_13337				8	0.0044	0.52	0.53	0.92	0.94	DS	IS	LS	2.0	12	18.9	374	205	ft	77,000
7946	-				8	0.0055	0.58	0.53	0.92	0.94	OK	DS	IS	2.0	12	21.0	99	554	ft	55,000
1760	13333_13332				10	0.0055	1.06	0.53	1.09	1.45	OK	DH	IS	2.3	15	19.8	47	235	ft	11,000
1759	13332_13331				10	0.0036	0.85	0.53	1.09	1.45	OK	DS	IS	2.3	15	21.0	246	574	ft	141,000
1758	13331_13330				10	0.0027	0.74	0.53	1.09	1.45	OK	DS	DS	2.3	15	23.9	306	642	ft	197,000
2061	13330_13329				10	0.0029	0.76	0.53	1.09	1.45	OK	DS	DS	2.3	15	25.5	376	1354	ft	509,000
2058	13329_13328				10	0.0033	0.81	0.53	1.09	1.45	OK	DS	DS	2.3	15	22.1	314	1202	ft	378,000
2057	13328_13327				10	0.0039	0.89	0.53	1.09	1.45	OK	IS	IS	2.3	15	13.7	310	386	ft	120,000
2056	13327_13326				10	0.0824	4.07	0.53	1.09	1.45	OK	OK	OK	2.3	15	8.7	300	318	ft	95,000
2055	13326_13310				10	0.0149	1.73	0.53	1.09	1.45	OK	OK	OK	2.3	15	9.3	247	326	ft	81,000

Special Considerations: (Included in Unit Costs)	Parallels Portland and Western Railroad; Crosses Tualatin Sherwood Rd.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Onion Flat Trunk

Project ID: D-020

Base Construction Cost	2,510,000
Contingency (30%)	753,000
Construction Budget Amount	3,260,000
Engineering & Administration (25%)	815,000
Capital Improvement Cost Total[1]:	**4,080,000**

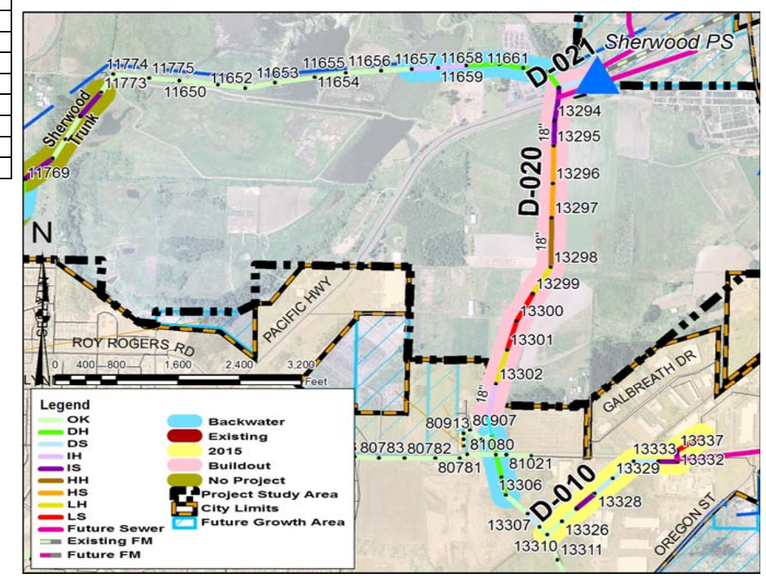
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Project is triggered by extension of service southeast of Oregon Street.

Location:	Runs from north of Tualatin Sherwood Rd. to connection with Upper Tualatin Interceptor
Treatment Plant Basin:	IH
Jurisdiction:	Sherwood
Local/Regional:	-
Brief Description:	Upsize ~4,920 ft of 18-inch diameter sanitary sewer to 33-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
2039	80905_13303				18	0.0033	3.91	1.70	2.62	4.12	OK	OK	IH	2.4	33	13.8	242	650	ft	157,000
2038	13303_13302				18	0.0032	3.84	1.70	2.62	4.12	OK	OK	IH	2.4	33	7.3	476	534	ft	254,000
2037	13302_13301				18	0.0034	3.96	1.70	2.62	4.12	OK	OK	LH	2.4	33	4.3	470	482	ft	226,000
2036	13301_13300				18	0.0029	3.65	1.70	2.62	4.12	OK	OK	LS	2.4	33	2.3	452	272	ft	123,000
2035	13300_13299				18	0.0030	3.75	1.70	2.62	4.12	OK	OK	LS	2.4	33	3.1	432	368	ft	159,000
2034	13299_13298				18	0.0033	3.92	1.69	2.62	4.11	OK	OK	LH	2.4	33	5.0	431	493	ft	212,000
2033	13298_13297				18	0.0035	4.03	1.69	2.62	4.11	OK	OK	HH	2.3	33	5.6	522	504	ft	263,000
2032	13297_13296				18	0.0023	3.24	1.69	2.61	4.11	OK	OK	HS	2.3	33	5.6	520	504	ft	262,000
2031	13296_13295				18	0.0030	3.71	1.69	2.61	4.10	OK	OK	HS	2.3	33	7.0	515	528	ft	272,000
2030	13295_13294				18	0.0030	3.75	1.69	2.61	4.10	OK	OK	IS	2.3	33	8.0	520	547	ft	285,000
2029	13294_13293				18	0.0030	3.74	1.69	2.61	4.10	OK	OK	IS	2.3	33	10.8	335	896	ft	300,000

Special Considerations: (Included in Unit Costs)	Parallels/crosses stream bed of Rock Creek; Crosses Pacific Highway.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Onion Flat Trunk

Project ID: D-021

Base Construction Cost	706,000
Contingency (30%)	212,000
Construction Budget Amount	920,000
Engineering & Administration (25%)	230,000

NOTES: These segments (MH 13293 to Sherwood Pump Station) are marginal at 2015, and an improvement may be needed sooner, depending on growth patterns. Size downstream of MH 11663 could be reduced if large "buildout+" flow from the west is delivered directly to the Sherwood PS location via parallel sewer (the model injects "buildout+" flows at MH 11663).

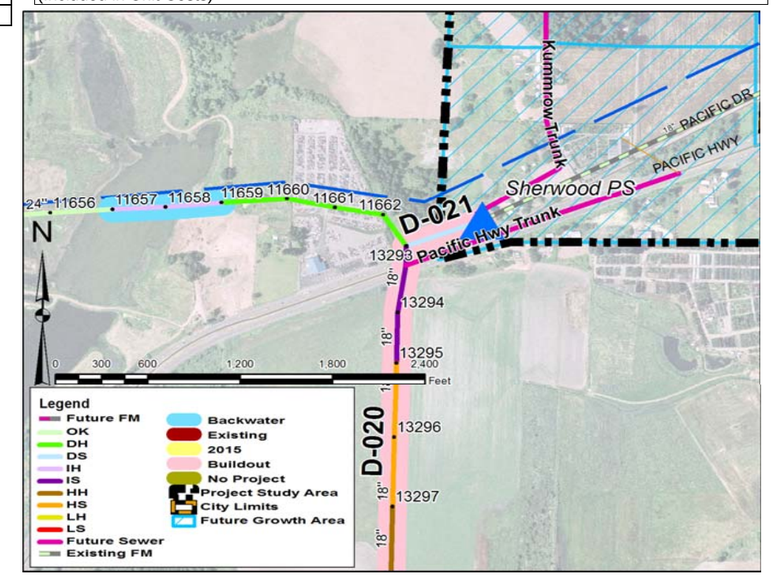
Capital Improvement Cost Total[1]: 1,150,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	Runs from Tualtin Sherwood Rd. to start of project D-020.
Treatment Plant Basin:	IS
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~680 ft of 18-inch and 24-inch diameter sanitary sewer to 33-inch and 66-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
2028	13293_11663				18	0.0015	2.60	1.68	2.85	4.41	OK	DH	IS	2.3	33	13.9	130	326	ft	42,000
2027	11663_11664				24	0.0015	5.69	4.17	6.41	9.83	OK	DS	DS	2.6	66	23.9	531	1205	ft	640,000
8865	-				24	0.5333	107.01	4.17	6.75	10.17	--	OK	OK	2.5	66	36.8	15	1570	ft	24,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hall Blvd. Lateral

Project ID: D-050

Base Construction Cost	398,000
Contingency (30%)	119,000
Construction Budget Amount	520,000
Engineering & Administration (25%)	130,000
Capital Improvement Cost Total[1]:	**650,000**

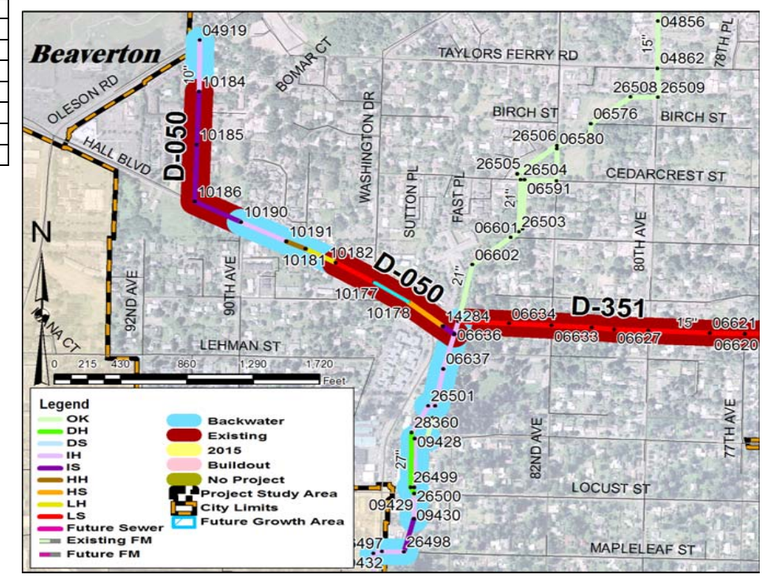
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Existing modeled flows would produce significant surcharging and potential outflows. Flow and surcharging should be verified.

Location:	Runs along Hall Blvd. from west of Washington Dr. to connection with Metzger Interceptor.
Treatment Plant Basin:	IH
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~2,710 ft of 8-inch and 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
911	10184_10185				10	0.0060	1.10	1.20	1.27	1.30	IS	IS	IS	4.6	12	9.4	370	145	ft	54,000
912	10185_10186				10	0.0059	1.09	1.20	1.27	1.30	IS	IS	IS	4.6	12	9.1	390	143	ft	56,000
913	10186_10190				8	0.0268	1.28	1.20	1.27	1.30	OK	IH	IS	4.6	12	9.3	332	144	ft	48,000
914	10190_10191				8	0.0333	1.43	1.20	1.27	1.30	IH	IH	IH	4.6	12	9.6	329	146	ft	48,000
915	10191_10181				8	0.0583	1.89	1.20	1.27	1.30	HH	HH	HH	4.6	12	10.0	135	149	ft	20,000
909	10181_10182				8	0.0280	1.31	1.20	1.27	1.30	LH	LH	LH	4.6	12	10.0	216	149	ft	32,000
910	10182_10177				8	0.0162	1.00	1.20	1.27	1.30	LS	LS	LS	4.5	12	10.0	285	149	ft	43,000
907	10177_10178				8	0.0120	0.86	1.20	1.27	1.30	HS	LS	LS	4.6	12	10.0	279	149	ft	42,000
908	10178_14284				8	0.0080	0.70	1.20	1.27	1.30	IS	IS	HS	4.6	12	10.0	282	149	ft	42,000
917	14284_06636				8	0.0240	1.21	1.20	1.27	1.30	IH	IS	IS	IS	12	10.0	88	149	ft	13,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Bluff/Cipole Sewer

Project ID: D-080

Base Construction Cost	1,221,000
Contingency (30%)	366,000
Construction Budget Amount	1,590,000
Engineering & Administration (25%)	398,000
Capital Improvement Cost Total[1]:	**1,990,000**

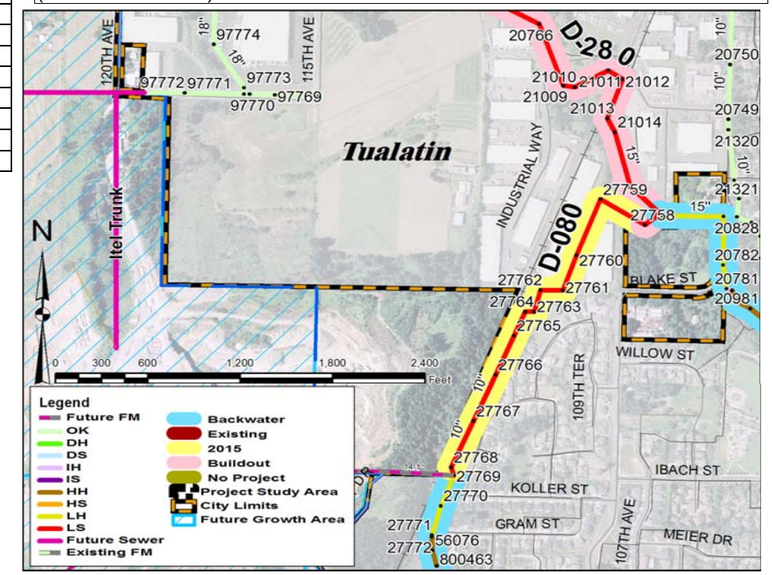
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: An alternative method of serving growth areas to west and south is under evaluation by District staff. Project D-080 would likely be superceded by the subject alternative method under consideration.

Location:	Runs northeast from north of Koller St. to 108th Ave.
Treatment Plant Basin:	LS
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~2,550 ft of 10-inch diameter sanitary sewer to 30-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
7451	27768_27767				10	0.0037	0.86	0.28	1.12	7.13	OK	IS	LS	2.3	30	14.5	356	617	ft	220,000
7453	27767_27766				10	0.0032	0.81	0.28	1.12	7.13	OK	DS	LS	2.3	30	19.0	361	694	ft	250,000
7455	27766_27765				10	0.0034	0.83	0.28	1.12	7.13	OK	DS	LS	2.3	30	17.0	299	659	ft	197,000
7457	27765_27764				10	0.0291	2.42	0.28	1.12	7.12	OK	OK	LS	2.3	30	15.7	136	637	ft	87,000
7459	27764_27763				10	0.0063	1.13	0.28	1.12	7.12	OK	DH	LS	2.3	30	17.1	60	662	ft	40,000
7461	27763_27762				10	0.0056	1.06	0.28	1.12	7.12	OK	DS	LS	2.3	30	15.5	160	635	ft	102,000
7463	27762_27761				10	0.0051	1.01	0.28	1.12	7.12	OK	DS	LS	2.3	30	15.5	145	317	ft	46,000
7465	27761_27760				10	0.0373	2.74	0.28	1.12	7.12	OK	OK	LS	2.3	30	14.6	262	309	ft	81,000
7467	27760_27759				10	0.0048	0.98	0.28	1.12	7.12	OK	IS	LS	2.3	30	9.1	424	262	ft	111,000
7469	27759_27758				10	0.0108	1.47	0.28	1.12	7.12	OK	OK	LS	2.3	30	8.0	343	253	ft	87,000

Special Considerations: (Included in Unit Costs) Parallels Portland and Western Railroad.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - East Tigard Trunk

Project ID: D-120

Base Construction Cost	216,000
Contingency (30%)	65,000
Construction Budget Amount	280,000
Engineering & Administration (25%)	70,000
Capital Improvement Cost Total[1]:	**350,000**

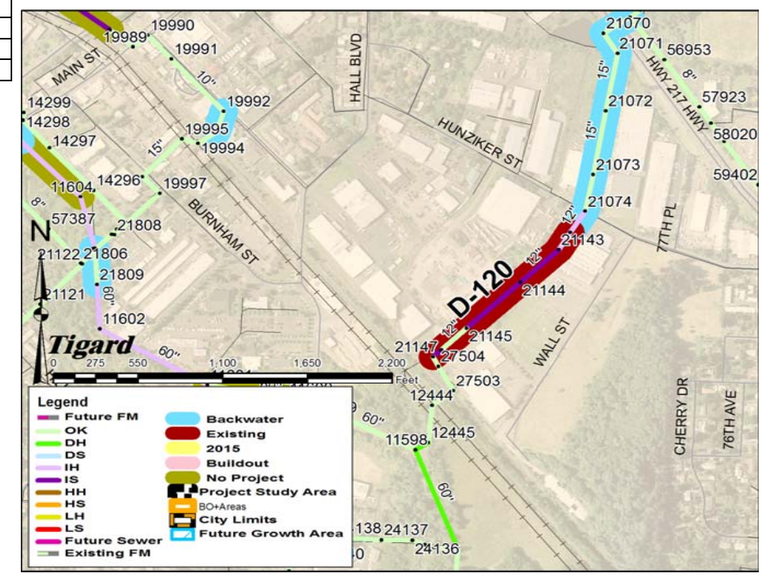
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: These 12-inch segments are a capacity restriction, carrying flows from an upstream 15-inch trunk with greater slope and capacity.

Location:	Runs from east of Portland and Western Railroad toward Hunziker St.
Treatment Plant Basin:	HH
Jurisdiction:	Tigard
Local/Regional:	-
Brief Description:	Upsize ~1,470 ft of 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1433	21074_21142				12	0.0075	2.00	1.31	1.48	1.75	IH	IH	HH	2.3	15	10.8	124	173	ft	21,000
1434	21142_21143				12	0.0030	1.26	1.31	1.48	1.75	IH	IS	HS	2.3	15	9.1	260	162	ft	42,000
1435	21143_21144				12	0.0031	1.28	1.57	1.89	2.17	IS	HS	HS	2.3	15	7.0	326	147	ft	48,000
1436	21144_21145				12	0.0029	1.24	1.57	1.89	2.17	IS	HS	HS	2.3	15	5.5	344	137	ft	47,000
1437	21145_21146				12	0.0051	1.65	1.57	1.89	2.17	OK	IS	HS	2.3	15	5.5	391	137	ft	54,000
1438	21146_21147				12	0.0016	0.92	1.57	1.89	2.16	IS	IS	IS	2.3	15	6.0	25	141	ft	4,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Metzger Interceptor

Project ID: D-170

Base Construction Cost	500,000
Contingency (30%)	150,000
Construction Budget Amount	650,000
Engineering & Administration (25%)	163,000
Capital Improvement Cost Total[1]:	**813,000**

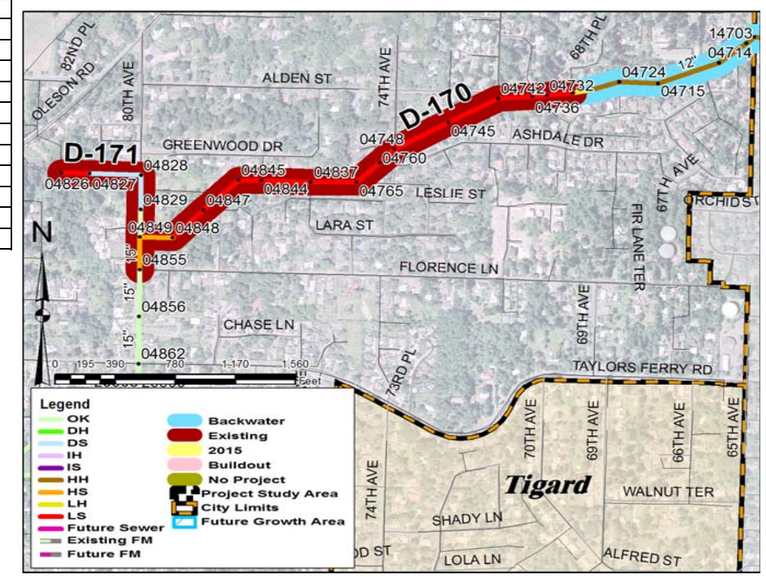
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Existing modeled flows would produce significant surcharging and potential outflows. Flow and surcharging should be verified.

Location:	Moon Shadow Park/greenbelt Portland between 80th Ave to 68th Pl.
Treatment Plant Basin:	LS
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~3,158 ft of 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
944	04731_04732				12	0.0034	1.34	2.68	2.68	2.73	LS	LS	LS	19.2	15	8.8	169	159	ft	27,000
945	04732_04736				12	0.0086	2.14	2.68	2.68	2.73	LS	LS	LS	19.1	15	8.5	95	157	ft	15,000
946	04736_04742				12	0.0086	2.13	2.68	2.68	2.73	LS	LS	LS	19.2	15	8.9	228	160	ft	36,000
947	04742_04745				12	0.0086	2.14	2.68	2.68	2.72	LS	LS	LS	19.1	15	8.4	364	157	ft	57,000
948	04745_04748				12	0.0086	2.14	2.97	2.97	3.03	LS	LS	LS	18.2	15	7.7	396	152	ft	60,000
949	04748_04760				12	0.0089	2.18	2.96	2.96	3.02	LS	LS	LS	18.2	15	7.4	128	150	ft	19,000
832	04760_04765				12	0.0129	2.62	2.96	2.96	3.02	LS	LS	LS	18.2	15	7.8	194	152	ft	30,000
833	04765_04837				12	0.0066	1.88	2.96	2.96	3.02	LS	LS	LS	18.2	15	6.5	302	144	ft	43,000
838	04837_04844				12	0.0077	2.03	2.96	2.96	3.02	LS	LS	LS	18.1	15	5.3	323	135	ft	44,000
839	04844_04845				12	0.0086	2.14	2.96	2.96	3.02	LS	LS	LS	18.1	15	6.1	149	141	ft	21,000
840	04845_04847				12	0.0086	2.14	2.96	2.96	3.01	LS	LS	LS	18.1	15	5.9	309	140	ft	43,000
841	04847_04848				12	0.0086	2.14	2.96	2.96	3.01	LS	LS	LS	18.1	15	4.9	280	133	ft	37,000
842	04848_04849				12	0.0093	2.22	2.95	2.95	3.01	HS	HS	HS	18.1	15	8.4	221	157	ft	35,000
843	04849_04855				15	0.0075	3.62	4.04	4.07	4.14	HS	HS	HS	15.8	15	7.0	223	147	ft	33,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Metzger Interceptor

Project ID: D-171

Base Construction Cost	168,000
Contingency (30%)	50,000
Construction Budget Amount	220,000
Engineering & Administration (25%)	55,000
Capital Improvement Cost Total[1]:	**275,000**

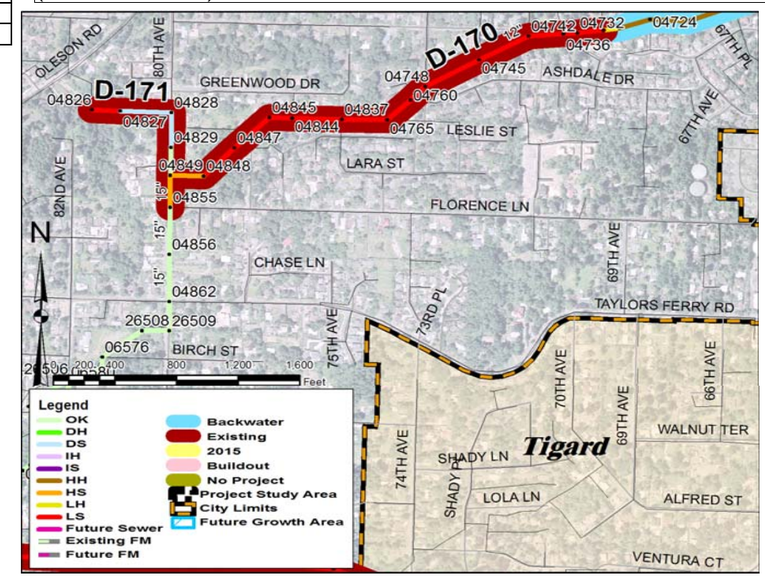
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Upper segment of this project is apparently very shallow. Flows may be overestimated due to coarseness of model; however, service area is significant. Recommend that additional 8" diameter segments upstream of MH 04826 be evaluated to verify adequate capacity during preliminary design of this improvement. Surcharge monitoring at MH 04826 is recommended.

Location:	Runs along Kensington Rd. and 80th Ave. to Florence Ln.
Treatment Plant Basin:	LS
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~960 ft of 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
834	04826_04827				10	0.0040	0.90	1.14	1.17	1.18	HS	LS	LS	12.5	12	9.1	182	143	ft	26,000
835	04827_04828				10	0.0040	0.90	1.14	1.17	1.18	DS	DS	DS	12.5	12	17.6	333	196	ft	65,000
836	04828_04829				10	0.0040	0.89	1.14	1.17	1.18	DS	DS	DS	12.5	12	15.8	244	184	ft	45,000
837	04829_04849				10	0.0456	3.03	1.14	1.17	1.18	OK	OK	OK	12.5	12	11.8	200	160	ft	32,000

Special Considerations: NA
(Included in Unit Costs)



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

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PROJECT - Upper Tualatin Interceptor

Project ID: D-220

Base Construction Cost	4,893,000
Contingency (30%)	1,468,000
Construction Budget Amount	6,360,000
Engineering & Administration (25%)	1,590,000
Capital Improvement Cost Total[1]:	**7,950,000**

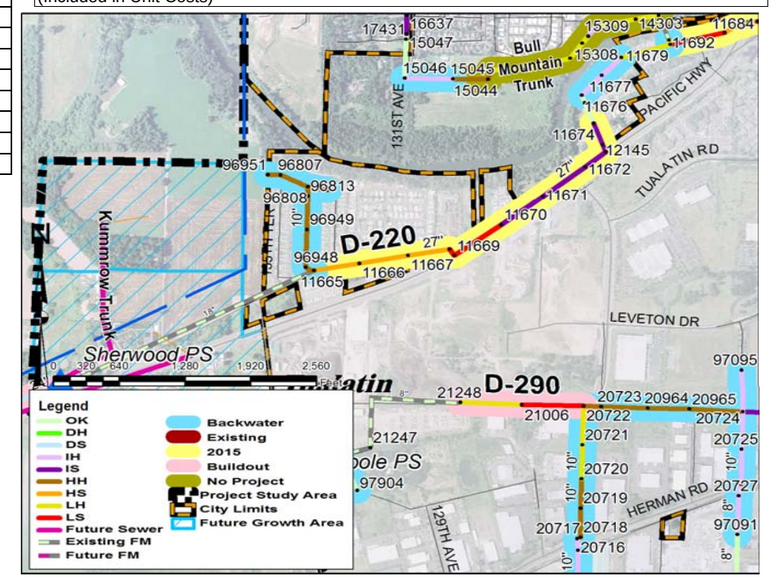
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted surcharging is moderate (about 1 foot), however, GIS data indicates MH 11669 is critically shallow (less than 5 ft to invert, less than 3 ft to pipe crown). Alternatives to reduce the risk of outflows at MH 11669 could be considered to defer this project to after 2015.

Location:	Pacific Highway
Treatment Plant Basin:	HS
Jurisdiction:	Tualatin
Local/Regional:	Regional
Brief Description:	Upsize ~3,570 ft of 27-inch diameter sanitary sewer to 72-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1897	11665_11666				27	0.0010	6.32	4.78	7.70	10.72	OK	IH	HS	2.7	72	8.2	453	686	ft	311,000
1898	11666_11667				27	0.0011	6.66	4.67	7.48	10.58	OK	IH	HS	2.6	72	7.7	481	679	ft	327,000
1899	11667_11668				27	0.0011	6.66	4.56	7.29	10.54	OK	IH	HS	2.6	72	7.7	463	680	ft	315,000
1900	11668_11669				27	0.0021	9.12	4.47	7.14	10.50	OK	HH	LS	2.6	72	6.1	87	161	ft	14,000
1901	11669_11670				27	0.0010	6.34	4.93	7.66	11.06	OK	HH	LS	2.6	72	6.9	511	1858	ft	949,000
1902	11670_11671				27	0.0010	6.34	4.84	7.61	11.00	OK	IH	IS	2.6	72	9.4	500	2109	ft	1,055,000
1903	11671_11672				27	0.0010	6.34	4.83	7.55	10.94	OK	IH	IS	2.6	72	9.4	500	2109	ft	1,055,000
1904	11672_11673				27	0.0014	7.60	4.82	7.49	10.89	OK	IH	IS	2.6	72	10.4	237	2148	ft	509,000
1905	11673_12145				27	0.0003	3.75	4.82	7.47	10.87	IS	IH	IS	2.6	72	11.0	86	2176	ft	187,000
1927	12145_11674				27	0.0012	7.03	4.81	7.45	10.86	OK	IS	IS	2.6	72	9.2	244	700	ft	171,000

Special Considerations: (Included in Unit Costs) Parallels Pacific Highway in right-of-way



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - King City Trunk

Project ID: D-230

Base Construction Cost	104,000
Contingency (30%)	31,000
Construction Budget Amount	140,000
Engineering & Administration (25%)	35,000
Capital Improvement Cost Total[1]:	**175,000**

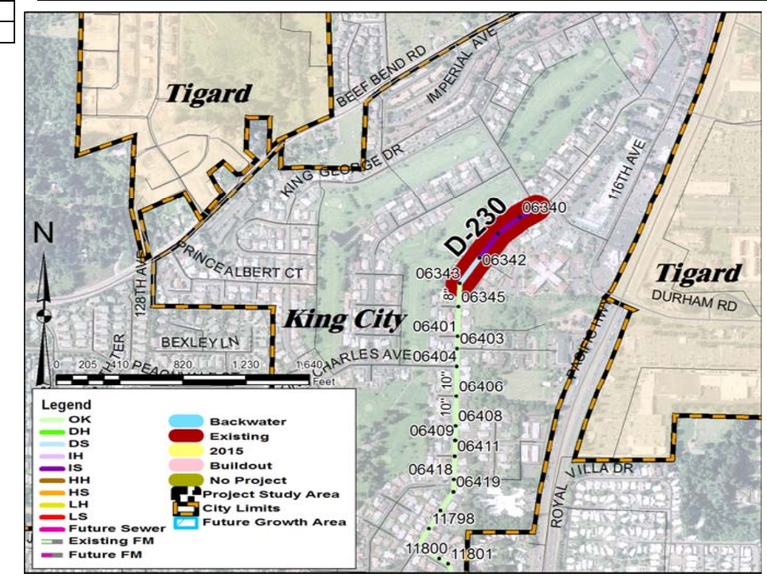
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Modeled existing flows exceed pipe capacity by about 35%, but are not expected to increase substantively. Therefore, existing peak flows should be verified before proceeding with the project. The tributary area is significant.

Location:	Runs along Royalty Pkwy southwest of Queen Elizabeth.
Treatment Plant Basin:	IS
Jurisdiction:	King City
Local/Regional:	-
Brief Description:	Upsize ~740 ft of 8-inch diameter sanitary sewer to 10-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8236	06338_06340				8	0.0059	0.60	0.81	0.81	0.84	IS	IS	IS	2.9	10	9.4	127	131	ft	17,000
8165	06340_06940				8	0.0059	0.60	0.81	0.81	0.84	IS	IS	IS	2.9	10	10.3	177	137	ft	24,000
8160	06940_06342				8	0.0059	0.60	0.81	0.81	0.84	IS	IS	IS	2.9	10	11.4	204	143	ft	29,000
8163	06342_06343				8	0.0059	0.60	0.81	0.81	0.84	DS	DS	DS	2.9	10	12.7	227	150	ft	34,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Bull Mountain Trunk

Project ID: D-240

Base Construction Cost	233,000
Contingency (30%)	70,000
Construction Budget Amount	300,000
Engineering & Administration (25%)	75,000
Capital Improvement Cost Total[1]:	**375,000**

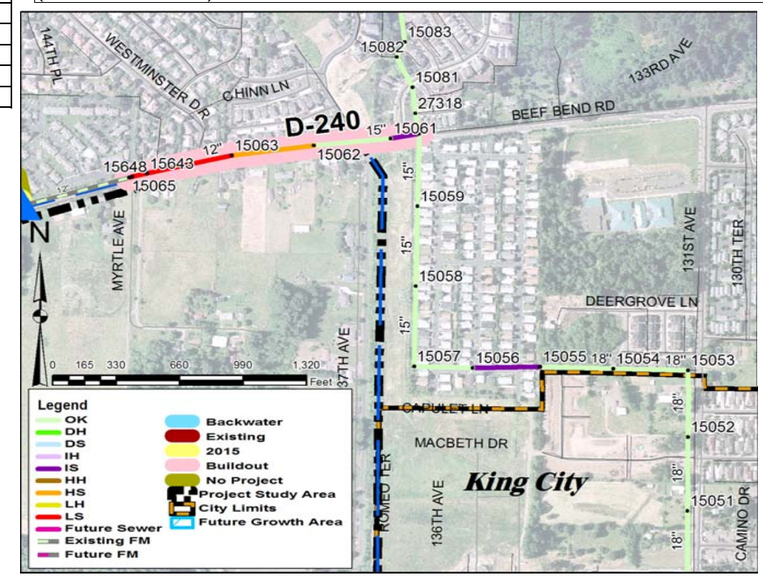
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Project would be triggered by growth in the Beef Bend area.

Location:	Runs along Beef Bend Rd. from Myrtle Ave. to just east of Peach Tree Dr.
Treatment Plant Basin:	LS
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~1,510 ft of 12-inch and 15-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1488	15065_15648				12	0.0360	4.38	2.02	3.71	5.31	OK	OK	LS	3.1	18	7.0	35	165	ft	6,000
1490	15648_15643				12	0.0251	3.66	1.98	3.67	5.29	OK	IH	LS	3.1	18	7.5	88	169	ft	15,000
1489	15643_15064				12	0.0358	4.37	1.94	3.64	5.27	OK	OK	LS	3.0	18	5.0	265	151	ft	40,000
1487	15064_15063				12	0.0160	2.92	1.88	3.58	5.25	OK	HS	LS	3.0	18	4.8	220	149	ft	33,000
1486	15063_15062				15	0.0100	4.18	1.82	3.55	5.22	OK	OK	HS	3.0	18	5.3	449	153	ft	69,000
1485	15062_15061				15	0.0231	6.36	1.75	3.51	5.18	OK	OK	OK	3.0	18	5.5	300	154	ft	46,000
1484	15061_15060				15	0.0111	4.40	1.72	3.48	5.14	OK	OK	IS	3.0	18	6.3	151	160	ft	24,000

Special Considerations: NA
(Included in Unit Costs)



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Beef Bend Road Trunk

Project ID: D-245

Base Construction Cost	1,159,000
Contingency (30%)	348,000
Construction Budget Amount	1,510,000
Engineering & Administration (25%)	377,500
Capital Improvement Cost Total[1]:	**1,888,000**

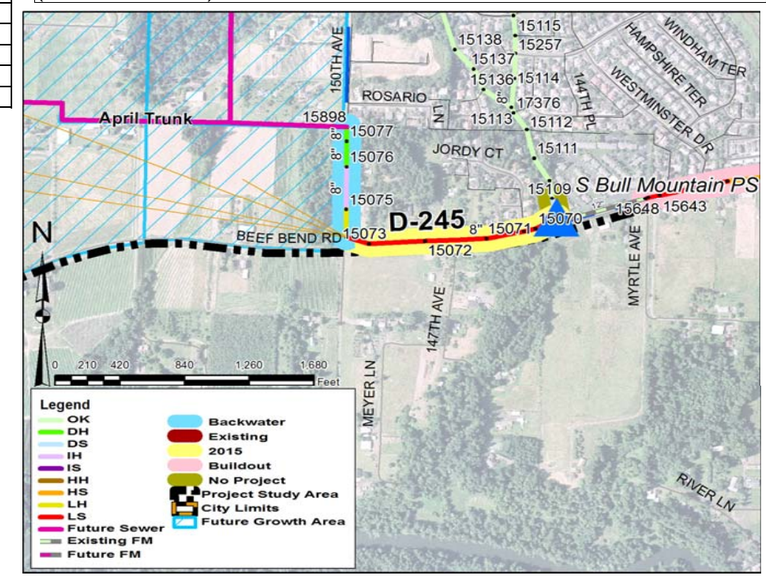
NOTES: Project would be triggered by growth in the Beef Bend area, as well as abandonment of Pleasant View Pump Station and redirection of the flow through the Beef Bend growth area.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	Near South Bull Mountain Pump Station
Treatment Plant Basin:	LS
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~1,400 ft of 8-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
8474	15074_15073				8	0.0040	0.49	0.27	2.41	4.05	OK	LS	LS	2.6	18	29.6	153	795	ft	122,000
8493	15073_15072				8	0.0040	0.49	0.27	2.41	4.05	OK	LS	LS	2.6	18	35.7	400	933	ft	373,000
8489	15072_15071				8	0.0040	0.49	0.27	2.40	4.04	OK	LS	LS	2.6	18	39.8	400	1026	ft	410,000
8494	15071_15250				8	0.0040	0.49	0.27	2.39	4.03	OK	LS	LS	2.6	18	28.5	228	771	ft	176,000
8484	15250_15070				8	0.0040	0.50	0.27	2.38	4.03	OK	HS	LS	2.6	18	19.1	84	252	ft	21,000
8495	15070_15069				8	0.0039	0.49	0.27	2.38	4.02	OK	IS	LS	2.6	18	16.9	66	236	ft	16,000
8482	15069_15068				8	0.0040	0.49	0.27	2.38	4.02	OK	IS	HS	2.6	18	22.2	65	628	ft	41,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Upper Tualatin Interceptor

Project ID: D-250

Base Construction Cost	3,380,000
Contingency (30%)	1,014,000
Construction Budget Amount	4,390,000
Engineering & Administration (25%)	1,098,000
Capital Improvement Cost Total[1]:	**5,490,000**

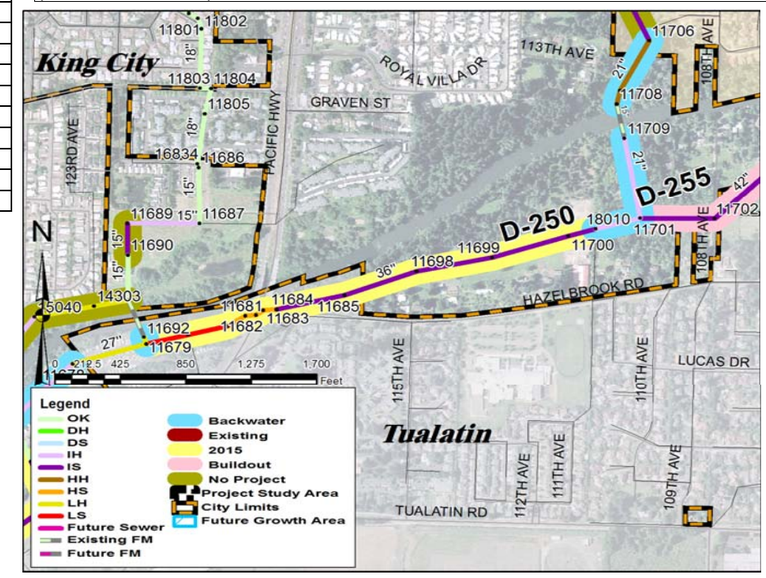
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted cumulative surcharging is significant by 2015, and would produce outflows under buildout conditions.

Location:	Runs between Summerfield Trunk and King City River Crossing (across Tualatin River).
Treatment Plant Basin:	LS
Jurisdiction:	Tualatin
Local/Regional:	Regional
Brief Description:	Upsize ~3,340 ft of 36-inch diameter sanitary sewer to 84-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1911	11679_15345				36	0.0003	6.91	9.72	13.82	18.90	IH	IH	LS	2.5	84	9.3	274	878	ft	241,000
1941	15345_11680				36	0.0008	11.98	9.71	13.80	18.89	OK	IH	LS	2.5	84	10.5	260	896	ft	233,000
1912	11680_11681				36	0.0007	11.72	9.70	13.80	18.89	IH	IH	HS	2.5	84	11.1	136	905	ft	123,000
1913	11681_11682				36	0.0001	5.13	9.70	13.79	18.88	IH	IH	HS	2.5	84	11.1	71	2716	ft	193,000
1914	11682_11683				36	0.0005	9.74	9.69	13.78	18.88	IH	IH	HS	2.5	84	11.2	59	2719	ft	160,000
1915	11683_11684				36	0.0005	9.32	9.68	13.78	18.88	IH	IH	HS	2.5	84	13.7	86	945	ft	81,000
1916	11684_11685				36	0.0005	9.77	9.93	14.02	19.15	DH	DH	IS	2.5	84	15.9	450	977	ft	440,000
1917	11685_11698				36	0.0005	9.65	9.91	14.01	19.14	DH	DH	IS	2.5	84	15.6	501	973	ft	487,000
1923	11698_11699				36	0.0005	9.64	9.89	13.99	19.13	DH	IH	IS	2.5	84	14.9	502	962	ft	483,000
1924	11699_11700				36	0.0005	9.66	10.14	14.25	19.39	DH	IH	IS	2.5	84	13.6	500	943	ft	471,000
1925	11700_18010				36	0.0005	9.59	10.14	14.24	19.38	DS	IH	IS	2.5	84	13.3	203	938	ft	190,000
1943	18010_11701				36	0.0022	20.35	10.13	14.24	19.37	OK	IH	IH	2.5	84	13.7	293	944	ft	276,000

Special Considerations: (Included in Unit Costs) Pacific Highway crossing



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Upper Tualatin Interceptor

Project ID: D-255

Base Construction Cost	6,960,000
Contingency (30%)	2,088,000
Construction Budget Amount	9,050,000
Engineering & Administration (25%)	2,260,000

NOTES: Predicted cumulative surcharging is insignificant by 2015, and significant under buildout conditions.

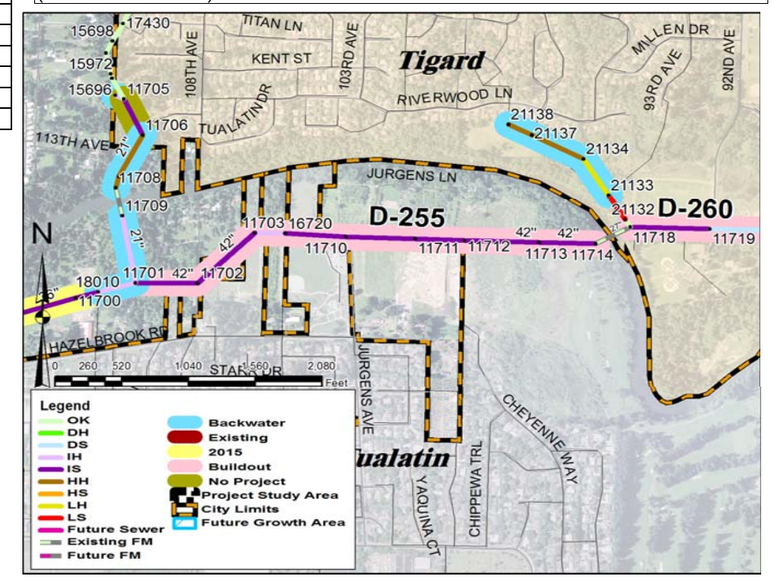
Capital Improvement Cost Total[1]: 11,310,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1926	11701_11702				42	0.0004	13.16	10.94	15.06	20.26	OK	IH	IS	2.5	84	12.6	515	1855	ft	955,000
1948	11702_11703				42	0.0004	13.16	11.05	15.18	20.39	OK	IH	IS	2.5	84	11.3	564	1816	ft	1,024,000
1456	11703_16720				42	0.0008	18.58	11.05	15.17	20.37	OK	IH	IH	2.5	84	11.5	246	1823	ft	448,000
1497	16720_11710				42	0.0002	9.19	11.23	15.36	20.59	IH	IH	IS	2.5	84	11.7	503	1827	ft	919,000
1462	11710_11711				42	0.0004	13.27	11.23	15.35	20.58	OK	IH	IS	2.5	84	12.8	482	1862	ft	897,000
1463	11711_11712				42	0.0004	13.17	11.21	15.35	20.56	OK	IH	IS	2.5	84	13.0	416	1868	ft	777,000
1464	11712_11713				42	0.0004	12.91	11.58	15.72	20.95	OK	IH	IS	2.5	84	13.2	586	1874	ft	1,098,000
1444	11713_11714				42	0.0004	12.99	11.58	15.72	20.94	OK	IH	IS	2.5	84	12.9	453	1865	ft	845,000

Location:	Runs between Summerfield Trunk and Upper Tualatin Interceptor Siphon across Tualatin River.
Treatment Plant Basin:	IS
Jurisdiction:	-
Local/Regional:	Regional
Brief Description:	Upsize ~3,770 ft of 42-inch diameter sanitary sewer to 84-inch diameter sanitary sewer.

Special Considerations: (Included in Unit Costs) Crosses agricultural fields, greenbelt area, and a small pond.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

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WYA - March 2009
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PROJECT - Upper Tualatin Interceptor

Project ID: D-260

Base Construction Cost	1,940,000
Contingency (30%)	582,000
Construction Budget Amount	2,520,000
Engineering & Administration (25%)	630,000

NOTES: Predicted cumulative surcharging is moderate by buildout (about 1.5 ft). Need for project should be reassessed as growth occurs.

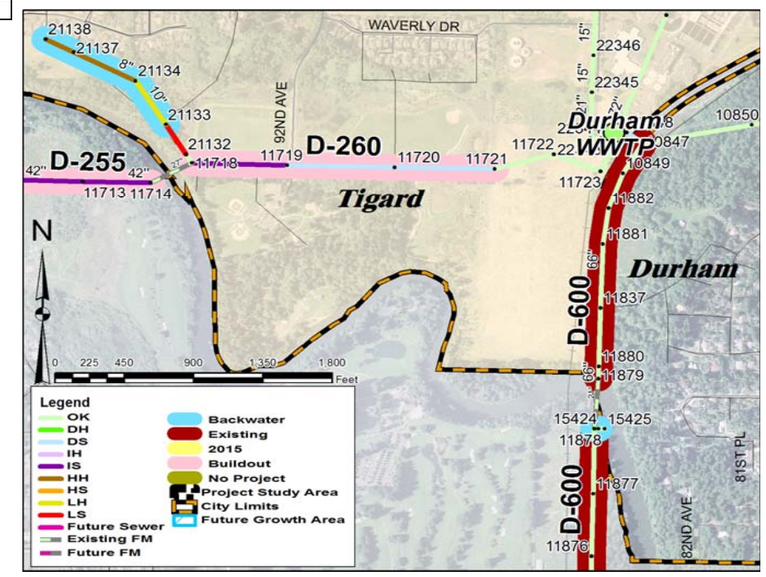
Location:	Runs east from River Wood Lateral/Upper Tualatin Interceptor Siphon across Tualatin River.
Treatment Plant Basin:	IS
Jurisdiction:	Tigard
Local/Regional:	Regional
Brief Description:	Upsize ~1,970 ft of 42-inch diameter sanitary sewer to 84-inch diameter sanitary sewer.

Capital Improvement Cost Total[1]: 3,150,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
1563	11718_11719				42	0.0004	12.94	12.02	16.16	21.43	OK	DH	IS	2.5	84	16.7	634	990	ft	628,000
1595	11719_11720				42	0.0004	12.84	12.02	16.15	21.41	OK	DH	DS	2.5	84	17.5	696	1001	ft	697,000
1300	11720_11721				42	0.0004	13.19	12.17	16.30	21.53	OK	DS	DS	2.5	84	15.3	635	968	ft	614,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Victoria Woods Trunk

Project ID: D-270

Base Construction Cost	82,000
Contingency (30%)	25,000
Construction Budget Amount	110,000
Engineering & Administration (25%)	27,500

NOTES: Some surcharging is predicted at buildout. Project may not be warranted. Sewers should be monitored as growth upstream of the Victoria Woods pump station occurs, and the need for this project evaluated as each significant development is considered.

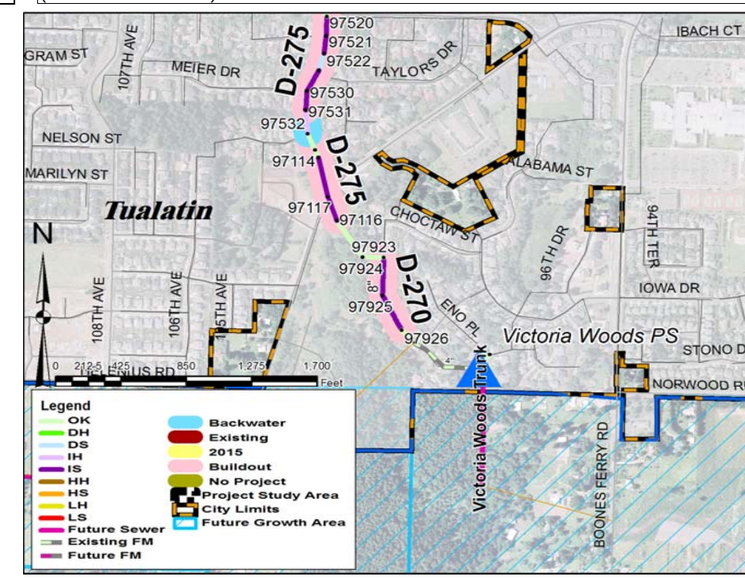
Capital Improvement Cost Total[1]: 138,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	Runs along Miama Dr., from south of Choctaw St. to north of Lumbee Ln.
Treatment Plant Basin:	IS
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~540 ft of 8-inch diameter sanitary sewer to 10-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8496	97926_97925				8	0.0069	0.65	0.03	0.10	0.76	OK	OK	IS	2.2	10	10.9	271	140	ft	38,000
8500	97925_97924				8	0.0037	0.48	0.03	0.10	0.76	OK	OK	IS	2.2	10	15.2	268	165	ft	44,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Victoria Woods Trunk

Project ID: D-275

Base Construction Cost	228,000
Contingency (30%)	68,400
Construction Budget Amount	296,000
Engineering & Administration (25%)	74,000
Capital Improvement Cost Total[1]:	**370,000**

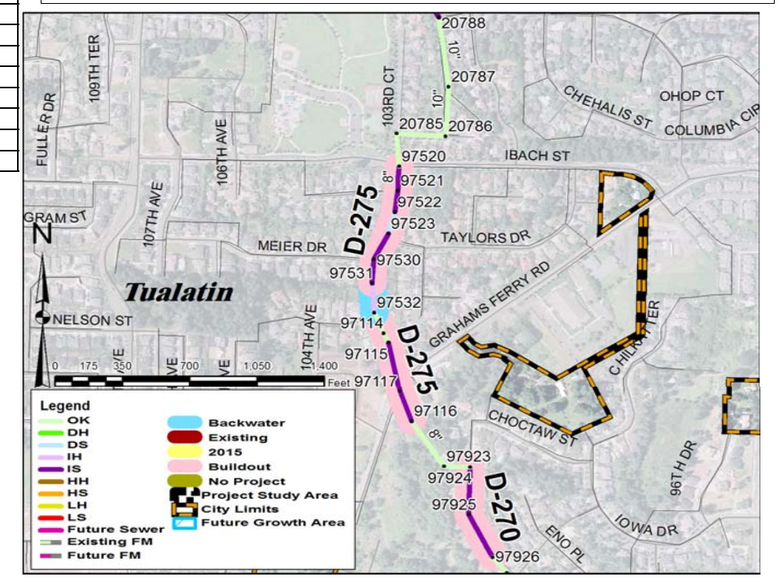
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Some surcharging is predicted at buildout. Project may not be warranted. Sewers should be monitored as growth upstream of the Victoria Woods pump station occurs, and the need for this project evaluated as each significant development is considered.

Location:	Runs along 103rd Ave., from Ibach St. to south of Grahams Ferry Rd.
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~1,490 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8510	97116_97117				8	0.0040	0.52	0.03	0.10	0.76	OK	OK	IS	2.2	12	7.3	178	130.25	ft	23,000
8508	97117_97115				8	0.0020	0.36	0.03	0.10	0.75	OK	OK	IS	2.2	12	9.6	278	146.35	ft	40,700
8505	97115_97114				8	0.0120	0.87	0.03	0.10	0.75	OK	OK	OK	2.2	12	10.1	58	149.53	ft	8,600
8512	97114_97532				8	0.0590	1.90	0.03	0.10	0.75	OK	OK	OK	2.2	12	10.3	124	151	ft	19,000
8521	97532_97531				8	0.0090	0.76	0.03	0.10	0.75	OK	OK	IH	2.2	12	11.5	166	158	ft	26,000
8523	97531_97530				8	0.0060	0.62	0.03	0.10	0.75	OK	OK	IS	2.2	12	11.8	135	160	ft	22,000
8525	97530_97523				8	0.0070	0.63	0.03	0.10	0.75	OK	OK	IS	2.2	12	14.0	163	173	ft	28,000
8514	97523_97522				8	0.0050	0.54	0.03	0.10	0.75	OK	OK	DS	2.2	12	14.4	126	175	ft	22,000
8520	97522_97521				8	0.0000	0.00	0.03	0.10	0.75	IH	IH	IS	2.2	12	11.7	123	159	ft	19,000
8517	97521_97520				8	0.0050	0.54	0.03	0.10	0.75	OK	OK	IS	2.2	12	9.8	136	148	ft	20,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

Clean Water Services
Our commitment is clear.

Sanitary Sewer Master Plan Update

PROJECT - Bluff/Cipole Sewer

Project ID: D-280

Base Construction Cost	1,390,000
Contingency (30%)	417,000
Construction Budget Amount	1,807,000
Engineering & Administration (25%)	452,000
Capital Improvement Cost Total(1):	**2,260,000**

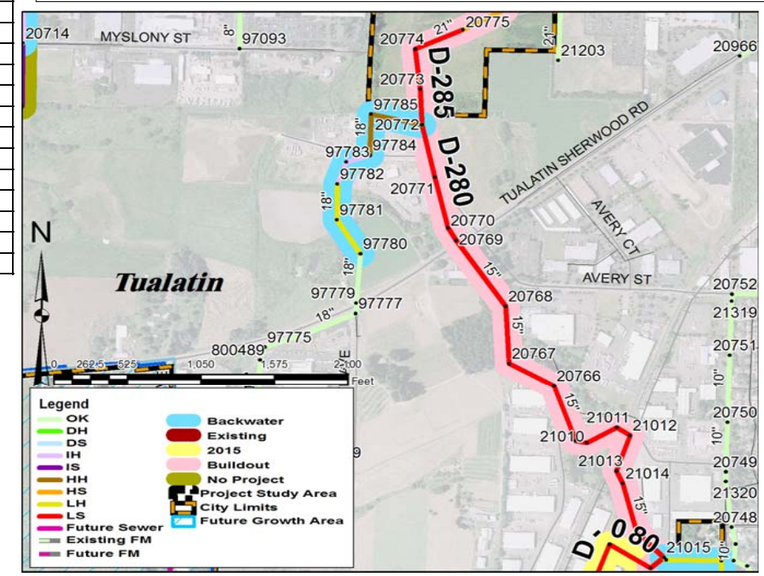
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: An alternative method of serving growth areas to west and south is under evaluation by District staff. Project D-280 may be shortened by the subject alternative method under consideration.

Location:	Runs from north of Amu St. to 108th Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~4,510 ft of 10-inch and 15-inch diameter sanitary sewer to 30-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
7471	27758_27757				10	0.0270	2.34	0.28	1.12	7.12	OK	OK	LS	2.3	30	13.0	177	296	ft	52,000
1826	20784_21015				15	0.0030	2.36	0.40	1.30	7.95	OK	OK	LS	2.3	30	15.0	289	313	ft	90,000
1877	21015_21014				15	0.0030	2.09	0.40	1.30	7.95	OK	OK	LS	2.3	30	14.5	400	309	ft	124,000
1876	21014_21013				15	0.0030	2.26	0.40	1.30	7.95	OK	OK	LS	2.3	30	14.9	209	312	ft	65,000
1875	21013_21012				15	0.0020	2.05	0.52	1.42	8.07	OK	OK	LS	2.3	30	13.9	326	304	ft	99,000
1874	21012_21011				15	0.0100	4.18	0.52	1.42	8.06	OK	OK	LS	2.3	30	14.2	87	306	ft	27,000
1873	21011_21010				10	0.0270	2.31	0.52	1.42	8.06	OK	OK	LS	2.3	30	12.1	306	288	ft	88,000
1872	21010_21009				10	0.2530	7.14	0.52	1.42	8.06	OK	OK	LS	2.3	30	8.3	65	256	ft	17,000
1871	21009_20766				15	0.0100	4.09	0.52	1.42	8.06	OK	OK	LS	2.3	30	8.9	385	261	ft	100,000
1808	20766_20767				15	0.0080	3.84	0.86	1.95	9.40	OK	OK	LS	2.1	30	10.0	345	271	ft	93,000
1809	20767_20768				15	0.0080	3.78	0.86	1.95	9.40	OK	OK	LS	2.1	30	10.1	400	271	ft	109,000
1810	20768_20769				15	0.0080	3.67	0.86	1.95	9.40	OK	OK	LS	2.1	30	12.8	500	294	ft	147,000
1811	20769_20770				12	0.0180	3.10	0.86	1.95	9.39	OK	OK	LS	2.1	30	15.2	153	629	ft	96,000
1812	20770_20771				12	0.0170	3.04	0.86	1.95	9.39	OK	OK	LS	2.1	30	14.8	416	312	ft	130,000
1813	20771_20772				12	0.0390	4.56	0.86	1.95	9.38	OK	OK	LS	2.1	30	18.4	447	342	ft	153,000

Special Considerations: Crosses Portland and Western Railroad.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

Clean Water Services
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PROJECT - Tualatin Reservoir Trunk

Project ID: D-285

Base Construction Cost	1,394,000
Contingency (30%)	418,200
Construction Budget Amount	1,812,000
Engineering & Administration (25%)	453,000
Capital Improvement Cost Total[1]:	**2,270,000**

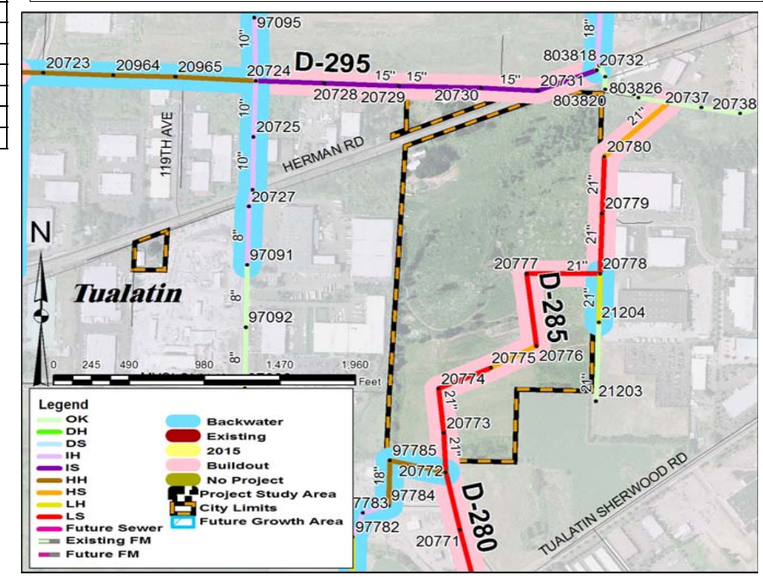
NOTES: Project is triggered by growth to the south.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1814	20772_20773				21	0.0010	3.74	1.00	2.64	10.82	OK	DH	LS	2.1	39	20.1	293	476	ft	139,000
1815	20773_20774				21	0.0010	3.27	1.00	2.64	10.81	OK	DH	LS	2.1	39	17.8	286	418	ft	120,000
1816	20774_20775				21	0.0010	3.74	1.00	2.63	10.80	OK	DH	LS	2.1	39	19.0	316	429	ft	136,000
1817	20775_20776				21	0.0020	4.10	1.00	2.63	10.79	OK	DH	HS	2.1	39	19.3	338	433	ft	146,000
1818	20776_20777				21	0.0020	4.07	1.00	2.63	10.78	OK	DH	LS	2.1	39	16.0	350	400	ft	140,000
1819	20777_20778				21	0.0010	3.94	1.04	3.30	11.38	OK	DH	LS	2.0	39	14.3	475	384	ft	182,000
1820	20778_20779				21	0.0020	4.11	1.11	3.49	11.55	DH	DH	LS	2.0	39	14.7	425	388	ft	165,000
1821	20779_20780				21	0.0010	3.58	1.15	3.55	11.61	IH	IH	LS	2.0	39	13.1	427	373	ft	159,000
1822	20780_20736				21	0.0010	3.75	1.15	3.55	11.61	IH	IH	HS	2.0	39	13.7	548	378	ft	207,000

Location:	Runs northeast from north of Amu St.
Treatment Plant Basin:	Durham
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~3,460 ft of 21-inch diameter sanitary sewer to 39-inch diameter sanitary sewer.

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Cipole/Bluff Trunk

Project ID: D-290

Base Construction Cost	117,000
Contingency (30%)	35,100
Construction Budget Amount	152,000
Engineering & Administration (25%)	38,000
Capital Improvement Cost Total[1]:	**190,000**

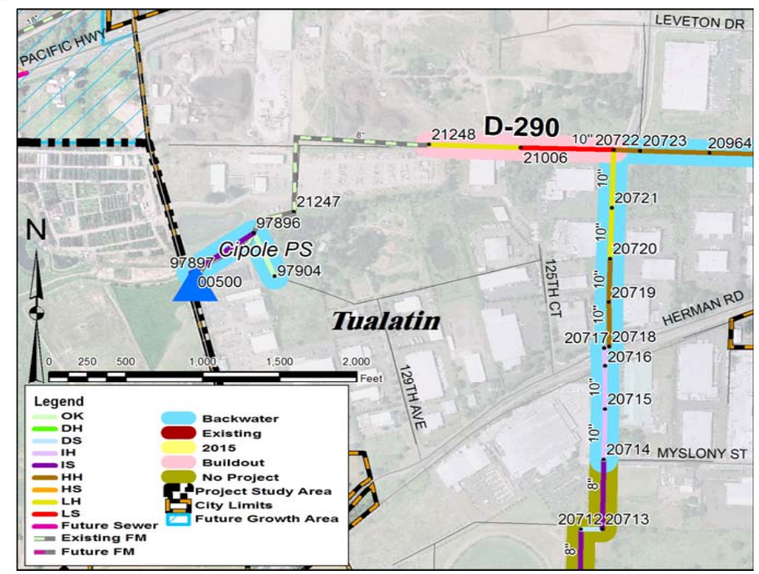
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Model may over-predict the hydraulic gradeline elevation due to an apparent datum mismatch at MH 20732. Buildout flow only slightly exceeds pipe capacity, however, this line is shallow. Flow monitoring as the service area develops may indicate this project is not necessary.

Location:	Runs from end of Cipole FM to 124th Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~1,000 ft of 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
1869	21005_21006				10	0.0030	0.75	0.47	0.52	0.77	OK	HH	LH	2.2	12	4.3	500	112	ft	56,000
1870	21006_20722				10	0.0030	0.78	0.54	0.60	0.87	OK	HH	LS	2.1	12	5.8	500	121	ft	61,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Cipole/Bluff Trunk

Project ID: D-295

Base Construction Cost	439,000
Contingency (30%)	131,700
Construction Budget Amount	571,000
Engineering & Administration (25%)	142,800

NOTES: Invert elevation datum appears to be mismatched at MH 20732. However, buildout flows are predicted to exceed pipe capacity enough to create significant surcharging. Flow monitoring is warranted due to variability in commercial/industrial flows.

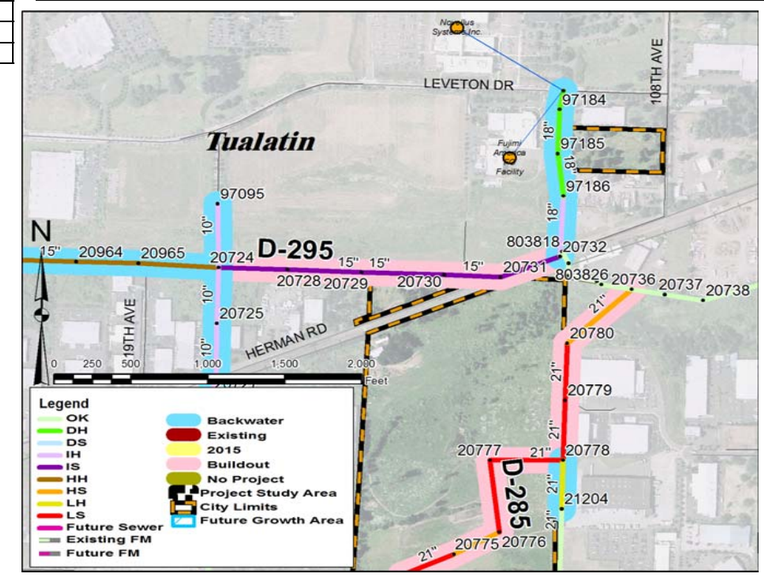
Capital Improvement Cost Total[1]: 714,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Location:	Spans between 118th Ave and Herman Rd
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~2,270 ft of 15-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1774	20724_20728				15	0.0020	1.64	1.38	1.94	2.18	IH	IH	IS	1.9	18	9.6	499	184	ft	92,000
1778	20728_20729				15	0.0020	1.72	1.38	1.93	2.17	IH	IH	IS	1.9	18	9.7	450	184	ft	83,000
1779	20729_20730				15	0.0020	1.68	1.37	1.93	2.17	IH	IH	IS	1.9	18	11.7	470	198	ft	93,000
1780	20730_20731				15	0.0020	1.68	1.37	1.93	2.17	IH	IH	IS	1.9	18	12.4	471	204	ft	96,000
1781	20731_20732				15	0.0020	1.89	1.37	1.93	2.17	IH	IH	IS	1.9	18	12.1	374	202	ft	75,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Scholl Trunk

Project ID: D-310

Base Construction Cost	197,000
Contingency (30%)	59,100
Construction Budget Amount	256,000
Engineering & Administration (25%)	64,000
Capital Improvement Cost Total[1]:	**320,000**

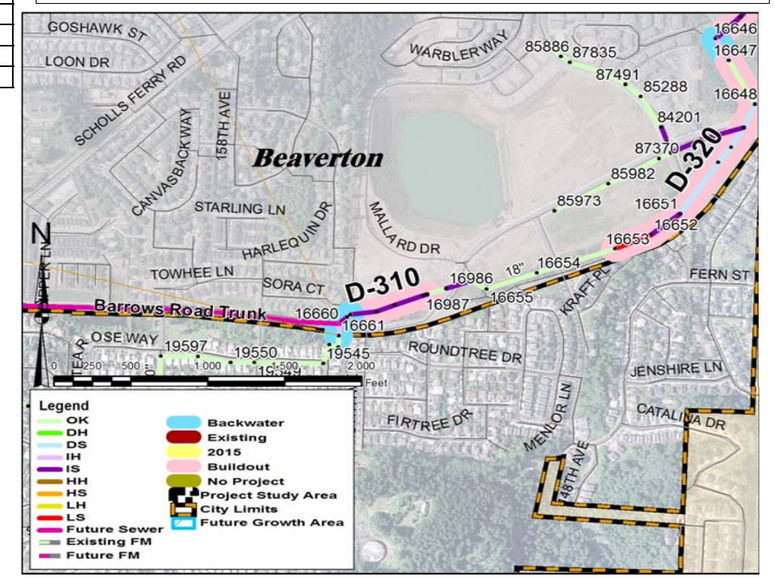
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Triggered by flow from the Roy Rogers and Barrows Road Trunk growth areas.

Location:	Runs east along the north side of Barrows Rd., south of impoundment.
Treatment Plant Basin:	Durham
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~660 ft of 18-inch diameter sanitary sewer to 36-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1956	16660_16989				18	0.0040	4.37	1.81	2.62	4.68	OK	OK	IS	3.1	36	7.8	75	292	ft	22,000
1961	16989_16659				18	0.0200	9.74	1.81	2.62	4.68	OK	OK	IH	3.1	36	7.3	20	287	ft	6,000
1955	16659_16658				18	0.0020	2.99	1.81	2.62	4.68	OK	OK	IS	3.1	36	7.5	218	290	ft	63,000
1954	16658_16988				18	0.0020	3.25	1.80	2.62	4.67	OK	OK	IS	3.1	36	8.8	127	302	ft	38,000
1960	16988_16987				18	0.0020	2.83	1.80	2.62	4.67	OK	OK	IS	3.1	36	10.0	150	313	ft	47,000
1959	16987_16657				18	0.0020	2.78	1.80	2.62	4.67	OK	OK	IS	3.1	36	9.8	66	311	ft	21,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Scholl Trunk

Project ID: D-320

Base Construction Cost	919,000
Contingency (30%)	275,700
Construction Budget Amount	1,195,000
Engineering & Administration (25%)	299,000
Capital Improvement Cost Total[1]:	**1,490,000**

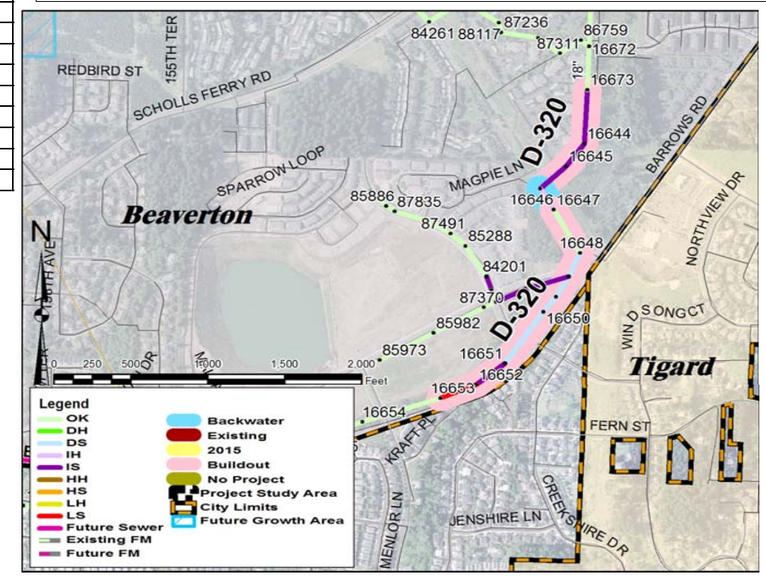
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Triggered by flow from the Roy Rogers and Barrows Road Trunk growth areas.

Location:	Runs from southwest of Springbrook Ln. to Barrows Rd. east of Menlor Ln.
Treatment Plant Basin:	Durham
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~2,690 ft of 18-inch diameter sanitary sewer to 36-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1975	16653_16652				18	0.0020	3.16	2.22	3.02	5.12	OK	IH	LS	3.3	36	8.4	251	298	ft	75,000
1974	16652_16651				18	0.0020	3.37	2.21	3.02	5.12	OK	IH	IS	3.3	36	15.3	237	362	ft	86,000
1973	16651_16650				18	0.0020	2.66	2.21	3.02	5.12	OK	DH	DS	3.3	36	18.5	426	392	ft	167,000
1972	16650_16649				18	0.0040	4.22	2.21	3.02	5.11	OK	DH	DS	3.3	36	17.4	135	382	ft	52,000
1971	16649_16648				18	0.0010	1.85	2.21	3.02	5.11	DH	DS	DS	3.3	36	17.1	162	379	ft	61,000
7830	-				18	0.0010	1.90	2.73	3.53	6.11	DS	DS	DS	3.0	36	15.7	179	366	ft	66,000
2104	16648_16647				18	0.0610	16.75	2.73	3.53	6.11	OK	OK	OK	3.0	36	12.2	310	333	ft	103,000
1232	16647_16646				18	0.0200	9.53	2.73	3.53	6.11	OK	OK	IH	3.0	36	10.2	150	314	ft	47,000
1231	16646_16645				18	0.0050	4.88	2.73	3.53	6.11	OK	OK	IS	3.0	36	12.6	253	337	ft	85,000
1230	16645_16644				18	0.0040	4.03	2.73	3.53	6.10	OK	OK	IS	3.0	36	11.6	214	328	ft	70,000
1229	16644_16673				18	0.0050	4.58	2.73	3.53	6.10	OK	OK	IS	3.0	36	7.8	366	292	ft	107,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Scholl Trunk

Project ID: D-330

Base Construction Cost	2,520,000
Contingency (30%)	756,000
Construction Budget Amount	3,276,000
Engineering & Administration (25%)	819,000
Capital Improvement Cost Total[1]:	**4,100,000**

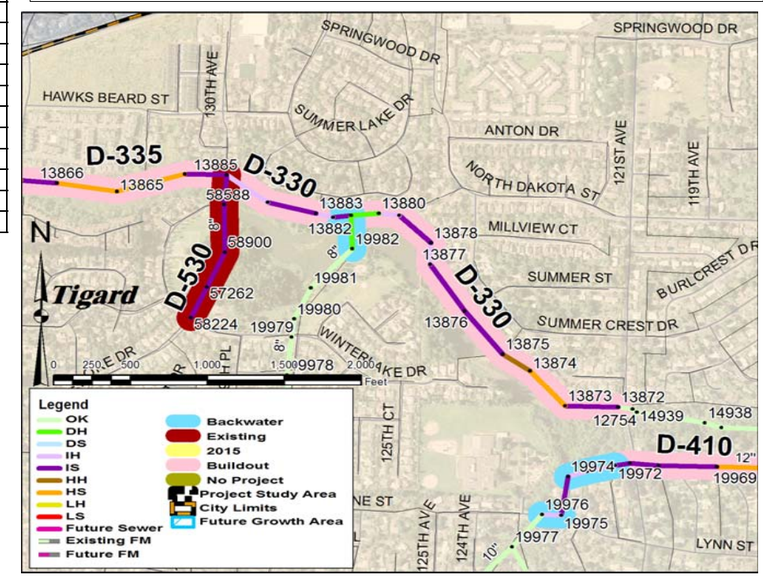
NOTES: Triggered by flow from the Roy Rogers and Barrows Road Trunk growth areas.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Location:	Runs along greenbelt on north side of Summer Lake, between 130th Ave. and 121st Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	Regional
Brief Description:	Upsize ~3,350 ft of 27-inch diameter sanitary sewer to 42-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1046	13885_13884				27	0.0020	9.63	6.69	7.49	10.53	OK	OK	IH	3.3	42	10.2	330	748	ft	247,000
1045	13884_13883				27	0.0020	8.99	6.69	7.49	10.51	OK	OK	IS	3.3	42	12.8	329	801	ft	263,000
1044	13883_13882				27	0.0030	10.75	6.69	7.49	10.50	OK	OK	IH	3.3	42	12.8	115	801	ft	92,000
1043	13882_13881				27	0.0020	8.89	6.69	7.49	10.50	OK	OK	IS	3.3	42	16.6	117	877	ft	103,000
1042	13881_13880				27	0.0030	10.14	7.02	7.82	10.83	OK	OK	DH	3.3	42	19.0	184	925	ft	170,000
1041	13880_13879				27	0.0030	10.50	7.02	7.81	10.82	OK	OK	IH	3.3	42	13.4	135	812	ft	110,000
1040	13879_13878				27	0.0020	9.81	7.02	7.81	10.81	OK	OK	IS	3.3	42	13.9	255	822	ft	210,000
1039	13878_13877				27	0.0030	10.08	7.02	7.81	10.79	OK	OK	IH	3.3	42	12.9	190	802	ft	152,000
1038	13877_13876				27	0.0020	8.97	7.02	7.81	10.78	OK	OK	IS	3.3	42	8.1	405	704	ft	285,000
1037	13876_13875				27	0.0020	8.97	7.01	7.80	10.76	OK	OK	IS	3.3	42	6.8	380	680	ft	258,000
1036	13875_13874				27	0.0020	9.90	7.01	7.80	10.76	OK	OK	HH	3.3	42	6.0	226	662	ft	150,000
1035	13874_13873				27	0.0020	9.66	7.01	7.80	10.75	OK	OK	HS	3.3	42	7.2	328	686	ft	225,000
1034	13873_13872				27	0.0020	9.60	7.00	7.80	10.75	OK	OK	IS	3.3	42	9.4	349	732	ft	255,000

Special Considerations: Parallel to/in stream bed of Summer Lake/Fanno Creek tributary



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

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Sanitary Sewer Master Plan Update

PROJECT - Scholl Trunk

Project ID: D-335

Base Construction Cost	1,328,000
Contingency (30%)	398,400
Construction Budget Amount	1,726,000
Engineering & Administration (25%)	432,000

NOTES: Triggered by flow from the Roy Rogers and Barrows Road Trunk growth areas.

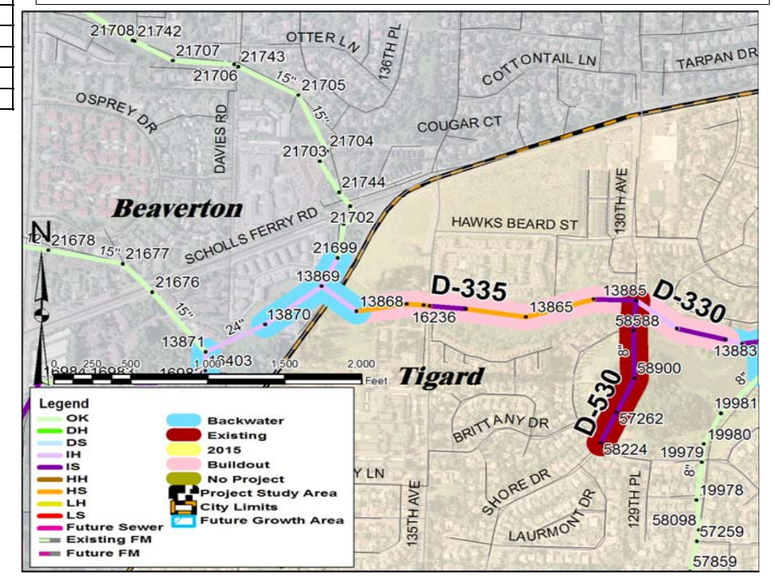
Capital Improvement Cost Total[1]: 2,160,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Location:	Runs along north side of Fanno Creek tributary draining to Summer Lake, between Barrows Rd. and 130th Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	Regional
Brief Description:	Upsize ~1,860 ft of 27-inch diameter sanitary sewer to 42-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
1029	13868_13867				27	0.0010	7.74	5.50	6.30	9.22	OK	OK	HS	3.2	42	8.4	329	710	ft	234,000
1028	13867_16379				27	0.0010	7.58	5.50	6.30	9.22	OK	OK	HS	3.2	42	8.1	112	704	ft	79,000
1061	16379_16236				27	0.0020	7.87	5.50	6.30	9.21	OK	OK	HS	3.2	42	11.5	39	774	ft	30,000
1060	16236_13866				27	0.0010	7.47	5.50	6.30	9.21	OK	OK	IS	3.2	42	11.6	231	775	ft	179,000
1027	13866_13865				27	0.0010	7.50	5.50	6.30	9.20	OK	OK	HS	3.2	42	7.7	401	696	ft	279,000
1026	13865_13864				27	0.0010	7.50	5.58	6.37	9.29	OK	OK	HS	3.2	42	8.0	458	703	ft	322,000
1025	13864_13885				27	0.0010	7.54	5.57	6.37	9.28	OK	OK	IS	3.2	42	9.1	283	726	ft	205,000

Special Considerations: Parallels Fanno Creek tributary draining to Summer Lake.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Metzger Interceptor

Project ID: D-340

Base Construction Cost	217,000
Contingency (30%)	65,100
Construction Budget Amount	282,000
Engineering & Administration (25%)	70,500
Capital Improvement Cost Total[1]:	**353,000**

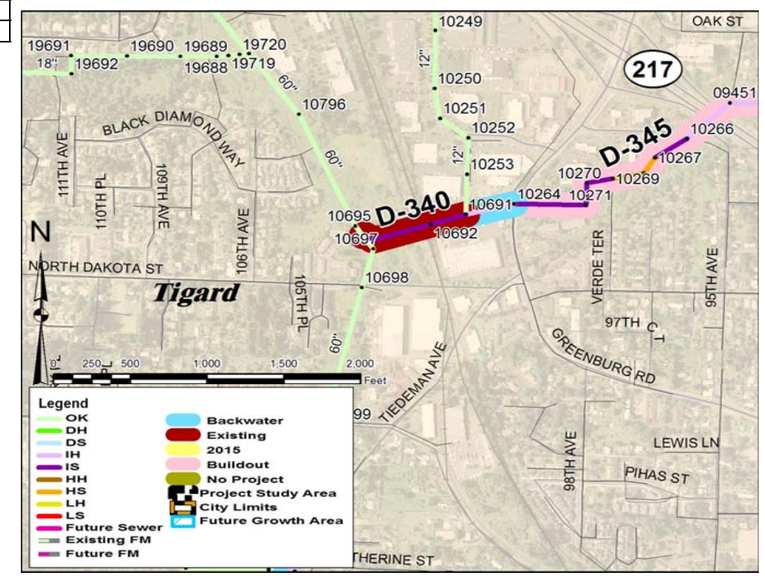
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Surcharging in these segments exacerbates upstream surcharging in segments with marginal capacity.

Location:	Runs west from 89th Ave. Lateral to Fanno Creek Interceptor.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	Regional
Brief Description:	Upsize ~720 ft of 30-inch diameter sanitary sewer to 36-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1004	10691_10692				30	0.0010	7.07	16.17	16.40	17.18	IS	IS	IS	9.4	36	8.8	240	301	ft	72,000
1005	10692_10693				30	0.0030	14.08	16.16	16.39	17.17	IS	IS	IS	9.4	36	8.9	395	302	ft	119,000
1006	10693_10694				30	0.0040	16.87	16.15	16.38	17.17	OK	OK	IS	9.4	36	11.1	67	323	ft	22,000
1007	10694_10696				30	0.1690	109.28	16.15	16.38	17.16	OK	OK	OK	9.4	36	12.0	12	331	ft	4,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Metzger Interceptor

Project ID: D-345

Base Construction Cost	1,267,000
Contingency (30%)	380,100
Construction Budget Amount	1,647,000
Engineering & Administration (25%)	411,800
Capital Improvement Cost Total[1]:	**2,059,000**

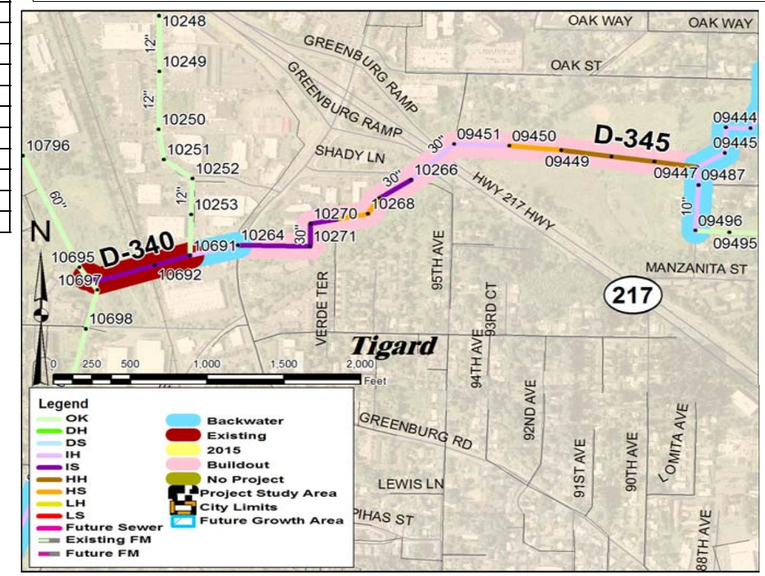
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: Marginally adequate at 2015. Flows should be closely monitored, especially when upstream improvements (Locust Street relief sewer) are completed and peak I&I flows from Portland are conveyed without restriction to this trunk.

Location:	Runs west from 89th Ave. Lateral to Fanno Creek Interceptor.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	Regional
Brief Description:	Upsize ~3,650 ft of 30-inch diameter sanitary sewer to 33-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
899	09446_09447				30	0.0030	14.06	13.80	14.03	14.58	IH	IH	HH	10.5	33	8.2	282	275	ft	78,000
900	09447_09448				30	0.0030	14.04	13.79	14.02	14.56	IH	IH	HH	10.5	33	7.5	283	269	ft	76,000
901	09448_09449				30	0.0030	14.09	13.78	14.01	14.56	IH	IH	HH	10.5	33	7.6	334	270	ft	90,000
1205	09449_09450				30	0.0020	13.18	14.23	14.44	15.22	IH	IH	HS	9.7	33	11.0	333	300	ft	100,000
1161	09450_09451				30	0.0030	14.40	14.22	14.43	15.21	IH	IH	IH	9.7	33	13.1	344	319	ft	110,000
1162	09451_10266				30	0.0030	14.03	14.21	14.42	15.20	IH	IH	IH	9.7	33	10.2	380	879	ft	334,000
1163	10266_10267				30	0.0030	14.04	14.80	15.01	15.81	IH	IH	IS	9.8	33	8.5	247	278	ft	69,000
1164	10267_10268				30	0.0030	14.06	14.79	14.99	15.79	IH	IH	HS	9.8	33	8.1	125	274	ft	34,000
1165	10268_10269				30	0.0030	14.15	14.79	14.99	15.79	IH	IH	HS	9.8	33	8.5	208	278	ft	58,000
1166	10269_10270				30	0.0030	14.00	14.78	14.98	15.78	IH	IH	IS	9.8	33	11.1	180	301	ft	54,000
1167	10270_10271				30	0.0030	14.36	14.78	14.98	15.77	IH	IH	IS	9.7	33	10.6	154	296	ft	46,000
993	10271_10264				30	0.0030	13.94	14.77	14.97	15.76	IH	IH	IS	9.7	33	8.9	476	282	ft	134,000
1003	10264_10691				30	0.0040	17.75	14.76	14.96	15.74	IH	IH	IH	9.7	33	9.0	298	283	ft	84,000

Special Considerations: Highway 217 crossing.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

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Sanitary Sewer Master Plan Update

PROJECT - Elmwood Lateral

Project ID: D-350 & D-351

Base Construction Cost	1,220,000
Contingency (30%)	366,000
Construction Budget Amount	1,586,000
Engineering & Administration (25%)	397,000

NOTES: In lieu of replacement, excess flows in this sewer will be redirected to a new sewer on Locust Street. Pipeline carries substantial I&I from City of Portland service areas.

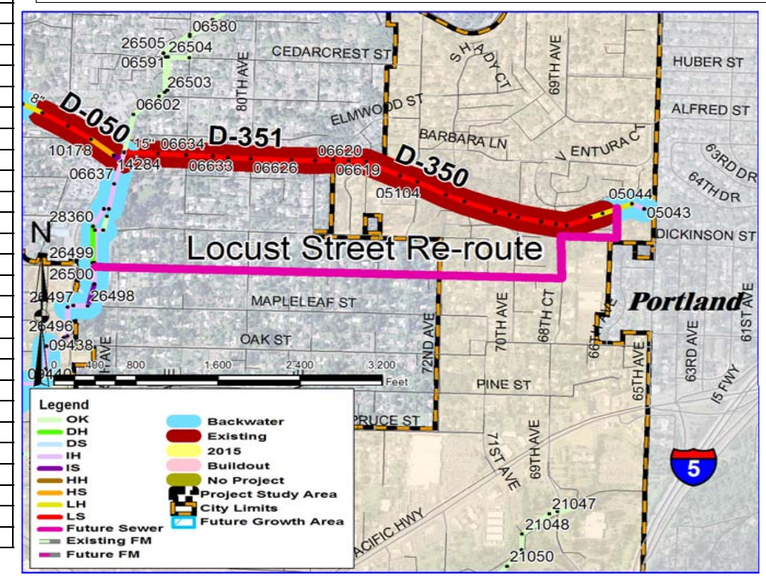
Capital Improvement Cost Total[1]: 1,983,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Location:	Runs from east of Ventura Pl. to just east of Landau Pl.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	-
Brief Description:	The future Locust Street re-route will divert peak Buildout flows from this sewer and alleviate capacity problems.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
D-350																				
848	05043_05044				12	0.0830	6.63	5.52	5.53	5.75	OK	IH	IH	19.0	21	7.9	124	-	ft	-
849	05044_05045				12	0.0620	5.75	5.52	5.53	5.75	LH	LH	LH	19.0	21	7.2	312	-	ft	-
850	05045_05048				12	0.0620	5.73	5.52	5.53	5.75	LH	LH	LH	19.0	21	13.0	126	-	ft	-
851	05048_05050				12	0.0580	5.55	5.52	5.53	5.75	LH	LH	LS	19.0	21	13.6	250	-	ft	-
852	05050_05076				12	0.0300	4.00	5.52	5.53	5.75	LS	LS	LS	19.0	21	6.9	102	-	ft	-
853	05076_05077				12	0.0450	4.91	5.52	5.53	5.75	LS	LS	LS	19.0	21	6.7	146	-	ft	-
854	05077_05085				12	0.0410	4.68	6.29	6.31	6.54	LS	LS	LS	19.4	21	6.7	214	-	ft	-
855	05085_05088				12	0.0210	3.36	6.29	6.31	6.54	LS	LS	LS	19.4	21	8.4	104	-	ft	-
856	05088_05089				12	0.0260	3.74	6.29	6.31	6.54	LS	LS	LS	19.4	21	8.7	149	-	ft	-
857	05089_05100				12	0.0090	2.16	6.29	6.31	6.54	LS	LS	LS	19.5	21	6.3	312	-	ft	-
858	05100_05101				12	0.0090	2.18	6.29	6.31	6.54	LS	LS	LS	19.5	21	6.6	198	-	ft	-
859	05101_05104				12	0.0090	2.15	6.29	6.31	6.54	LS	LS	LS	19.5	21	6.8	310	-	ft	-
860	05104_05105				12	0.0120	2.58	6.29	6.31	6.54	LS	LS	LS	19.5	21	6.3	183	-	ft	-
861	05105_06616				12	0.0120	2.49	6.60	6.62	6.85	LS	LS	LS	19.1	21	7.5	349	-	ft	-
D-351																				
873	06616_06618				15	0.0052	3.03	8.02	8.05	8.28	LS	LS	LS	4.4	21	8.2	181	-	ft	-
874	06618_06619				15	0.0055	3.11	8.02	8.05	8.28	LS	LS	LS	4.4	21	8.1	150	-	ft	-
875	06619_06620				15	0.0054	3.08	8.02	8.05	8.28	LS	LS	LS	4.4	21	7.7	172	-	ft	-
876	06620_06621				15	0.0054	3.07	8.02	8.05	8.28	LS	LS	LS	4.4	21	7.3	228	-	ft	-
877	06621_06626				15	0.0054	3.07	8.02	8.05	8.28	LS	LS	LS	4.4	21	10.0	400	-	ft	-
878	06626_06627				15	0.0054	3.08	8.02	8.05	8.28	LS	LS	LS	4.4	21	10.2	219	-	ft	-
879	06627_06628				15	0.0053	3.06	8.02	8.05	8.28	LS	LS	LS	4.4	21	7.2	146	-	ft	-
880	06628_06633				15	0.0054	3.08	8.02	8.05	8.28	LS	LS	LS	4.4	21	10.8	265	-	ft	-
881	06633_06634				15	0.0054	3.07	8.02	8.05	8.28	LS	LS	LS	4.4	21	10.8	276	-	ft	-
882	06634_06635				15	0.0152	5.16	8.02	8.05	8.28	LS	LS	LS	4.4	21	9.0	330	-	ft	-
Locust Street Re-route																				
-	05043_26500				-	-	-	5.52	5.53	5.75	-	-	-	-	21	10.0	6,330	193	ft	1,220,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - SW Katherine Lateral

Project ID: D-410

Base Construction Cost	152,000
Contingency (30%)	45,600
Construction Budget Amount	198,000
Engineering & Administration (25%)	49,500

NOTES: Surcharging at 2015 is 6-inches or less in all segments, and predicted increase in flow through 2015 is insignificant. Buildout flows are expected to increase less than 10% over existing, and would produce lest than 18 inches of surcharging. Monitor future flows to determine if project is necessary.

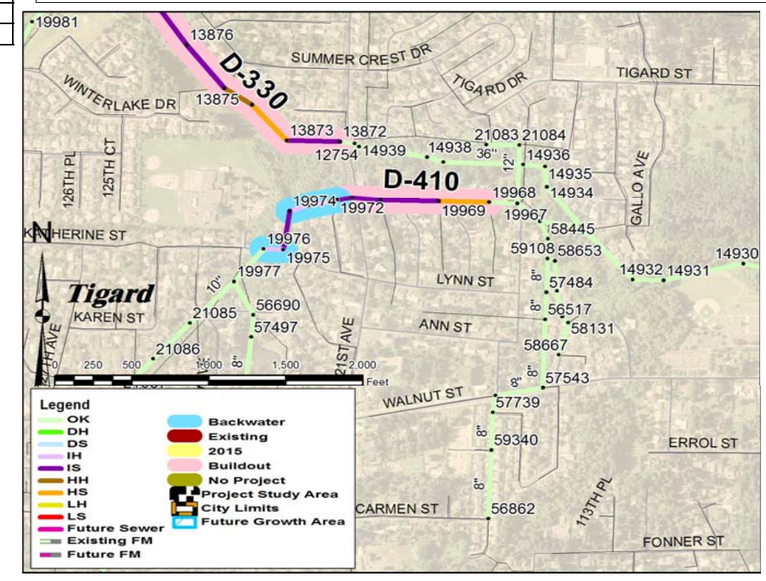
Capital Improvement Cost Total[1]: 248,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1103	19972_19971				12	0.0010	0.70	1.70	1.71	1.83	IS	IS	IS	10.1	15	8.9	33	160	ft	5,000
1102	19971_19970				12	0.0050	1.64	1.70	1.71	1.83	IH	IH	IS	10.1	15	10.3	152	169	ft	26,000
1101	19970_19969				12	0.0050	1.63	1.70	1.71	1.83	IH	IH	IS	10.1	15	12.0	385	181	ft	70,000
1100	19969_19968				12	0.0050	1.63	1.70	1.71	1.83	HS	HS	HS	10.1	15	8.3	329	156	ft	51,000

Location:	Runs on Katherine St. from 122nd Ct. to east of 118th Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	-
Brief Description:	Upsize ~900 ft of 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - N. Brentwood Interceptor

Project ID: D-480

Base Construction Cost	0
Contingency (30%)	0
Construction Budget Amount	0
Engineering & Administration (25%)	0
Capital Improvement Cost Total[1]:	**0**

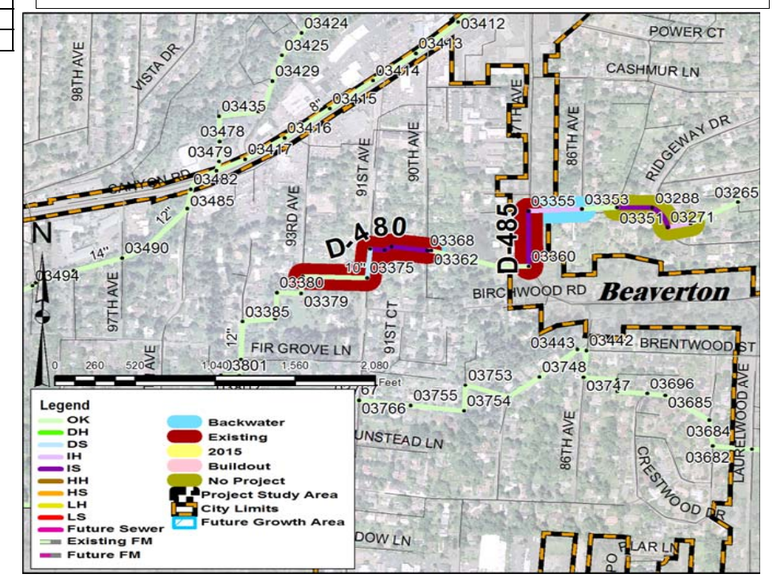
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: This project has already been constructed. No further upgrades recommended at this time.

Location:	Runs from 90th Ave. onto 91st Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~570 ft of 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
157	03368_03369				10	0.0050	0.96	1.28	1.32	1.36	IS	IS	IS	7.6	12	8.5	223	0	ft	0
158	03369_03370				10	0.0050	1.03	1.28	1.32	1.36	IS	IS	IS	7.6	12	9.5	42	0	ft	0
159	03370_03373				10	0.0040	0.94	1.28	1.32	1.35	IS	IS	IS	7.6	12	10.5	96	0	ft	0
160	03373_03375				10	0.0040	0.90	1.28	1.32	1.35	DS	DS	DS	7.6	12	11.5	203	0	ft	0

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - N. Brentwood Interceptor

Project ID: D-485

Base Construction Cost	0
Contingency (30%)	0
Construction Budget Amount	0
Engineering & Administration (25%)	0
Capital Improvement Cost Total[1]:	**0**

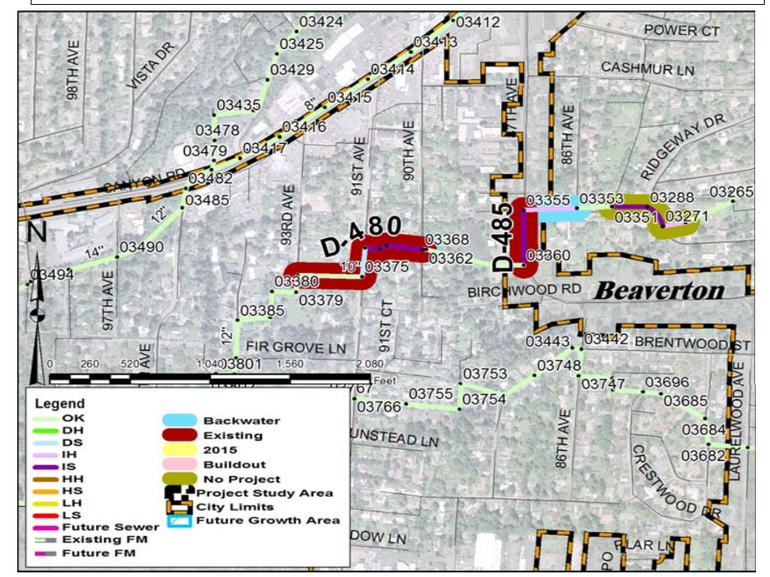
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2009

NOTES: This project has already been constructed. No further upgrades recommended at this time.

Location:	Runs along 87th Ave. south of Fairway Dr.
Treatment Plant Basin:	Durham
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~400 ft of 8-inch diameter sanitary sewer to 10-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
153	03355_03360				8	0.0120	0.87	1.04	1.08	1.11	IS	IS	IS	7.3	10	11.0	397	0	ft	0

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - W. Tektronix Interceptor

Project ID: D-510

Base Construction Cost	405,000
Contingency (30%)	121,500
Construction Budget Amount	527,000
Engineering & Administration (25%)	131,800
Capital Improvement Cost Total[1]:	**659,000**

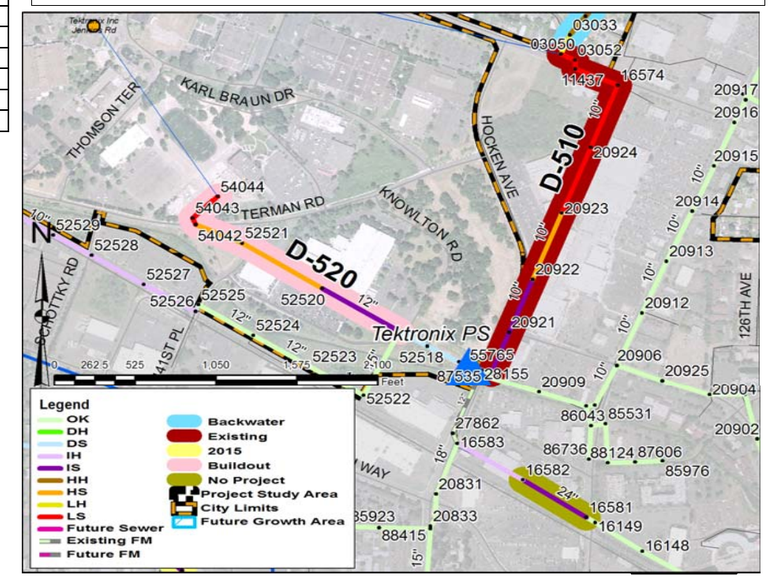
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Modeled allocation of service area is coarse; may be overly conservative. Review layout of small sewers and consider refining the modeled distribution of flow inputs; at least one existing parallel 8-inch line (Hocken Ave) is excluded from the model and would provide some relief to this sewer. Model indicates existing peak flows produce risk of outflows, yet outflows are not known to have occurred. The need for this project should be reassessed when layout of existing system and points of connection for industrial dischargers are confirmed.

Location:	Near Tektronics Pump Station
Treatment Plant Basin:	Durham
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~2,670 ft of 8-inch and 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
764	03050_03052				8	0.0130	0.96	1.48	1.58	1.58	LS	LS	LS	2.6	12	8.8	105	141	ft	15,000
765	03052_11437				8	0.0050	0.55	1.48	1.57	1.58	LS	LS	LS	2.6	12	8.4	68	137	ft	9,000
767	11437_16574				8	0.0060	0.59	1.47	1.57	1.58	LS	LS	LS	2.6	12	10.5	307	152	ft	47,000
771	16574_20924				10	0.0070	1.16	1.47	1.57	1.57	HS	LS	LS	2.6	12	11.6	460	158	ft	73,000
703	20924_20923				10	0.0110	1.49	1.71	1.81	1.81	HS	LS	LS	2.8	12	10.0	501	149	ft	75,000
741	20923_20922				10	0.0110	1.49	1.71	1.81	1.81	IS	HS	HS	2.8	12	10.0	504	149	ft	75,000
740	20922_20921				10	0.0110	1.49	1.71	1.81	1.81	IS	IS	IS	2.8	12	10.0	400	149	ft	60,000
453	20921_20911				10	0.0080	1.30	1.71	1.81	1.81	IS	IS	IS	2.8	12	11.6	320	158	ft	51,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Terman Road Trunk

Project ID: D-520

Base Construction Cost	420,000
Contingency (30%)	126,000
Construction Budget Amount	546,000
Engineering & Administration (25%)	137,000
Capital Improvement Cost Total[1]:	**680,000**

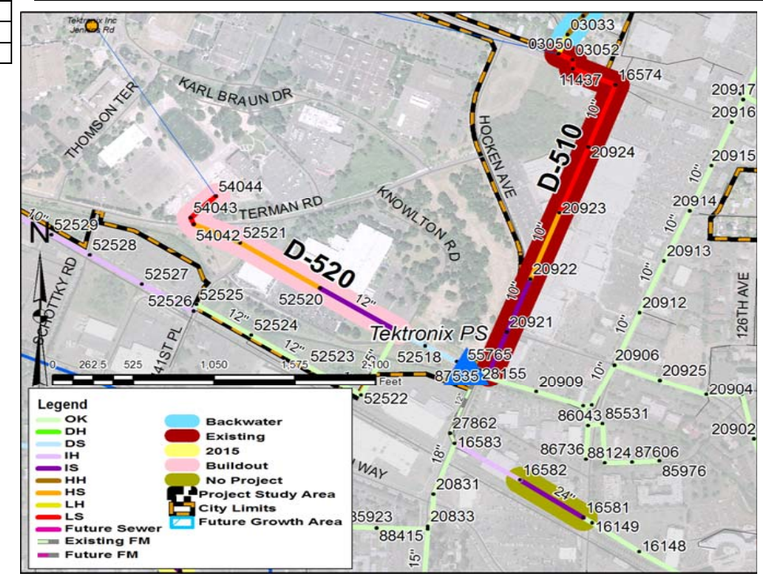
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Modeled allocation of service area is coarse; may be overly conservative. Review layout of small sewers and consider refining the modeled distribution of flow inputs. Model indicates existing peak flows produce risk of outflows, yet outflows are not known to have occurred. The need for this project should be reassessed when layout of existing system and points of connection for industrial dischargers are confirmed.

Location:	Near Tektronics Pump Station
Treatment Plant Basin:	Durham
Jurisdiction:	0
Local/Regional:	-
Brief Description:	Upsize ~2,070 ft of 12-inch diameter sanitary sewer to 15-inch and 21-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
8452	54044_54043				12	0.0060	1.82	1.10	1.10	1.93	OK	OK	LS	3.2	15	5.7	229	139	ft	32,000
8450	54043_54042				12	0.0060	1.73	1.10	1.10	1.93	OK	OK	LS	15	15	10.1	43	169	ft	7,000
8447	54042_52521				12	0.0060	1.83	1.10	1.10	1.93	OK	OK	HS	15	15	12.2	596	183	ft	109,000
8453	52521_52520				12	0.0010	0.65	1.10	1.10	1.93	IS	IS	HS	21	21	12.4	610	223	ft	136,000
8455	52520_52519				12	0.0010	0.65	1.10	1.10	1.93	DS	DS	IS	21	21	13.8	584	234	ft	137,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Shore Drive Trunk

Project ID: D-530

Base Construction Cost	193,000
Contingency (30%)	57,900
Construction Budget Amount	251,000
Engineering & Administration (25%)	63,000
Capital Improvement Cost Total[1]:	**310,000**

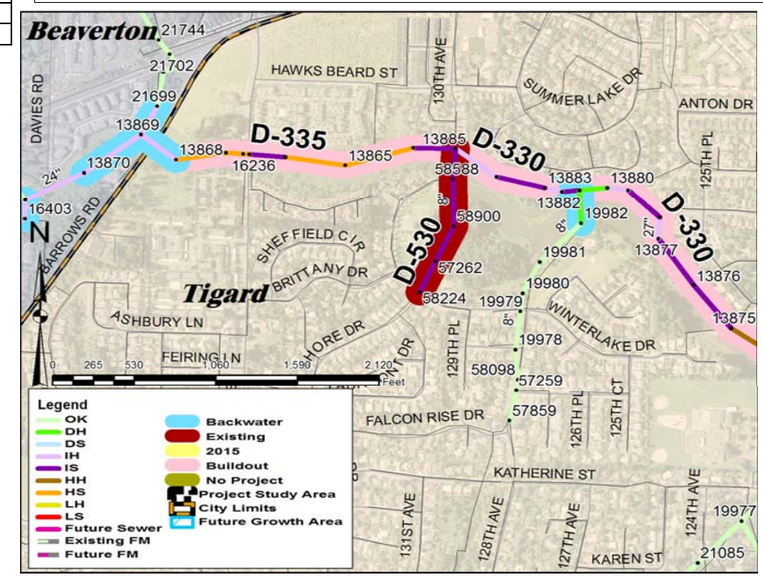
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Available data indicates this is an 8-inch sewer at substandard slope (0.002 ft/ft); slope and diameter should be field verified. Modeled existing peak flows significantly exceed capacity, although outflows are not predicted. The tributary area is substantial, and additional 8-inch sewers upstream of MH 58224 to Wilton Ave. and possibly beyond may be similarly impacted because they carry much of the flow present in the modeled segments. Upstream sewers should be evaluated before or during preliminary design for this project.

Location:	Runs northeast from north of Amu St.
Treatment Plant Basin:	Durham
Jurisdiction:	Tigard
Local/Regional:	-
Brief Description:	Upsize ~1,050 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8121	58224_57262				8	0.0020	0.35	0.61	0.61	0.66	DS	DS	IS	4.2	12	16.4	239	188	ft	45,000
8119	27262_58900				8	0.0020	0.35	0.61	0.61	0.66	DS	DS	IS	4.2	12	19.4	272	208	ft	56,000
8117	58900_58588				8	0.0020	0.35	0.61	0.61	0.66	IS	IS	IS	4.2	12	16.0	334	186	ft	62,000
8002	58588_13885				8	0.0020	0.35	0.61	0.61	0.66	IS	IS	IS	4.2	12	9.6	203	147	ft	30,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Sherwood Rd Trunk

Project ID: D-540

Base Construction Cost	416,000
Contingency (30%)	124,800
Construction Budget Amount	541,000
Engineering & Administration (25%)	135,300
Capital Improvement Cost Total[1]:	**676,000**

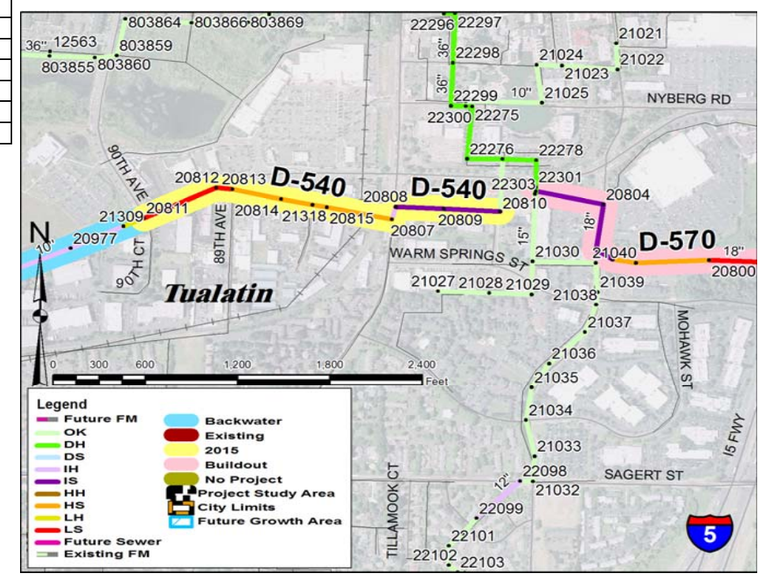
NOTES: Modeled existing flows slightly exceed pipe capacity and need to be verified. A moderate (20%) increase in flow is predicted by 2015. Surcharging is critical due to backwater effects from downstream in the Lower Tualatin Interceptor. Flows, pipe diameters, and inverts should be field verified to confirm the need for this project, particularly in the 10-inch portion.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1946	20811_20812				10	0.0010	0.34	0.93	1.12	1.12	HS	LS	LS	2.5	15	4.9	476	133	ft	63,000
1632	20812_20813				10	0.0050	0.97	0.93	1.11	1.12	HH	LS	LS	2.5	15	5.3	133	135	ft	18,000
1633	20813_20814				10	0.0040	0.90	0.98	1.20	1.20	HS	HS	HS	2.5	15	5.3	280	136	ft	38,000
1634	20814_21318				10	0.0040	0.90	0.98	1.19	1.20	HS	HS	HS	2.5	15	6.1	272	141	ft	38,000
1668	21318_20815				10	0.0040	0.91	0.98	1.19	1.20	IS	IS	HS	2.5	15	6.7	98	145	ft	14,000
1635	20815_20807				10	0.0040	0.93	0.98	1.19	1.20	IS	IS	HS	2.5	15	7.5	430	301	ft	130,000
1629	20807_20808				12	0.0080	2.11	1.55	1.75	1.78	IH	IH	IH	2.6	15	8.7	56	159	ft	9,000
1630	20808_20809				12	0.0040	1.46	1.55	1.75	1.78	IH	IS	IS	2.6	15	8.1	295	155	ft	46,000
1631	20809_20810				12	0.0040	1.51	1.54	1.74	1.78	IH	IS	IS	2.6	15	8.5	379	157	ft	60,000

Location:	Runs from end of Cipole FM to 124th Ave.
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~2,420 ft of 10-inch and 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Special Considerations: Portland and Western Railroad Crossing



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - 150th Avenue Trunk

Project ID: D-550

Base Construction Cost	135,000
Contingency (30%)	40,500
Construction Budget Amount	176,000
Engineering & Administration (25%)	44,000
Capital Improvement Cost Total[1]:	**220,000**

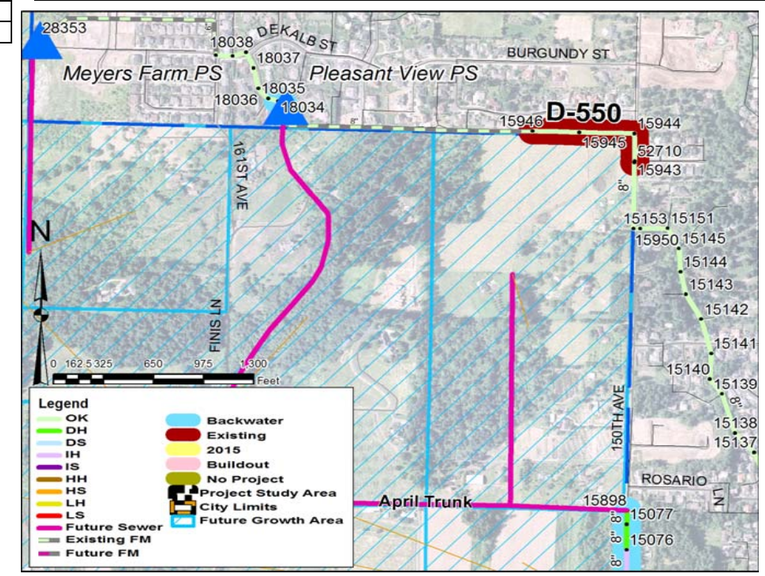
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Existing capacity exceedance relived by disconnection of upstream pump stations Pleasant View PS and Meyers Farm PS. Improvement needed if upstream flows are not disconnected in the near future, or unless actual PWWF is shown to be substantially lower than predicted.

Location:	Near Cabernet Dr and 150th Ave
Treatment Plant Basin:	Durham
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~860 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8232	15946_15945				8	0.0040	0.47	0.77	0.21	0.22	HS	OK	OK	6.7	12	7.6	297	132	ft	39,000
8242	15945_15944				8	0.0040	0.51	0.77	0.21	0.22	IS	OK	OK	6.7	12	13.9	353	172	ft	61,000
8213	15944_52710				8	0.0080	0.70	0.77	0.21	0.22	DS	OK	OK	6.7	12	14.1	177	174	ft	31,000
8562	52710_15943				8	0.0130	0.90	0.77	0.21	0.22	OK	OK	OK	6.7	12	9.3	27	145	ft	4,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Borland Sewer

Project ID: D-560

Base Construction Cost	144,000
Contingency (30%)	43,200
Construction Budget Amount	187,000
Engineering & Administration (25%)	46,800
Capital Improvement Cost Total[1]:	**234,000**

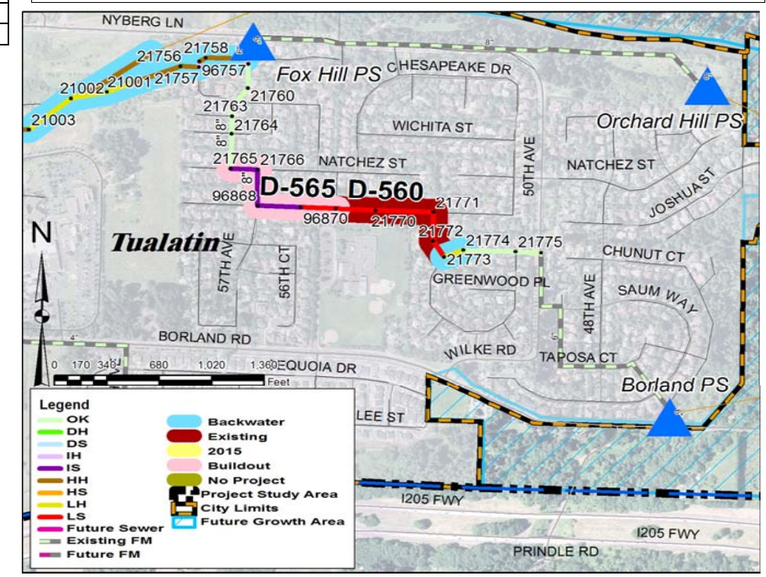
NOTES: Predicted flow substantially exceeds pipe capacity. Future service area needs to be verified as development and route of sewer service is proposed.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	Joshua Street
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~990 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8552	21773_21772				8	0.0040	0.48	0.61	0.73	1.18	IS	HS	LS	2.9	12	8.2	134	136	ft	18,000
8559	21772_21771				8	0.0020	0.34	0.61	0.73	1.18	IS	IS	LS	2.9	12	10.7	206	153	ft	32,000
8537	21771_21770				8	0.0040	0.51	0.61	0.73	1.18	IS	IS	LS	2.9	12	10.7	382	153	ft	58,000
8540	21770_21769				8	0.0030	0.40	0.61	0.73	1.18	IS	IS	LS	2.9	12	8.5	262	138	ft	36,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Borland Sewer

Project ID: D-565

Base Construction Cost	141,000
Contingency (30%)	42,300
Construction Budget Amount	183,000
Engineering & Administration (25%)	46,000
Capital Improvement Cost Total[1]:	**230,000**

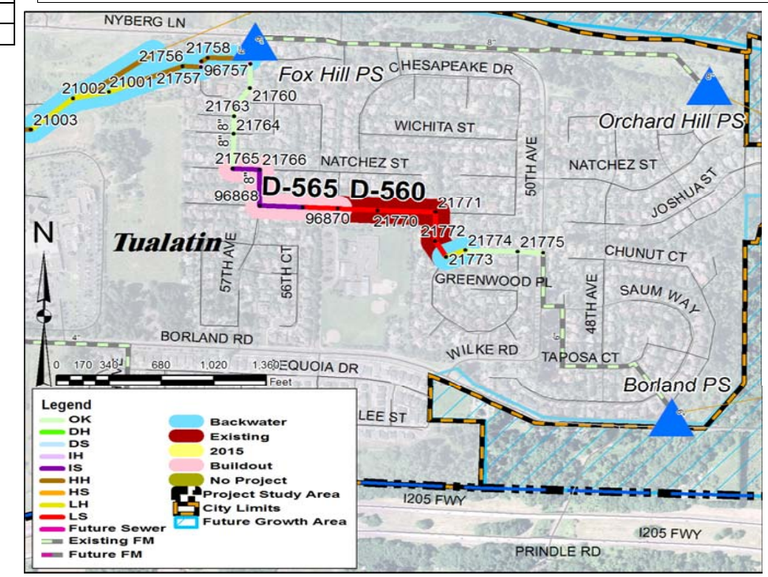
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted flow substantially exceeds pipe capacity. Future service area needs to be verified as development and route of sewer service is proposed.

Location:	Joshua Street
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~950 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8542	21769_96870				8	0.0100	0.79	0.61	0.73	1.18	OK	OK	LS	2.9	12	10.6	231	153	ft	35,000
8551	96870_96868				8	0.0160	0.99	0.61	0.73	1.18	OK	OK	IS	2.9	12	12.5	278	163	ft	45,000
8549	96868_21766				8	0.0140	0.93	0.61	0.73	1.17	OK	OK	IS	2.9	12	10.0	264	149	ft	39,000
8547	21766_21765				8	0.0070	0.65	0.61	0.73	1.17	OK	IS	IS	2.9	12	7.0	169	128	ft	22,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Nyberg Trunk

Project ID: D-570

Base Construction Cost	1,080,000
Contingency (30%)	324,000
Construction Budget Amount	1,404,000
Engineering & Administration (25%)	351,000
Capital Improvement Cost Total[1]:	**1,760,000**

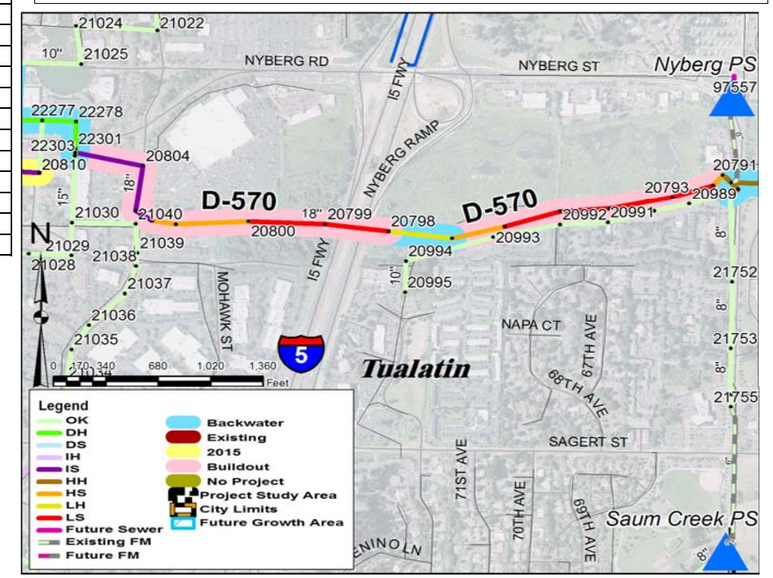
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted flow substantially exceeds pipe capacity, however, District flow monitoring indicates modeled flows may be overestimated. Existing land uses and flows need to be verified. Future service area needs to be verified as development and route of sewer service is proposed. Project scheduled as a buildout project based on the assumption that modeled current conditions are overly conservative and actual flows are lower than modeled.

Location:	South of Nyberg Road-Interstate Highway 5
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	-
Brief Description:	Upsize ~4,690 ft of 18-inch diameter sanitary sewer to 24-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1614	20791_20792				18	0.0020	2.69	3.27	3.53	4.16	IH	IS	HS	3.0	24	11.4	115	235	ft	27,000
1615	20792_20793				18	0.0020	2.68	3.26	3.53	4.15	HH	HS	LS	3.0	24	9.5	290	220	ft	64,000
1616	20793_20794				18	0.0020	2.76	3.26	3.53	4.15	HH	HS	LS	3.0	24	8.0	400	209	ft	84,000
1617	20794_20806				18	0.0010	2.18	3.26	3.53	4.15	HS	HS	LS	3.0	24	8.0	352	208	ft	73,000
1628	20806_20796				18	0.0010	2.48	3.32	3.59	4.21	HS	HS	LS	3.0	24	7.9	414	208	ft	86,000
1618	20796_20797				18	0.0020	2.69	3.31	3.58	4.20	HH	HS	HS	3.0	24	7.4	307	204	ft	63,000
1619	20797_20798				18	0.0040	4.21	3.31	3.58	4.20	LH	HH	LH	3.0	24	6.2	407	195	ft	79,000
1620	20798_20799				18	0.0020	3.00	3.31	3.58	4.19	LH	HH	LS	3.0	24	6.2	395	389	ft	154,000
1621	20799_20800				18	0.0020	2.70	3.31	3.58	4.19	LH	HS	LS	3.0	24	7.5	502	204	ft	103,000
1622	20800_20801				18	0.0010	1.82	3.30	3.57	4.18	LS	IS	HS	3.0	24	8.6	475	213	ft	101,000
1623	20801_20802				18	0.0020	3.05	3.30	3.57	4.18	LH	IH	HS	3.0	24	8.6	154	213	ft	33,000
1624	20802_20803				18	0.0030	3.86	3.52	3.80	4.40	LH	IH	IS	2.9	24	10.3	93	226	ft	21,000
1625	20803_20804				18	0.0010	2.06	3.52	3.80	4.40	HS	IS	IS	2.9	24	11.8	338	238	ft	80,000
1626	20804_22302				18	0.0020	3.01	3.52	3.80	4.40	HH	IS	IS	2.9	24	14.2	445	257	ft	115,000

Special Considerations: Crosses Interstate 5 Highway



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Lower Tualatin Interceptor

Project ID: D-600

Base Construction Cost	11,362,000
Contingency (30%)	3,408,600
Construction Budget Amount	14,771,000
Engineering & Administration (25%)	3,693,000
Capital Improvement Cost Total[1]:	**18,460,000**

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Construct the Lower Tualatin Pump Station and Force Main to relieve a portion of this sewer. Upsize the remaining gravity sewers as indicated on Drawings. Refer to MWH Dwg G-7 "Design Criteria Flows and Pump Station Forcemain Hydraulic Profile", Project 6187, Aug. 11, 2008.

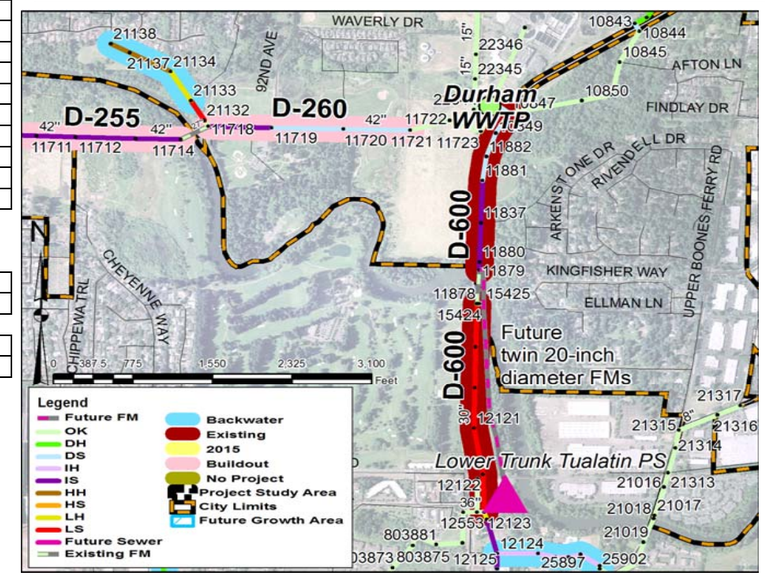
Location:	Runs along the east side of the Portland and Western Railroad
Treatment Plant Basin:	Durham
Jurisdiction:	Tualatin
Local/Regional:	Regional
Brief Description:	Construct future Lower Tualatin Pump Station and force main as well as upsize the northern portion of gravity sewer beyond the waterway crossing to alleviate capacity exceedances in this sewer.

Special Considerations: NA

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
Trunk with capacity problems																				
1727	12123_12122				30	0.0010	7.86	12.02	15.87	24.80	IH	LS	LS	2.2	0	17.3	412	0	ft	0
1726	12122_12121				30	0.0010	7.17	12.02	15.87	24.78	IH	LS	LS	2.2	0	17.3	488	0	ft	0
1725	12121_11876				30	0.0010	8.24	12.01	15.87	24.76	IH	HS	LS	2.2	0	18.6	443	0	ft	0
1719	11876_11877				30	0.0010	6.18	12.65	16.49	25.40	DS	IS	LS	2.2	0	20.2	500	0	ft	0
1720	11877_11878				30	0.0010	8.02	12.64	16.48	25.37	DH	IS	LS	2.2	0	20.7	450	0	ft	0
1722	11879_11880				30	0.0040	17.39	12.81	16.65	25.55	DH	DH	IS	2.2	0	23.9	84	0	ft	0
1723	11880_11837				30	0.0010	8.80	12.80	16.65	25.55	DH	DH	IS	2.2	66	21.5	410	1204	ft	101,000
1718	11837_11881				30	0.0010	6.85	13.06	16.93	25.82	DH	DS	IS	2.2	66	20.9	452	1137	ft	466,000
1724	11881_11882				30	0.0000	4.09	13.06	16.93	25.81	DS	DS	IS	2.2	66	21.3	253	1102	ft	498,000
1951	11882_10849				30	0.0000	3.80	13.06	16.93	25.80	DS	DS	DS	2.2	66	20.6	245	1130	ft	286,000
1293	10849_10847				30	0.0040	17.55	13.05	16.92	25.78	DS	DS	DS	2.2	66	20.8	250	992	ft	243,000

Future Force Main								
Two parallel 20" diameter FMs	28.50		20	8.0	2,340	641	ft	1,500,000

Future Pump Station		
Lower Tualatin Pump Station	28.50	8,268,000



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - 16th/Pacific Ave Trunk

Project ID: F-010

Base Construction Cost	160,000
Contingency (30%)	48,000
Construction Budget Amount	210,000
Engineering & Administration (25%)	53,000

NOTES: Triggered by long-term growth in currently undeveloped areas tributary to B Street Pump Station and future 18th Avenue Pump Station.

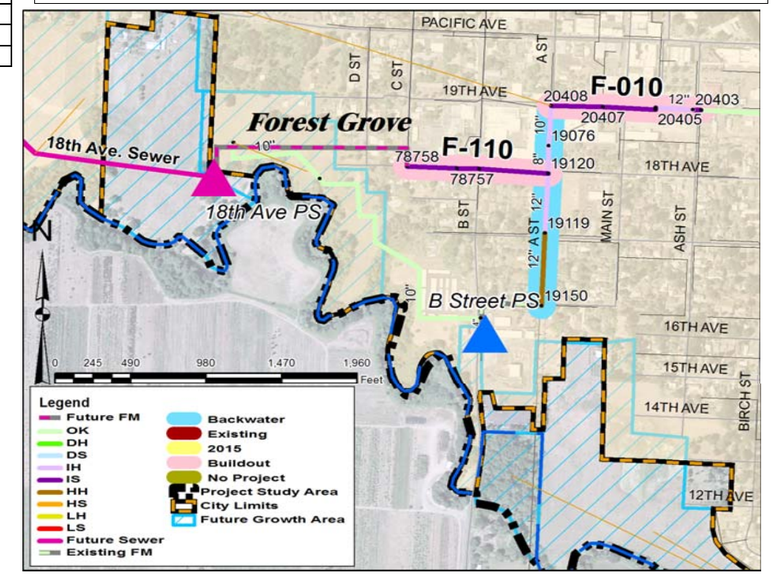
Capital Improvement Cost Total[1]: 260,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	19th Avenue from A Street to Council Street
Treatment Plant Basin:	Forest Grove
Jurisdiction:	Forest Grove
Local/Regional:	-
Brief Description:	Upsize ~980 ft of 10-inch and 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
227	20408_20407				10	0.0081	1.28	0.58	1.24	1.67	OK	OK	IS	3.3	15	9.1	334	162	ft	54,000
226	20407_20405				10	0.0078	1.25	0.58	1.24	1.67	OK	OK	IS	3.3	15	8.9	356	161	ft	57,000
225	20405_20404				10	0.0091	1.35	0.58	1.24	1.67	OK	OK	IS	3.3	15	8.5	11	157	ft	2,000
224	20404_20403				12	0.0048	1.60	0.58	1.24	1.67	OK	OK	IH	3.3	15	8.0	242	154	ft	37,000
223	20403_20402				12	0.0036	1.39	0.58	1.24	1.67	OK	OK	IS	3.3	15	8.0	33	154	ft	5,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Cedar PS Trunk

Project ID: F-020

Base Construction Cost	230,000
Contingency (30%)	69,000
Construction Budget Amount	300,000
Engineering & Administration (25%)	75,000
Capital Improvement Cost Total[1]:	**380,000**

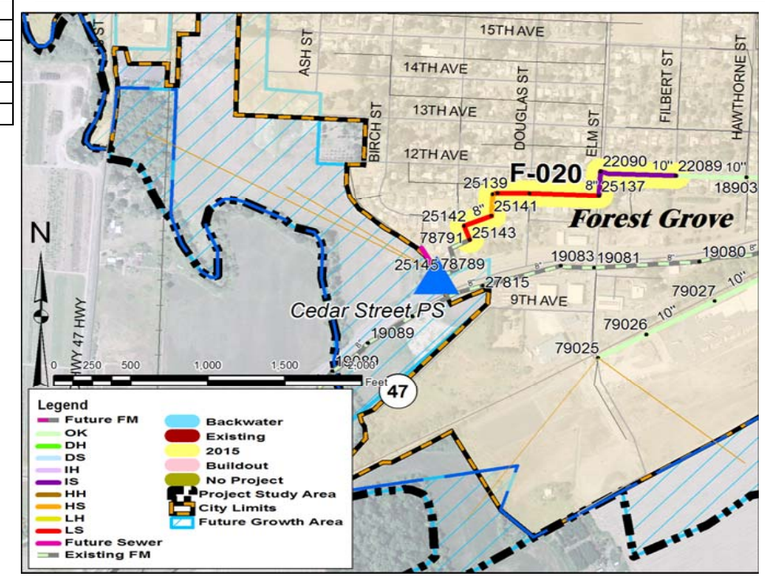
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Triggered by growth in currently undeveloped areas tributary to Cedar Street Pump Station.

Location:	Cedar Street to 12th Avenue at Filbert Street.
Treatment Plant Basin:	Forest Grove
Jurisdiction:	Forest Grove
Local/Regional:	-
Brief Description:	Upsize ~1,800 ft of 8-inch and 10-inch diameter sanitary sewer to 10-inch and 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd: Existing (2006)	2015	Buildout	HGL Rank: Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6147	25143_25142				8	0.0040	0.49	0.03	0.58	0.64	OK	HS	LS	3.8	10	6.0	103	110	ft	11,000
6145	25142_25141				8	0.0040	0.50	0.03	0.58	0.64	OK	HS	LS	3.8	10	5.9	192	109	ft	21,000
6143	25141_25140				8	0.0030	0.43	0.03	0.58	0.64	OK	HS	HS	3.8	10	5.6	144	108	ft	16,000
6139	25140_25139				8	0.0040	0.49	0.03	0.58	0.64	OK	LS	LS	3.8	10	5.2	15	106	ft	2,000
6142	25139_25138				8	0.0040	0.49	0.03	0.58	0.64	OK	LS	LS	3.8	10	5.2	235	106	ft	25,000
6136	25138_25137				8	0.0040	0.49	0.03	0.58	0.64	OK	LS	LS	3.8	10	7.6	450	119	ft	53,000
6148	25137_22090				8	0.0040	0.50	0.03	0.58	0.64	OK	IS	IS	3.8	10	9.5	174	132	ft	23,000
96	22090_22089				10	0.0060	1.10	0.80	1.67	1.62	OK	IS	IS	3.6	15	9.6	483	165	ft	80,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - 18th Avenue Trunk

Project ID: F-110

Base Construction Cost	170,000
Contingency (30%)	51,000
Construction Budget Amount	220,000
Engineering & Administration (25%)	55,000
Capital Improvement Cost Total[1]:	**280,000**

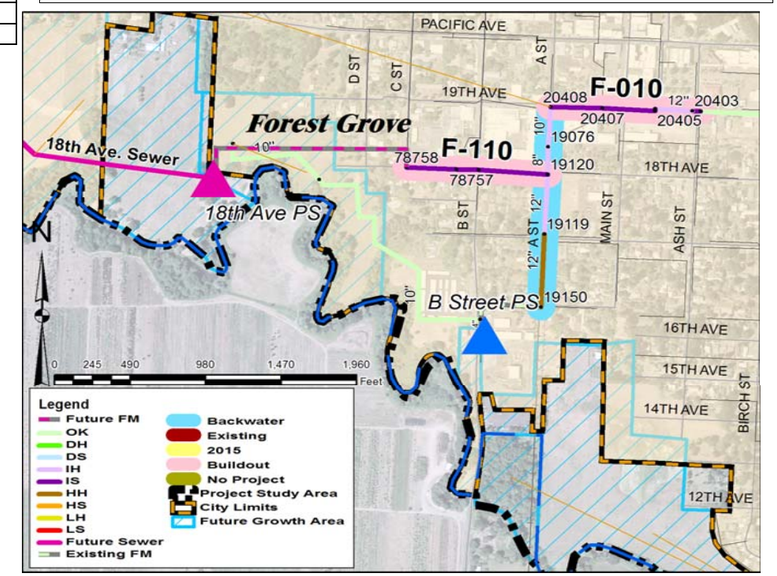
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Triggered by long-term growth in currently undeveloped areas tributary to B Street Pump Station and future 18th Avenue Pump Station.

Location:	18th Avenue
Treatment Plant Basin:	Forest Grove
Jurisdiction:	Forest Grove
Local/Regional:	-
Brief Description:	Upsize ~1,060 ft of 8-inch diameter sanitary sewer to 10-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd: Existing (2006)	2015	Buildout	HGL Rank: Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6190	78758_78827				8	0.0030	0.43	--	0.45	0.68	--	DH	IS	3.0	10	16.8	327	176	ft	58,000
6187	78827_78757				8	0.0030	0.43	--	0.45	0.68	--	DH	IS	3.0	10	16.0	142	170	ft	24,000
6191	78757_19120				8	0.0030	0.43	--	0.45	0.68	--	DS	IS	3.0	10	13.2	450	153	ft	69,000
216	19120_19076				8	0.0228	1.18	0.23	0.77	1.14	OK	OK	IH	2.9	10	9.1	135	129	ft	17,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Gaston South

Project ID: F-210

Base Construction Cost	240,000
Contingency (30%)	72,000
Construction Budget Amount	310,000
Engineering & Administration (25%)	78,000
Capital Improvement Cost Total[1]:	**390,000**

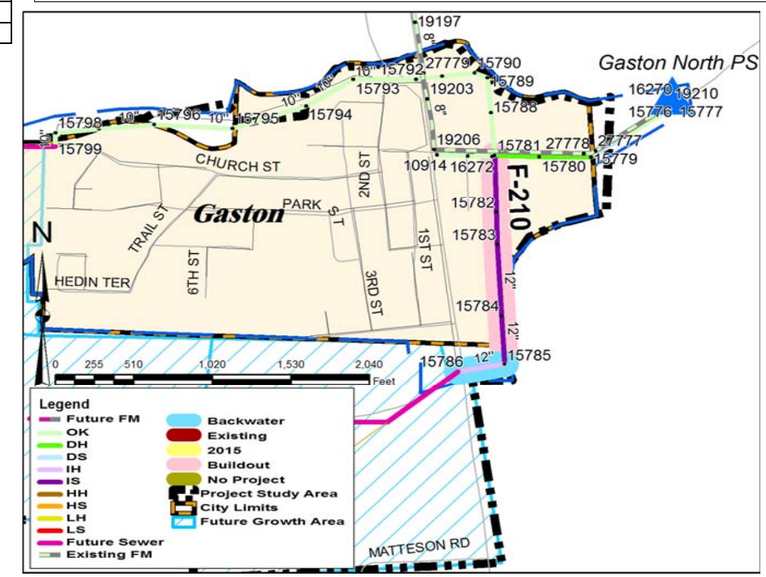
NOTES: Triggered by growth in South Gaston.

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	Gaston near Wapato Creek
Treatment Plant Basin:	Forest Grove
Jurisdiction:	Gaston
Local/Regional:	-
Brief Description:	Upsize ~1,480 ft of 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
267	15785_15784				12	0.0025	1.16	0.20	0.32	1.35	OK	OK	IS	2.8	15	6.2	342	142	ft	49,000
266	15784_15783				12	0.0022	1.08	0.20	0.32	1.35	OK	OK	IS	2.8	15	7.7	500	152	ft	76,000
265	15783_15782				12	0.0022	1.08	0.20	0.32	1.35	OK	OK	IS	2.8	15	10.0	229	168	ft	38,000
264	15782_15781				12	0.0028	1.22	0.20	0.32	1.35	OK	OK	IS	2.8	15	12.8	400	187	ft	75,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hillsboro Interceptor

Project ID: H-010

Base Construction Cost	2,150,000
Contingency (30%)	645,000
Construction Budget Amount	2,800,000
Engineering & Administration (25%)	700,000
Capital Improvement Cost Total[1]:	**3,500,000**

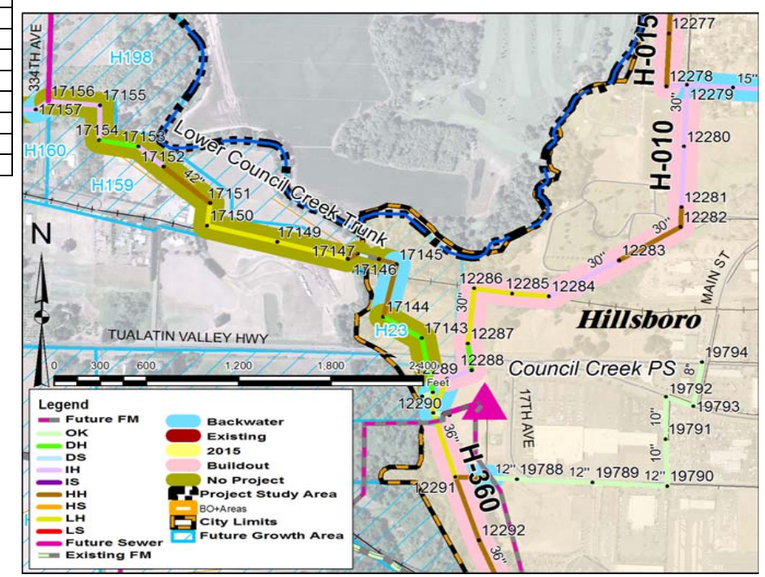
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Timing of this project is deferred until after 2015, as a result of redirecting North Plains flows to the Rock Creek basins. In the absence of the redirection, this project would be needed very soon.

Location:	Tualatin Valley Highway to Jackson Street.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	Hillsboro
Local/Regional:	Regional
Brief Description:	Upsize ~3,470 ft of 30-inch diameter sanitary sewer to 48-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
72	12279_12280				30	0.0010	6.49	6.91	6.96	9.22	DH	DH	IH	2.6	48	17.1	436	512	ft	223,000
232	12280_12281				30	0.0010	6.45	6.90	6.96	9.21	DH	DH	IH	2.6	48	17.1	492	512	ft	252,000
225	12281_12282				30	0.0010	6.72	7.00	7.06	9.32	IH	IH	HH	2.6	48	13.3	125	471	ft	59,000
224	12282_12283				30	0.0010	6.38	7.07	7.15	9.40	IH	IH	HH	2.6	48	12.7	433	465	ft	201,000
223	12283_12284				30	0.0010	6.51	7.06	7.15	9.40	IH	IH	IH	2.6	48	12.6	500	464	ft	232,000
222	12284_12285				30	0.0010	6.59	7.05	7.15	9.40	IH	IH	LH	2.6	48	8.8	244	423	ft	103,000
221	12285_12286				30	0.0010	6.48	7.05	7.15	9.40	IH	IH	LH	2.6	48	7.8	235	825	ft	194,000
220	12286_12287				30	0.0010	6.72	7.05	7.15	9.39	IH	IH	LH	2.6	48	14.4	391	484	ft	189,000
219	12287_12288				30	0.0010	6.08	7.04	7.14	9.39	DH	DH	DH	2.6	48	22.2	172	2762	ft	475,000
218	12288_12289				30	0.0010	6.60	7.03	7.14	9.39	DH	DS	IH	2.6	48	19.8	178	542	ft	97,000
217	12289_12290				30	0.0020	11.45	7.03	7.14	9.39	IH	OK	LH	2.6	48	12.1	264	459	ft	121,000

Special Considerations: Tualatin Valley Hwy crossing; Portland and Western Railway crossing;.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hillsboro Interceptor

Project ID: H-015

Base Construction Cost	1,679,000
Contingency (30%)	504,000
Construction Budget Amount	2,180,000
Engineering & Administration (25%)	545,000
Capital Improvement Cost Total[1]:	**2,730,000**

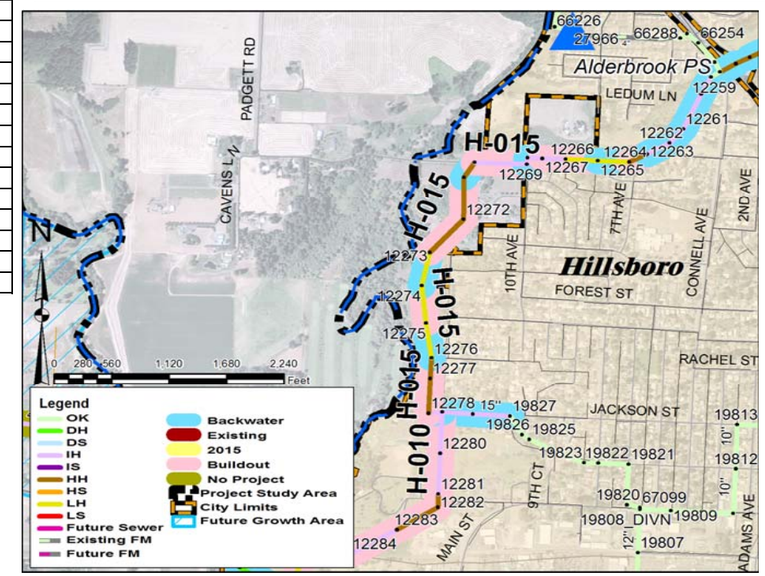
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: This buildout project may not be necessary upon construction of downstream improvements to eliminate anticipated surcharging and backwater conditions affecting these segments. Need for this project is deferred and possibly eliminated as a result of redirecting North Plains flows to the Rock Creek basins. In the absence of the redirection, this project would be needed very soon.

Location:	Jackson St to Padgett Rd along McKay Creek
Treatment Plant Basin:	Hillsboro
Jurisdiction:	Hillsboro
Local/Regional:	Regional
Brief Description:	Upsize ~4,700 ft of 30-inch diameter sanitary sewer to 42-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
88	12263_12264				30	0.0010	6.97	6.01	6.01	8.26	OK	OK	HH	2.5	42	6.7	189	338	ft	64,000
87	12264_12265				30	0.0010	8.53	6.00	6.01	8.25	OK	OK	LH	2.5	42	5.0	301	322	ft	97,000
86	12265_12266				30	0.0010	6.90	5.99	5.99	8.25	OK	OK	LH	2.5	42	7.6	311	348	ft	108,000
85	12266_12267				30	0.0010	7.13	6.15	6.16	8.41	OK	OK	IH	2.6	42	11.1	222	383	ft	85,000
84	12267_12268				30	0.0010	9.87	6.15	6.16	8.41	OK	OK	IH	2.6	42	11.7	145	389	ft	56,000
83	12268_12269				30	0.0020	11.88	6.15	6.16	8.41	OK	OK	IH	2.6	42	12.1	75	393	ft	29,000
82	12269_12270				30	0.0010	7.96	6.15	6.15	8.41	OK	OK	IH	2.6	42	11.3	490	385	ft	188,000
81	12270_12271				30	0.0010	9.08	6.14	6.15	8.41	OK	OK	HH	2.6	42	9.0	197	362	ft	71,000
80	12271_12272				30	0.0010	7.98	6.15	6.15	8.41	IH	OK	HH	2.6	42	7.0	443	342	ft	151,000
79	12272_12273				30	0.0010	7.99	6.14	6.15	8.40	IH	OK	HH	2.6	42	7.5	497	346	ft	172,000
78	12273_12274				30	0.0010	8.44	6.17	6.18	8.43	HH	OK	LH	2.6	42	6.8	337	340	ft	114,000
77	12274_12275				30	0.0010	7.02	6.17	6.18	8.44	HH	OK	LH	2.6	42	7.0	401	341	ft	137,000
76	12275_12276				30	0.0010	9.32	6.16	6.18	8.43	IH	OK	LH	2.6	42	8.4	382	356	ft	136,000
75	12276_12277				30	0.0010	6.94	6.16	6.18	8.43	IH	OK	HH	2.6	42	8.7	220	359	ft	79,000
74	12277_12278				30	0.0010	8.34	6.15	6.17	8.42	IH	IH	HH	2.6	42	11.8	345	390	ft	134,000
73	12278_12279				30	0.0020	11.57	6.14	6.17	8.42	DH	DH	IH	2.6	42	15.2	137	425	ft	58,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Oakway Trunk

Project ID: H-100

Base Construction Cost	260,000
Contingency (30%)	78,000
Construction Budget Amount	340,000
Engineering & Administration (25%)	85,000
Capital Improvement Cost Total[1]:	**425,000**

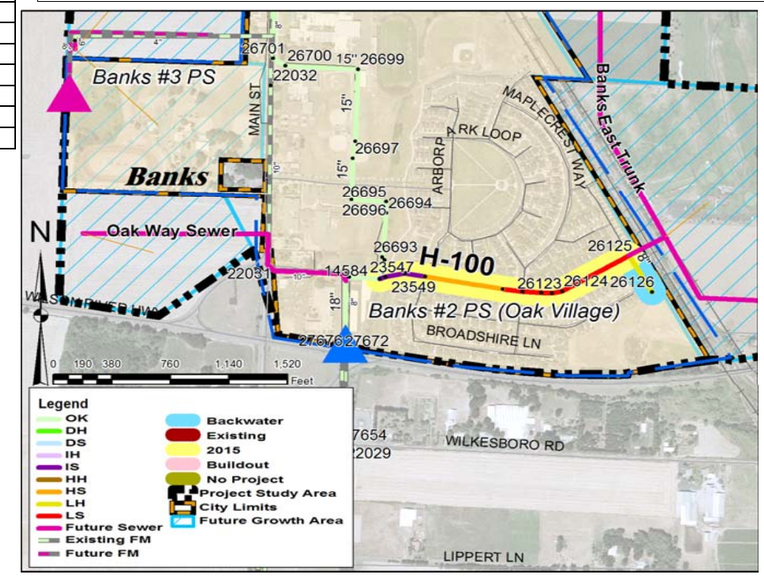
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Project is triggered by growth east of the railroad. Existing pipe can accommodate approximate 730 equivalent dwelling units, or about 0.38 mgd without upsizing. Need for and timing of project will be determined by decisions regarding the location of future growth.

Location:	Oak Way near Wilson River Highway.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	Banks
Local/Regional:	-
Brief Description:	Upsize ~1,700 ft of 8-inch and 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6319	26125_26124				8	0.0040	0.49	-	-	1.09	OK	-	LS	2.5	12	7.2	500	130	ft	65,000
6314	26124_26123				8	0.0040	0.49	-	-	1.09	OK	-	LS	2.5	12	9.2	68	144	ft	10,000
6312	26123_23553				8	0.0040	0.50	-	-	1.09	OK	-	LS	2.5	12	10.4	72	152	ft	11,000
6307	23553_23552				8	0.0080	0.70	-	-	1.09	OK	-	LS	2.5	12	12.8	122	165	ft	20,000
6300	23552_23551				8	0.0060	0.59	-	-	1.09	OK	-	LS	2.5	12	14.8	133	177	ft	24,000
6311	23551_23549				8	0.0060	0.61	-	-	1.25	OK	-	HS	2.7	12	13.6	499	170	ft	85,000
6309	23549_23548				10	0.0040	0.89	-	-	1.25	OK	-	IS	2.7	12	11.1	150	156	ft	23,000
6303	23548_23547				10	0.0030	0.72	-	-	1.25	OK	-	IS	2.7	12	9.0	92	142	ft	13,000
6306	23547_14581				10	0.0050	1.02	-	-	1.25	OK	-	IS	2.7	12	10.6	60	153	ft	9,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

Clean Water Services
Our commitment is clear.

Sanitary Sewer Master Plan Update

PROJECT - West Union Trunk

Project ID: H-210

Base Construction Cost	400,000
Contingency (30%)	120,000
Construction Budget Amount	520,000
Engineering & Administration (25%)	130,000
Capital Improvement Cost Total[1]:	**650,000**

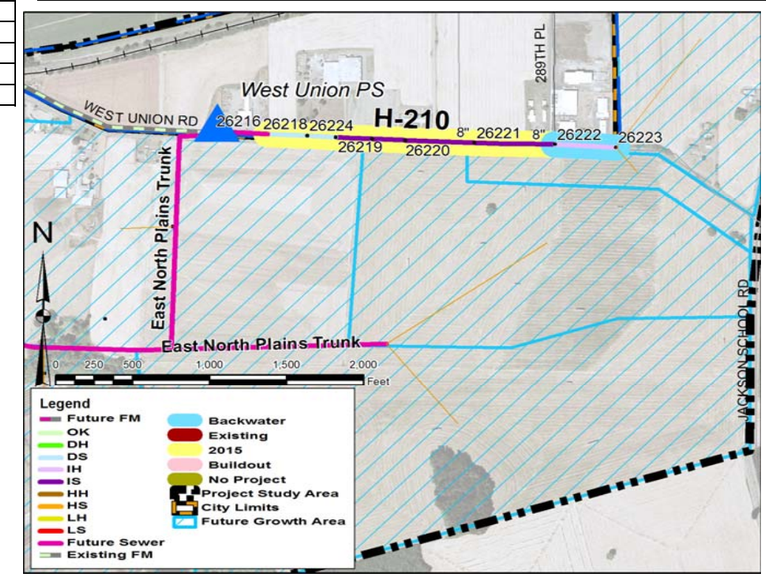
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Needed to accommodate new growth areas. Length of project dependent on points of connection for development; upstream limit of the replacement sewer could be adjusted.

Location:	Near West Union Pump Station.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	North Plains
Local/Regional:	-
Brief Description:	Upsize ~2,270 ft of 8-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6477	26223_26222				8	0.0040	0.49	0.00	0.16	0.45	-	IH	LH	2.6	12	13.1	401	167	ft	67,000
6475	26222_26221				8	0.0030	0.46	0.00	0.54	1.10	-	IS	LS	2.5	12	14.1	522	173	ft	91,000
6473	26221_26220				8	0.0040	0.49	0.00	0.54	1.10	-	IS	LS	2.5	12	14.6	450	176	ft	79,000
6466	26220_64798				8	0.0030	0.44	0.40	0.90	1.40	-	IS	LS	2.3	12	14.8	212	178	ft	38,000
6469	64798_26219				8	0.0050	0.54	0.40	0.90	1.40	-	IS	LS	2.3	12	15.0	238	179	ft	43,000
6481	26219_26224				8	0.0030	0.45	0.40	0.89	1.40	-	DS	HS	2.3	12	15.4	185	181	ft	34,000
6479	26224_26218				8	0.0040	0.48	0.40	0.89	1.40	-	DS	IS	2.3	12	15.9	260	185	ft	48,000

Special Considerations: NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Old West Union Rd Trunk

Project ID: H-220

Base Construction Cost	152,000
Contingency (30%)	46,000
Construction Budget Amount	200,000
Engineering & Administration (25%)	50,000
Capital Improvement Cost Total[1]:	**250,000**

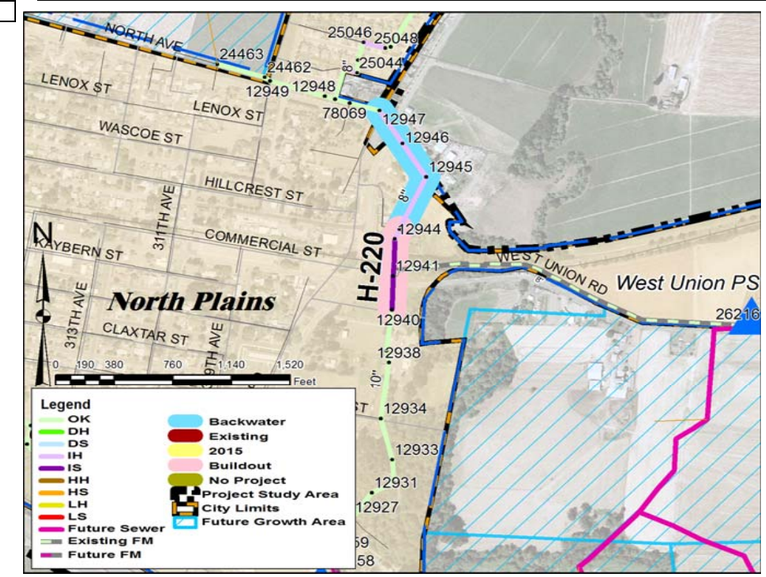
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Buildout flows exceed existing pipe capacity. Replacement diameter should accommodate planned growth areas to the north.

Location:	Near intersection of Glencoe Rd and West Union Road.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	North Plains
Local/Regional:	-
Brief Description:	Upsize ~610 ft of 8-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6460	23510_12944				8	0.0040	0.47	0.06	0.27	0.48	IH	OK	IH	2.6	18	8.7	95	177	ft	17,000
6431	12944_12941				8	0.0030	0.42	0.06	0.27	0.48	IH	OK	IS	2.6	18	8.1	269	346	ft	93,000
6099	12941_12940				8	0.0050	0.54	0.80	0.49	0.71	IS	OK	IS	3.0	18	8.6	237	176	ft	42,000

Special Considerations: Portland and Western Railroad crossing.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - HLAT004

Project ID: H-320

Base Construction Cost	1,035,000
Contingency (30%)	311,000
Construction Budget Amount	1,350,000
Engineering & Administration (25%)	338,000
Capital Improvement Cost Total[1]:	**1,690,000**

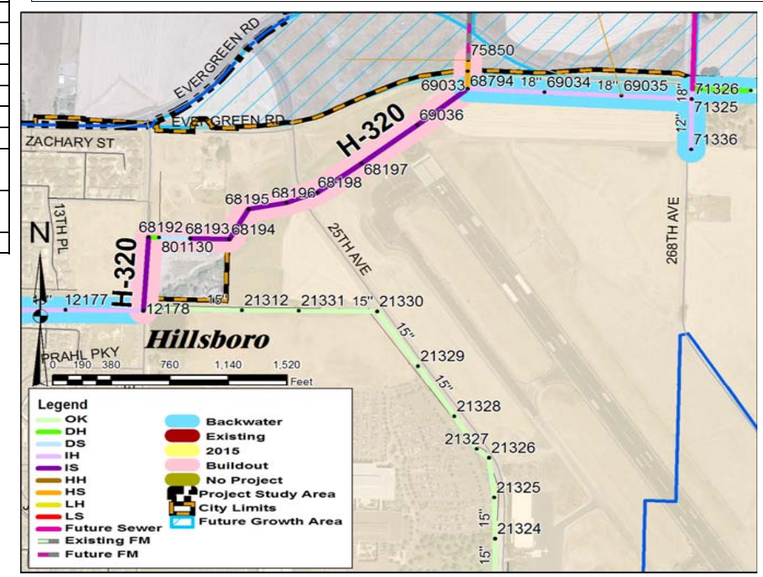
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Triggered by growth in the Evergreen area (North Hillsboro) area. Two upstream segments may required upsizing upon connection of planned force main, or the force main extended to the downstream 18-inch at MH 69033. Other existing pipe is adequate to accommodate significant growth before upsizing is needed.

Location:	Near intersection of 25th Ave and Evergreen Rd.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~3,150 ft of 10-inch and 18-inch diameter sanitary sewer to 18-inch and 24-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
6227	75850_68794				10	0.0020	0.64	0.00	0.96	2.15	OK	IS	HS	2.5	18	10.6	78	191	ft	15,000
6225	68794_69033				10	0.0030	0.75	0.00	0.96	2.15	OK	IS	HS	2.5	18	10.5	122	380	ft	46,000
6241	69033_69036				18	0.0020	2.81	0.31	1.70	3.75	OK	OK	IS	2.2	24	10.6	416	457	ft	190,000
6239	69036_68197				18	0.0020	2.81	0.31	1.70	3.75	OK	OK	IS	2.2	24	11.0	450	464	ft	209,000
6237	68197_69198				18	0.0020	2.82	0.75	2.09	4.17	OK	OK	IS	2.1	24	10.0	356	448	ft	159,000
6235	68198_69196				18	0.0020	2.80	0.75	2.09	4.17	OK	OK	IS	2.1	24	8.7	213	214	ft	46,000
6233	68196_69195				18	0.0020	2.81	0.75	2.08	4.17	OK	OK	IS	2.1	24	9.0	252	216	ft	54,000
6231	68195_69194				18	0.0020	2.81	0.78	2.12	4.27	OK	OK	IS	2.1	24	10.2	247	225	ft	56,000
6229	68194_69193				18	0.0020	3.11	0.78	2.12	4.27	OK	OK	IS	2.1	24	13.0	253	248	ft	63,000
6198	68193_801130				18	0.0010	2.15	0.78	2.12	4.27	OK	OK	DS	2.1	24	16.8	200	277	ft	55,000
6195	801130_68192				18	0.0060	5.27	0.78	2.11	4.26	OK	OK	DH	2.1	24	17.2	70	280	ft	20,000
6228	68192_12178				18	0.0010	2.34	0.78	2.11	4.26	OK	OK	IS	2.1	24	12.9	492	247	ft	122,000

Special Considerations: Pipeline within Portland-Hillsboro Airport runway zone.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Council Creek Pump Station (Hillsboro Interceptor Relief)

Project ID: H-360

Base Construction Cost	8,310,000
Contingency (30%)	2,493,000
Construction Budget Amount	10,800,000
Engineering & Administration (25%)	2,700,000
Capital Improvement Cost Total[1]:	**13,500,000**

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Flows in the Hillsboro Interceptor (H-360 portion) must be relieved by 2015 by (a) redirecting North Plains flow to the Rock Creek basin, and (b) constructing the first phase of the recommended Council Creek Pump Station. Modeling for 2015 and buildout is based on 10.5 mgd being pumped from near MH 12290 to the existing twin transfer force mains via Council Creek PS. To avoid H-360 pipeline improvements by buildout, an additional 7.5 mgd (18 mgd total) will need to be pumped at Council Creek PS. (Flow includes flow from future SE Cornelius PS.) Without relief, surcharging in the downstream Hillsboro Interceptor by 2015 is predicted to create critical backwater conditions in the upstream Hillsboro Interceptor and in the Lower Council Creek Trunk.

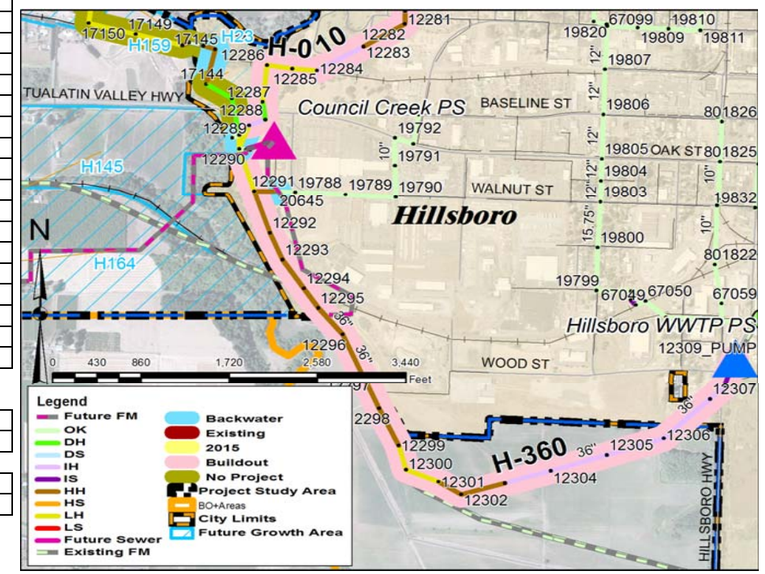
Location:	Tualatin Valley Highway along Dairy Creek to Hillsboro WWTP.
Treatment Plant Basin:	Hillsboro
Jurisdiction:	Hillsboro
Local/Regional:	Regional
Brief Description:	Construct Council Creek Pump Station and 2,300 feet of two parallel 24-inch diameter force mains. First phase capacity is 10.5 mgd needed by 2015. Buildout phase capacity is 18 mgd.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
Trunk with capacity problems																				
216	12290_12291				36	0.0010	14.06	11.68	9.00	17.65	IH	OK	LH	3.8	0	10.1	472	0.00	ft	0
215	12291_12292				36	0.0010	11.44	11.96	9.29	17.96	IH	OK	HH	3.8	0	10.7	471	0.00	ft	0
214	12292_12293				36	0.0010	11.57	11.95	9.29	17.95	IH	OK	HH	3.8	0	10.0	293	0.00	ft	0
213	12293_12294				36	0.0010	11.51	11.95	9.29	17.93	IH	OK	HH	3.8	0	10.1	366	0.00	ft	0
212	12294_12295				36	0.0010	11.59	12.21	9.56	18.28	IH	OK	HH	3.8	0	10.1	250	0.00	ft	0
211	12295_12296				36	0.0010	11.47	12.22	9.56	18.26	IH	OK	HH	3.8	0	9.4	369	0.00	ft	0
210	12296_12297				36	0.0010	11.35	12.22	9.56	18.24	IH	OK	HH	3.8	0	8.9	449	0.00	ft	0
209	12297_12298				36	0.0010	11.37	12.22	9.56	18.23	IH	OK	HH	3.8	0	8.7	390	0.00	ft	0
208	12298_12299				36	0.0010	11.49	12.23	9.55	18.21	IH	OK	HH	3.7	0	7.8	438	0.00	ft	0
207	12299_12300				36	0.0010	11.41	12.24	9.56	18.19	IH	OK	LH	3.7	0	7.0	258	0.00	ft	0
206	12300_12301				36	0.0010	11.34	12.24	9.55	18.17	IH	OK	LH	3.7	0	8.4	334	0.00	ft	0
205	12301_12302				36	0.0010	11.43	12.23	9.54	18.16	IH	OK	HH	3.7	0	9.5	300	0.00	ft	0
204	12302_12303				36	0.0010	11.45	12.24	9.54	18.15	IH	OK	HH	3.7	0	10.6	441	0.00	ft	0
203	12303_12304				36	0.0010	11.36	12.25	9.53	18.13	IH	OK	IH	3.7	0	11.5	463	0.00	ft	0
202	12304_12305				36	0.0010	11.41	12.25	9.52	18.11	IH	OK	IH	3.7	0	11.0	574	0.00	ft	0
201	12305_12306				36	0.0010	11.49	12.25	9.51	18.09	IH	IH	IH	3.7	0	11.2	580	0.00	ft	0
200	12306_12307				36	0.0000	6.04	12.24	9.50	18.08	IH	IS	IH	3.7	0	14.3	613	0.00	ft	0
199	12307_12308				36	0.0010	12.28	12.24	9.49	18.08	OK	OK	IH	3.7	0	14.5	198	0.00	ft	0
198	12308_12309				36	0.0010	16.71	12.24	9.50	18.08	OK	OK	IS	3.7	0	18.3	321	0.00	ft	0

Future Force Main										
Two parallel 24" diameter FMs		10.5	18		24	8.0	2,300	517	ft	1,189,000

Future Pump Station										
Council Creek PS		10.5	18							7,118,000

Special Considerations: Bore & jack stream crossing (230 feet of twin 24-inch diameter force mains)



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Dawson Creek Trunk/Pump Station

Project ID: R-010

Base Construction Cost	18,910,000
Contingency (30%)	5,673,000
Construction Budget Amount	24,580,000
Engineering & Administration (25%)	6,150,000
Capital Improvement Cost Total[1]:	**30,730,000**

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

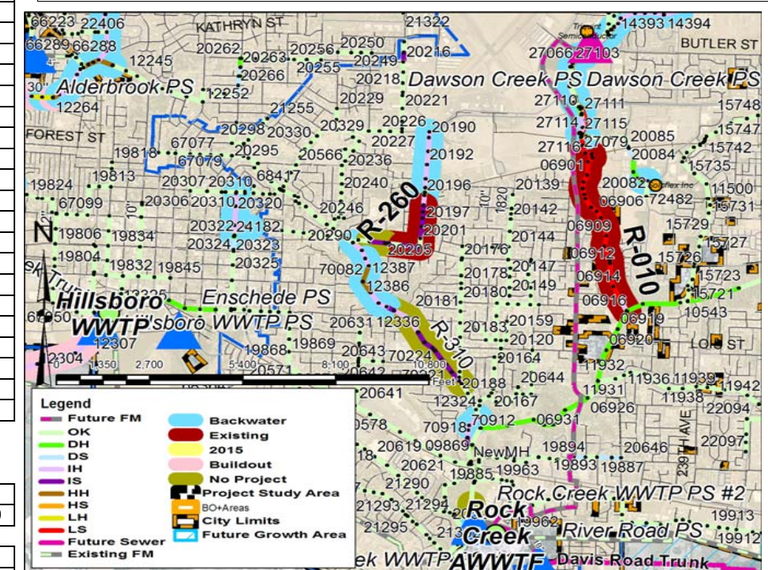
NOTES: New Dawson Creek Pump Station and force main will divert flow around the capacity-limited portion of the trunk. Planned capacity is based on modeled flow at proposed pump station location, and is sufficient to relieve the Dawson Creek Trunk.

Location:	Runs from Rock Creek trunk near Rock Creek to Parkway lateral near Brookwood Parkway.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	Regional
Brief Description:	Construct Future Dawson Creek Pump Station and divert flow via ~16,000 ft of 24-inch diameter force mains to Rock Creek Trunk.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
Trunk with capacity problems																				
796	06904_06905				24	0.0030	7.74	10.48	17.09	26.15	IS	LS	LS	1.6	0	12.3	308	-	ft	-
797	06905_06906				24	0.0030	8.09	10.48	17.09	26.15	IS	LS	LS	1.6	0	12.8	210	-	ft	-
798	06906_06907				24	0.0020	6.46	10.48	17.09	26.14	IS	LS	LS	1.6	0	12.1	247	-	ft	-
799	06907_06908				24	0.0040	9.26	10.48	17.09	26.14	IH	LS	LS	1.6	0	11.6	198	-	ft	-
800	06908_06909				24	0.0030	8.25	10.48	17.09	26.13	IS	LS	LS	1.6	0	11.8	391	-	ft	-
801	06909_06910				24	0.0040	9.53	10.47	17.08	26.13	IH	LS	LS	1.6	0	11.3	333	-	ft	-
802	06910_06911				24	0.0030	8.47	10.47	17.08	26.12	IS	LS	LS	1.6	0	11.4	464	-	ft	-
803	06911_06912				27	0.0060	15.36	10.47	17.08	26.12	IH	HH	LS	1.6	0	13.2	104	-	ft	-
804	06912_06913				27	0.0020	7.79	10.70	17.30	26.41	IS	IS	LS	1.6	0	13.1	444	-	ft	-
805	06913_06914				27	0.0030	10.67	10.70	17.30	26.40	IH	IS	LS	1.6	0	10.9	290	-	ft	-
806	06914_06915				27	0.0020	8.58	10.69	17.29	26.40	IS	IS	LS	1.6	0	10.6	448	-	ft	-
807	06915_06916				27	0.0160	25.54	10.69	17.29	26.39	OK	OK	IH	1.6	0	15.1	395	-	ft	-
808	06916_06918				27	0.2030	90.41	10.69	17.29	26.38	OK	OK	DH	1.6	0	22.2	16	-	ft	-
787	06895_06896				24	0.0040	8.83	10.30	16.91	25.87	HS	LS	LS	1.6	0	12.8	292	-	ft	-
788	06896_06897				24	0.0030	7.73	10.30	16.90	25.86	HS	LS	LS	1.6	0	12.4	259	-	ft	-
789	06897_06898				24	0.0070	12.59	10.29	16.90	25.86	HH	LS	LS	1.6	0	16.5	191	-	ft	-
790	06898_06899				24	0.0050	10.77	10.29	16.90	25.86	DH	IS	LS	1.6	0	21.9	113	-	ft	-
791	06899_06900				24	0.0010	5.11	10.29	16.90	25.85	IS	LS	LS	1.6	0	18.7	189	-	ft	-
792	06900_06901				24	0.0020	7.24	10.29	16.89	25.85	IS	LS	LS	1.6	0	13.7	405	-	ft	-
793	06901_06902				24	0.0030	8.39	10.28	16.89	25.84	IS	LS	LS	1.6	0	12.3	250	-	ft	-
794	06902_06903				24	0.0030	7.52	10.48	17.10	26.16	IS	LS	LS	1.6	0	12.3	201	-	ft	-
795	06903_11469				24	0.0010	5.03	10.48	17.10	26.16	HS	LS	LS	1.6	0	10.6	212	-	ft	-
823	11469_06904				24	0.0060	11.35	10.48	17.10	26.15	HH	LS	LS	1.6	0	10.7	140	-	ft	-

Future Force Main										
Two parallel 24-inch diameter FMs		16	25		24	8.0	20,150	546	ft	11,000,000
Future Pump Station										
Future Dawson Creek Pump Station		16	25							7,912,000

Special Considerations: (Included in Unit Costs) Force main crosses railroad in two locations.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

CleanWater Services
Our commitment is clear.

Sanitary Sewer Master Plan Update

PROJECT - 198th Avenue Lateral

Project ID: R-020

Base Construction Cost	415,000
Contingency (30%)	125,000
Construction Budget Amount	540,000
Engineering & Administration (25%)	135,000
Capital Improvement Cost Total[1]:	**675,000**

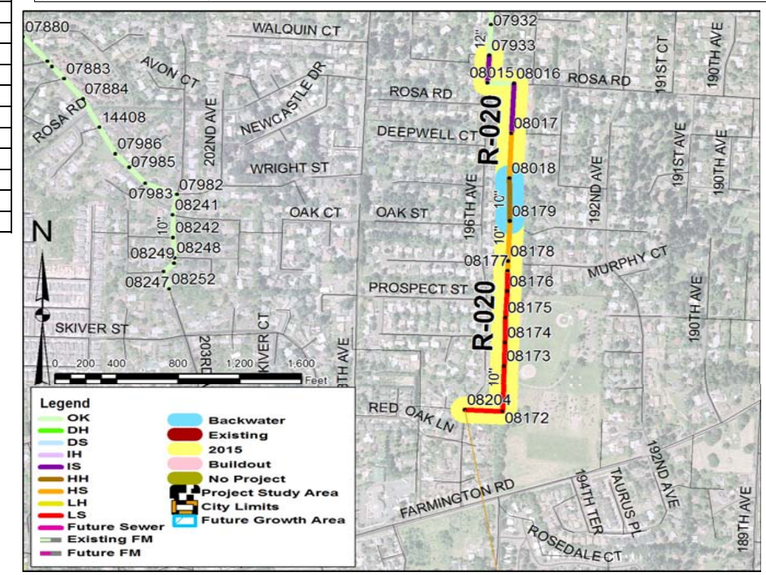
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Substantial surcharging and risk of outflow is predicted as infill development occurs in the tributary area. Extension of the project to Farmington Road should be considered as the unmodeled sewers upstream of the listed segments may also have capacity exceedances.

Location:	Located in Beaverton. Runs along Rosa Park parallel to 196th Street from Sumac Ct near Hazeldale Park with connection to the 198th Street lateral on 196th Street near the intersection of Walquin
Treatment Plant Basin:	Rock Creek
Jurisdiction:	-
Local/Regional:	-
Brief Description:	Upsize ~2,930 ft of 10-inch and 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1779	08204_08172				10	0.0040	0.85	0.68	0.94	1.34	OK	HS	LS	3.8	15	6.4	253	143	ft	36,000
1772	08172_08173				10	0.0090	1.33	0.91	1.17	1.57	OK	HH	LS	4.0	15	6.5	325	144	ft	47,000
1773	08173_08174				10	0.0090	1.33	0.91	1.17	1.56	OK	HH	LS	4.0	15	5.2	162	135	ft	22,000
1774	08174_08175				10	0.0090	1.33	0.91	1.16	1.55	HH	HH	LS	4.0	15	4.9	163	133	ft	22,000
1775	08175_08176				10	0.0030	0.76	0.91	1.16	1.55	HS	HS	LS	3.9	15	5.3	185	136	ft	25,000
1776	08176_08177				10	0.0010	0.55	0.91	1.16	1.55	IS	IS	LS	3.9	15	6.2	140	142	ft	20,000
1777	08177_08178				10	0.0030	0.80	0.91	1.16	1.55	IS	IS	HS	3.9	15	5.7	75	139	ft	10,000
1778	08178_08179				10	0.0040	0.89	0.91	1.16	1.55	IS	IS	HS	3.9	15	6.4	265	143	ft	38,000
1804	08179_08018				10	0.0130	1.63	0.91	1.16	1.55	OK	OK	HH	3.9	15	6.2	325	142	ft	46,000
1421	08018_08017				10	0.0090	1.33	0.91	1.16	1.54	OK	OK	HS	3.9	15	5.2	325	135	ft	44,000
1420	08017_08016				10	0.0110	1.49	0.91	1.16	1.54	OK	OK	IS	3.9	15	5.9	345	140	ft	48,000
1419	08016_08015				12	0.0060	1.81	1.09	1.35	1.73	OK	OK	OK	4.1	15	8.0	173	154	ft	27,000
1418	08015_07933				12	0.0060	1.73	1.09	1.35	1.73	OK	OK	IS	4.1	15	8.1	193	154	ft	30,000

Special Considerations: NA
(Included in Unit Costs)



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hall Blvd Lateral

Project ID: R-110

Base Construction Cost	638,000
Contingency (30%)	191,000
Construction Budget Amount	830,000
Engineering & Administration (25%)	208,000
Capital Improvement Cost Total[1]:	**1,038,000**

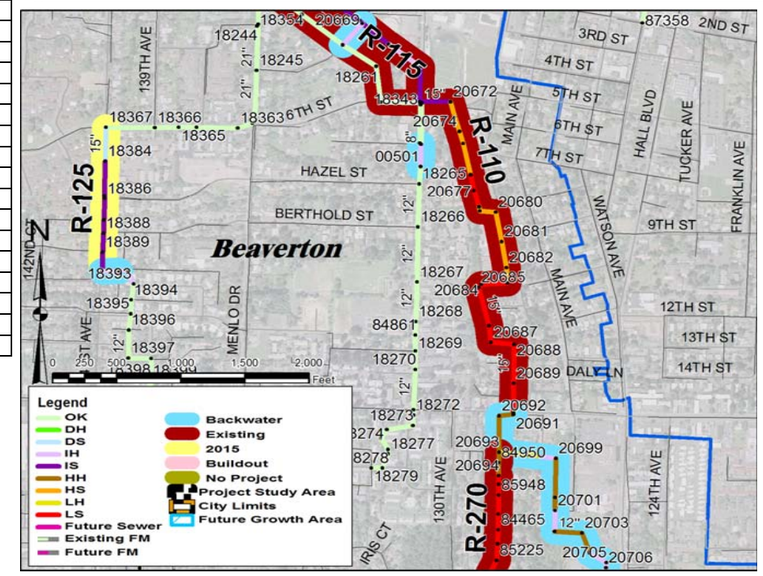
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Modeled existing flows substantially exceed pipe capacity. Predicted flow increase is not very significant; however, a project should be assumed unless and until additional monitoring and calibration contradicts the predicted surcharging.

Location:	Connects Hall Blvd lateral at Allen Blvd to Beaverton interceptor at the intersection of Erickson Ave and 6th Street.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~3,420 ft of 15-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1184	20681_20680				15	0.0020	2.02	3.39	3.39	3.49	HS	HS	HS	9.6	18	9.1	249	180	ft	45,000
1183	20680_20679				15	0.0030	2.46	3.39	3.39	3.49	HS	HS	HS	9.6	18	8.0	119	172	ft	21,000
1182	20679_20678				15	0.0030	2.39	3.39	3.39	3.49	HS	HS	HS	9.6	18	9.1	40	180	ft	7,000
1181	20678_20677				15	0.0030	2.35	3.39	3.39	3.49	LS	LS	LS	9.6	18	8.4	140	175	ft	25,000
1180	20677_20676				15	0.0030	2.16	3.39	3.39	3.49	LS	LS	LS	9.6	18	9.6	131	184	ft	24,000
1179	20676_20675				15	0.0030	2.28	3.39	3.39	3.49	HS	HS	HS	9.6	18	9.7	265	185	ft	49,000
1178	20675_20674				15	0.0040	2.75	3.39	3.39	3.49	HS	HS	HS	9.6	18	7.0	102	165	ft	17,000
1177	20674_20673				15	0.0030	2.29	3.39	3.39	3.49	HS	HS	HS	9.6	18	7.5	127	169	ft	21,000
1176	20673_20672				15	0.0030	2.29	3.39	3.39	3.49	IS	IS	HS	9.6	18	9.3	130	182	ft	24,000
1175	20672_18342				15	0.0040	2.65	3.39	3.39	3.49	IS	IS	IS	9.6	18	11.0	247	193	ft	48,000
1273	20690_20689				15	0.0030	2.19	2.62	2.62	2.71	LS	LS	LS	9.6	18	8.9	289	179	ft	52,000
1272	20689_20688				15	0.0050	3.08	3.39	3.40	3.49	LS	LS	LS	9.6	18	10.2	323	188	ft	61,000
1271	20688_20687				15	0.0030	2.42	3.39	3.40	3.49	LS	LS	LS	9.6	18	10.3	180	189	ft	34,000
1293	20687_20686				15	0.0030	2.41	3.39	3.40	3.49	LS	LS	LS	9.6	18	10.6	133	191	ft	25,000
1189	20686_20685				15	0.0030	2.29	3.39	3.40	3.49	LS	LS	LS	9.6	18	11.8	328	199	ft	65,000
1188	20685_20684				15	0.0010	1.41	3.39	3.40	3.49	LS	LS	LS	9.6	18	11.5	35	198	ft	7,000
1187	20684_20683				15	0.0030	2.21	3.39	3.40	3.49	LS	LS	LS	9.6	18	11.6	201	198	ft	40,000
1186	20683_20682				15	0.0010	1.62	3.39	3.39	3.49	HS	HS	HS	9.6	18	11.7	134	199	ft	27,000
1185	20682_20681				15	0.0010	1.62	3.39	3.39	3.49	HS	HS	HS	9.6	18	10.8	240	192	ft	46,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hall Blvd Lateral

Project ID: R-115

Base Construction Cost	321,000
Contingency (30%)	96,000
Construction Budget Amount	420,000
Engineering & Administration (25%)	105,000
Capital Improvement Cost Total[1]:	**525,000**

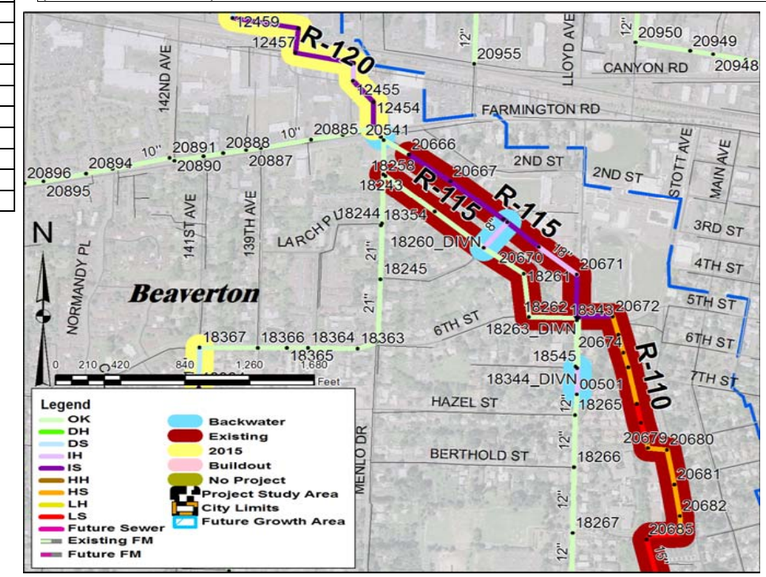
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Two alternative measures should be evaluated based on more detailed field information: Either divert additional flow (up to about 1.0 mgd) to the Hall Blvd Lateral (divert additional flow at MH 18263 to 18262) and upsize to 15-inch from MH 18263 to MH 18243; or upsize the Beaverton Interceptor to 21-inch from MH 18342 to MH 20541. Basis of cost is the first alternative, including $20,000 allowance for modification of diversions. Eliminate diversion at MH 18260.

Location:	Beaverton Interceptor
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~1,770 ft of 10-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	I/I Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1139	18262_18261				10	0.0030	0.79	0.53	0.53	0.53	OK	OK	OK	8.7	15	13.7	293	193	ft	56,000
1137	18260_18259				10	0.0030	0.76	0.32	0.32	0.32	OK	OK	OK	8.8	15	12.1	413	182	ft	75,000
1136	18259_18258				10	0.0030	0.75	0.32	0.32	0.32	OK	OK	OK	8.8	15	10.1	409	168	ft	69,000
1135	18258_18243				10	0.0300	2.46	0.32	0.32	0.32	OK	OK	OK	8.8	15	8.3	15	156	ft	2,000
1172	20669_20668				18	0.0020	3.36	4.39	4.40	4.50	IS	IS	IS	7.9	0	7.1	41	0	ft	0
1171	20668_20667				18	0.0030	3.53	4.39	4.40	4.50	IS	IS	IS	7.9	0	5.9	430	0	ft	0
1170	20667_20666				18	0.0030	3.52	4.39	4.40	4.50	IS	IS	IS	7.9	0	5.3	384	0	ft	0
1140	18263_18262				10	0.0020	0.55	0.00	0.00	0.00	OK	OK	OK	0.0	15	13.7	322	193	ft	62,000
1142	18342_20671				18	0.0020	3.04	4.18	4.19	4.29	IS	IS	IS	7.9	0	9.5	291	0	ft	0
1174	20671_20670				18	0.0030	4.00	4.18	4.19	4.29	IH	IH	IH	7.9	0	7.3	327	0	ft	0
1173	20670_20669				18	0.0030	3.57	4.18	4.19	4.29	IS	IS	IS	7.9	0	7.4	243	0	ft	0
1138	18261_18260				10	0.0070	1.19	0.53	0.53	0.53	OK	OK	OK	8.7	15	12.0	315	181	ft	57,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Beaverton Interceptor

Project ID: R-120

Base Construction Cost	926,000
Contingency (30%)	278,000
Construction Budget Amount	1,200,000
Engineering & Administration (25%)	300,000
Capital Improvement Cost Total[1]:	**1,500,000**

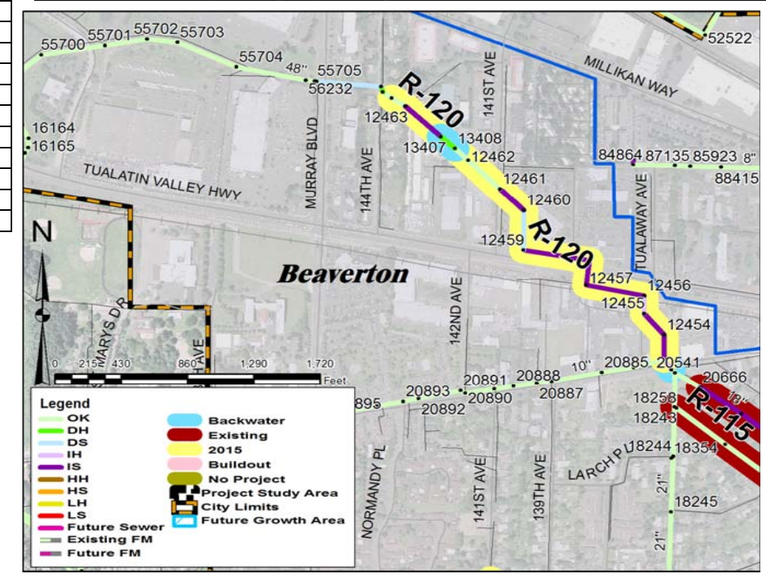
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Flows should be monitored closely to verify model and need for this project. Portions of the existing 24-inch sewer have adequate capacity, but are included to maintain a contiguous project.

Location:	Runs between 144th Avenue and Farmington Highway
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Beaverton
Local/Regional:	Regional
Brief Description:	Upsize ~3,030 ft of 24-inch diameter sanitary sewer to 27-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			I/I Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
1105	12453_12454				24	0.0020	6.36	8.03	8.05	8.19	IS	IS	IS	6.4	27	10.6	202	253	ft	51,000
1106	12454_12455				24	0.0020	6.52	8.03	8.04	8.19	IH	IH	IS	6.4	27	9.1	197	242	ft	48,000
1107	12455_12456				24	0.0020	7.00	8.03	8.04	8.19	IH	IH	IH	6.4	27	9.2	127	484	ft	61,000
1108	12456_12457				24	0.0020	6.54	8.03	8.04	8.19	IH	IH	IS	6.4	27	9.9	397	248	ft	98,000
1109	12457_12458				24	0.0020	6.46	8.03	8.04	8.19	IH	IH	IS	6.4	27	11.2	175	775	ft	136,000
1110	12458_12459				24	0.0020	6.55	8.61	8.62	8.81	IS	IS	IS	5.9	27	12.5	435	269	ft	117,000
1111	12459_12460				24	0.0020	6.12	8.61	8.62	8.80	DS	DS	DS	5.9	27	13.4	275	276	ft	76,000
1112	12460_12461				24	0.0030	7.93	8.61	8.62	8.80	IS	IS	IS	5.9	27	12.9	215	272	ft	59,000
1113	12461_12462				24	0.0080	13.02	8.61	8.62	8.80	OK	OK	OK	5.9	27	12.9	295	272	ft	80,000
1114	12462_13408				24	0.0130	16.75	8.61	8.62	8.80	OK	OK	OK	5.9	27	14.0	127	281	ft	36,000
1119	13408_13407				24	0.0040	9.27	8.60	8.62	8.80	DH	DH	DH	5.9	27	16.8	130	304	ft	40,000
1118	13407_12463				24	0.0010	4.67	8.60	8.62	8.80	IS	IS	IS	5.9	27	13.4	345	276	ft	95,000
1115	12463_10869				24	0.0740	39.85	8.60	8.61	8.79	OK	OK	OK	5.9	27	11.6	109	262	ft	29,000

Special Considerations: (Included in Unit Costs)	Portland and Western Railroad crossing and Tualatin Valley Highway crossing.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

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PROJECT - Murray Blvd Interceptor

Project ID: R-125

Base Construction Cost	247,000
Contingency (30%)	74,000
Construction Budget Amount	320,000
Engineering & Administration (25%)	80,000
Capital Improvement Cost Total[1]:	**400,000**

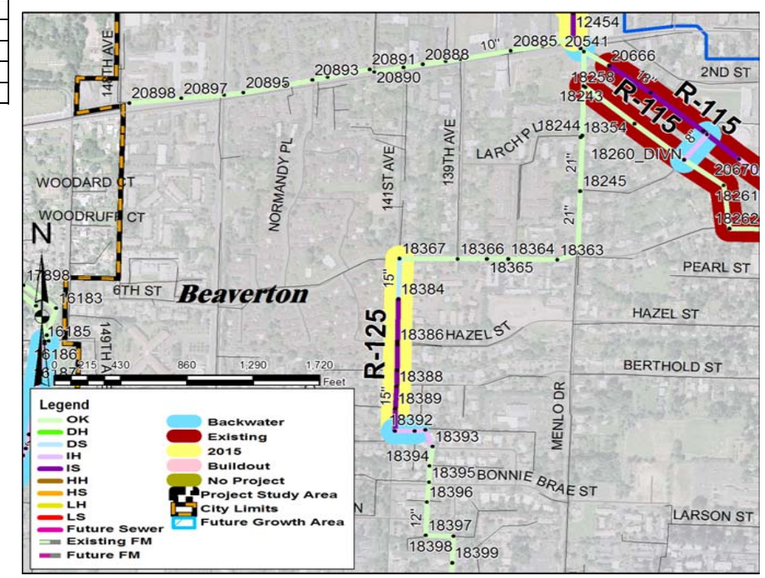
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted growth is minor. Cumulative surcharging produces about 1.5 feet at upstream end under buildout conditions. Monitor flows and surcharging to verify need for this project. Defer to 2015 or later, unless and until peak flows are verified.

Location:	141st Avenue
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~1,230 ft of 15-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	I/I Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1158	18390_18389				15	0.0020	1.87	2.40	2.40	2.44	IS	IS	IS	6.0	18	9.4	160	182	ft	29,000
1157	18389_18388				15	0.0020	1.93	2.40	2.40	2.44	IS	IS	IS	6.0	18	8.6	160	177	ft	28,000
1156	18388_18387				15	0.0020	2.01	2.40	2.40	2.44	IS	IS	IS	6.0	18	8.1	108	173	ft	19,000
1155	18387_18386				15	0.0020	1.87	2.40	2.40	2.44	IS	IS	IS	6.0	18	8.5	180	176	ft	32,000
1154	18386_18385				15	0.0020	1.83	2.40	2.40	2.44	IS	IS	IS	6.0	18	8.8	26	178	ft	5,000
1153	18385_18384				15	0.0020	1.88	2.40	2.40	2.44	IS	IS	IS	6.0	18	13.1	302	209	ft	63,000
1152	18384_18367				15	0.0030	2.16	2.40	2.40	2.44	DS	DS	DS	6.0	18	18.0	292	244	ft	71,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - RC Blvd Lateral

Project ID: R-130

Base Construction Cost	0
Contingency (30%)	0
Construction Budget Amount	0
Engineering & Administration (25%)	0
Capital Improvement Cost Total[1]:	**0**

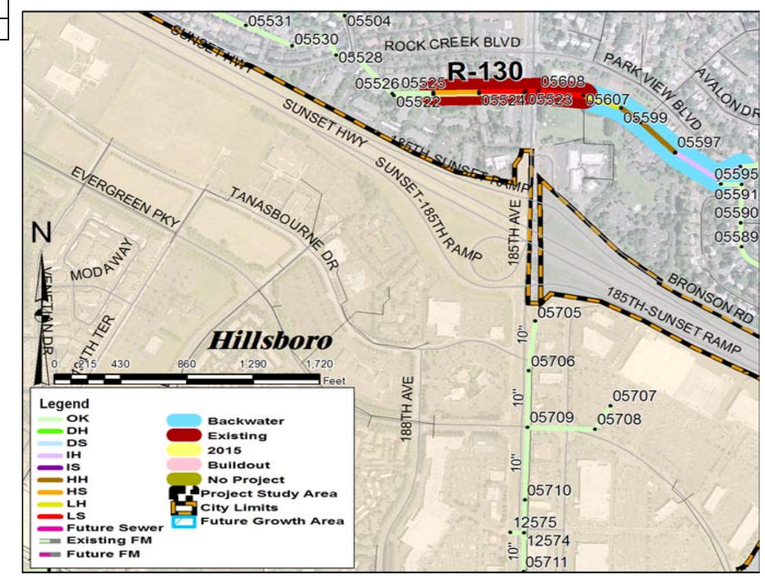
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: A project has already been constructed to relieve capacity problems for this trunk. No further upgrades recommended at this time.

Location:	South of Rock Creek Blvd and Parkview Blvd
Treatment Plant Basin:	Rock Creek
Jurisdiction:	-
Local/Regional:	-
Brief Description:	No project recommended at this time.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	I/I Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
450	05524_05525				8	0.0070	0.64	1.01	1.01	1.01	HS	HS	HS	12.1	0	6.6	302	0	ft	0
476	05607_05608				8	0.0100	0.79	1.01	1.01	1.01	LS	LS	LS	12.1	0	7.0	298	0	ft	0
477	05608_05523				8	0.0060	0.62	1.01	1.01	1.01	LS	LS	LS	12.1	0	6.8	80	0	ft	0
449	05523_05524				8	0.0050	0.55	1.01	1.01	1.01	LS	LS	LS	12.1	0	6.3	300	0	ft	0

Special Considerations: NA
(Included in Unit Costs)



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Zurich Court Trunk

Project ID: R-140

Base Construction Cost	482,000
Contingency (30%)	145,000
Construction Budget Amount	630,000
Engineering & Administration (25%)	158,000
Capital Improvement Cost Total[1]:	**788,000**

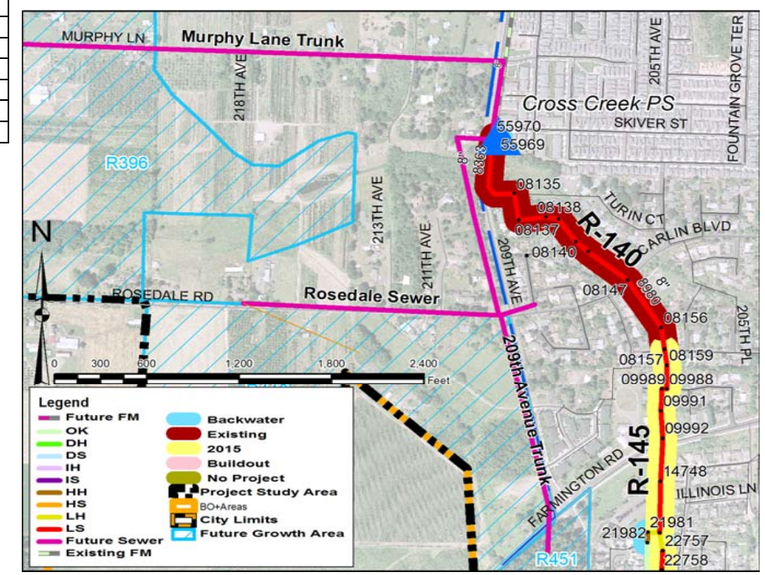
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted existing peak flows produce significant surcharging. Verify flows to further assess need for and timing of this project. Substantial increases anticipated as areas south of SW Gassner Road develop and connect. Portion just upstream of Cross Creek PS, including new crossing of the creek, will carry flows from future 209th Avenue Trunk Sewer (model injects 209th Avenue flows farther upstream than is likely, depending on how much the existing sewer is realigned and deepened).

Location:	Vienna Drive to Cross Creek Pump Station along Zurch Ct.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	0
Local/Regional:	-
Brief Description:	Upsize ~2,170 ft of 8-inch diameter sanitary sewer to 21-inch and 27-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8971	08157_08156				8	0.0050	0.55	0.78	3.01	4.09	HS	LS	LS	2.8	21	7.1	150	184	ft	28,000
8980	08156_08147				8	0.0060	0.62	0.78	3.01	4.09	HS	LS	LS	2.8	21	7.2	403	184	ft	74,000
8992	08147_08146				8	0.0080	0.72	0.78	3.01	4.08	IS	LS	LS	2.8	21	7.5	326	186	ft	61,000
8982	08146_08140				8	0.0170	1.02	0.78	3.01	4.08	IH	LS	LS	2.8	21	7.5	107	186	ft	20,000
8989	08140_08139				8	0.0170	1.02	0.78	3.14	4.54	IH	LS	LS	2.7	27	7.4	188	227	ft	43,000
8986	08139_08138				8	0.0060	0.60	0.78	3.13	4.54	IS	LS	LS	2.7	27	7.4	81	227	ft	18,000
8993	08138_08137				8	0.0050	0.54	0.78	3.13	4.53	IS	LS	LS	2.7	27	8.8	181	238	ft	43,000
8990	08137_08135				8	0.0150	0.95	0.78	3.13	4.53	IH	LS	LS	2.7	27	9.6	175	245	ft	43,000
8363	08135_55970				8	0.0040	0.47	0.78	3.13	4.53	IS	LS	LS	2.7	27	13.2	551	275	ft	152,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

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PROJECT - 208th Avenue Trunk

Project ID: R-145

Base Construction Cost	761,000
Contingency (30%)	228,000
Construction Budget Amount	990,000
Engineering & Administration (25%)	248,000
Capital Improvement Cost Total[1]:	**1,240,000**

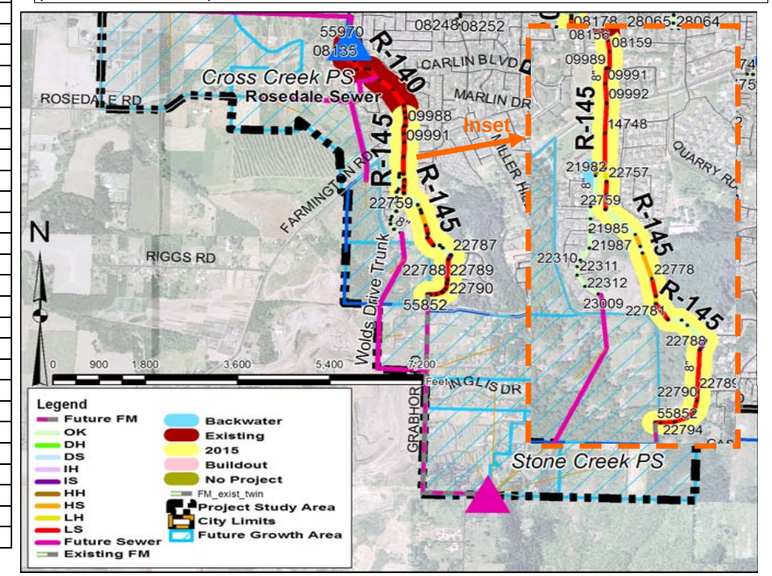
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Triggered as areas south of SW Gassner Road develop and connect. This improvement could be shortened by rerouting the Stone Creek pump station force main to the Wolds Drive trunk.

Location:	Located in Beaverton near Farmington Rd (Hwy 10) and 209th Ave. Connects sewer at Grabhorn Rd to sewer at intersection of 208th Ave and Vienna Dr.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	0
Local/Regional:	-
Brief Description:	Upsize ~4,130 ft of 8-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8835	55852_22794				8	0.0200	1.11	0.00	1.71	2.39	OK	LS	LS	2.4	15	7.5	57	150	ft	9,000
8825	22794_22793				8	0.0670	2.03	0.00	1.71	2.39	OK	LH	LS	2.4	15	9.1	124	162	ft	20,000
8803	22793_22792				8	0.0210	1.13	0.00	1.71	2.38	OK	LS	LS	2.4	15	9.7	117	166	ft	19,000
8829	22792_22791				8	0.0070	0.67	0.00	1.70	2.38	OK	LS	LS	2.4	15	9.6	98	165	ft	16,000
8847	22791_22790				8	0.0110	0.82	0.00	1.70	2.38	OK	HS	LS	2.4	15	11.2	100	176	ft	18,000
8868	22790_22789				8	0.0130	0.90	0.00	1.70	2.38	OK	IS	LS	2.4	15	12.4	81	184	ft	15,000
8866	22789_22788				8	0.0510	1.76	0.00	1.70	2.38	OK	IH	LS	2.4	15	12.5	434	185	ft	80,000
8849	22788_22787				8	0.0190	1.09	0.00	1.69	2.37	OK	IS	IS	2.4	15	12.1	91	182	ft	17,000
8839	22787_22786				8	0.1290	2.81	0.32	2.00	2.74	OK	OK	OK	2.6	15	9.1	216	161	ft	35,000
8820	22786_22785				8	0.4190	5.07	0.32	2.00	2.74	OK	OK	OK	2.6	15	8.2	75	155	ft	12,000
8823	22785_22781				8	0.3360	4.54	0.32	2.00	2.74	OK	OK	OK	2.6	15	12.8	125	187	ft	23,000
8831	22781_22780				8	0.0110	0.80	0.32	1.99	2.73	OK	IS	LS	2.6	15	12.8	215	186	ft	40,000
8806	22780_22779				8	0.1810	3.33	0.32	1.99	2.73	OK	OK	LH	2.6	15	7.5	69	151	ft	10,000
8832	22779_22778				8	0.1090	2.58	0.32	1.99	2.73	OK	OK	LS	2.6	15	6.6	168	145	ft	24,000
8834	22778_22777				8	0.1010	2.49	0.32	1.99	2.72	OK	OK	HS	2.6	15	7.8	273	153	ft	42,000
8815	22777_22776				8	0.3210	4.44	0.32	1.99	2.72	OK	OK	OK	2.6	15	7.5	59	150	ft	9,000
8809	22776_22760				8	0.0140	0.94	0.32	1.99	2.72	OK	IS	HS	2.6	15	7.0	77	147	ft	11,000
8861	22760_22759				8	1.4950	9.57	0.32	1.98	2.71	OK	OK	OK	2.6	15	6.0	20	141	ft	3,000
8863	22759_22758				8	0.0140	0.93	0.32	1.98	2.71	OK	LS	LS	2.6	15	5.4	159	137	ft	22,000
8843	22758_22757				8	0.0860	2.30	0.32	1.98	2.71	OK	OK	LS	2.6	15	5.4	103	136	ft	14,000
8841	22757_14749				8	0.2090	3.58	0.32	1.98	2.70	OK	OK	LH	2.6	15	9.4	95	164	ft	16,000
8978	14749_14748				8	0.0300	1.36	0.32	2.56	3.63	OK	LS	LS	2.6	15	9.3	400	163	ft	65,000
8994	14748_09992				8	0.0300	1.36	0.32	2.56	3.63	OK	LS	LS	2.6	15	7.3	300	449	ft	135,000
8998	09992_09991				8	0.0300	1.36	0.32	2.56	3.63	OK	LS	LS	2.6	15	9.7	190	166	ft	31,000
8996	09991_09989				8	0.0300	1.36	0.32	2.56	3.63	OK	LS	LS	2.6	15	9.9	157	167	ft	26,000
8975	09989_09988				8	0.0360	1.49	0.32	2.56	3.63	OK	LS	LS	2.6	15	8.7	30	159	ft	5,000
8985	09988_08159				8	0.0140	0.93	0.32	2.55	3.62	OK	LS	LS	2.6	15	7.4	152	150	ft	23,000
8973	08159_08157				8	0.0320	1.40	0.32	2.55	3.62	OK	LS	LS	2.6	15	7.4	141	150	ft	21,000

Special Considerations: (Included in Unit Costs) Crossing Farmington Rd (Hwy 10).



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Bendemeer Trunk

Project ID: R-240

Base Construction Cost	574,000
Contingency (30%)	172,000
Construction Budget Amount	750,000
Engineering & Administration (25%)	188,000

NOTES: Triggered by industrial / commercial infill development, plus Helvetia growth area. Depending on project timing, Helvetia growth area flows could alternately be diverted from these sewers to the future North Plains force main and thus relieve these sewers if the North Plains force main is sized adequately.

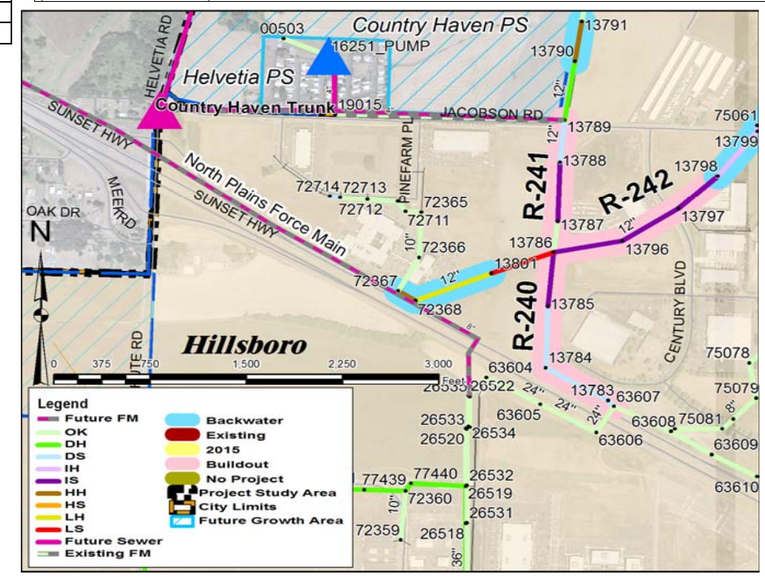
Location:	Near Sunset Hwy and Helvetia Rd in Hillsboro.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	Upsize ~1,600 ft of 18-inch diameter sanitary sewer to 24-inch diameter sanitary sewer.

Capital Improvement Cost Total[1]: 938,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
350	13786_13785				18	0.0020	2.76	1.21	2.36	4.00	OK	OK	IS	2.4	24	12.3	455	242	ft	110,000
349	13785_13784				18	0.0020	2.69	1.21	2.36	4.00	OK	OK	DS	2.4	24	17.9	550	286	ft	157,000
348	13784_13783				18	0.0020	2.70	1.21	2.36	4.00	OK	DH	DS	2.4	24	20.7	526	541	ft	285,000
8756	13783_63607				18	0.0010	2.30	1.20	2.36	3.99	OK	DS	DS	2.4	24	20.2	61	356	ft	22,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Bendemeer Trunk

Project ID: R-241

Base Construction Cost	291,000
Contingency (30%)	87,000
Construction Budget Amount	380,000
Engineering & Administration (25%)	95,000
Capital Improvement Cost Total[1]:	**475,000**

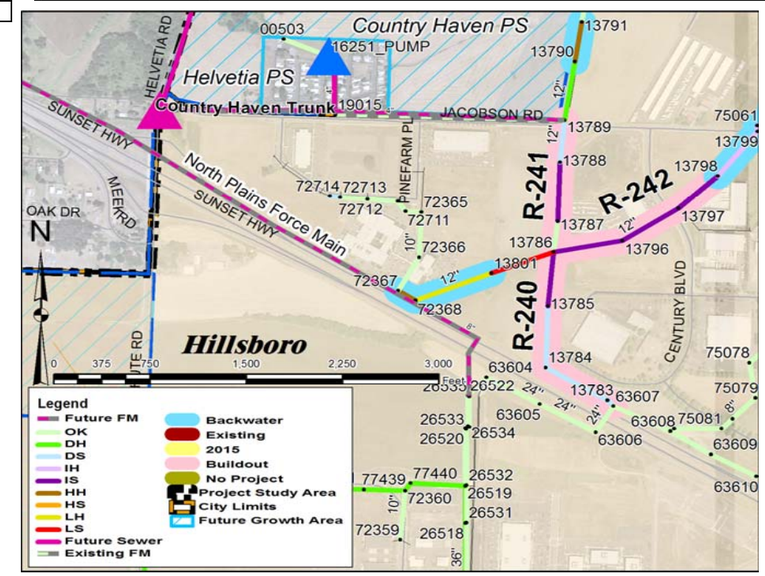
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Triggered by industrial / commercial infill development, plus Helvetia growth area. Downstream link has adequate capacity due to higher slope, but for planning purposes it is assumed to be replaced as part of the project to match upstream diameters. Depending on project timing, Helvetia growth area flows could alternately be diverted from these sewers to the future North Plains force main and thus relieve these sewers if the North Plains force main is sized adequately.

Location:	Near Sunset Hwy and Helvetia Rd in Hillsboro.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	Upsize ~1,110 ft of 12-inch diameter sanitary sewer to 18-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
351	13787_13786				12	0.0470	4.99	0.23	1.29	2.23	OK	OK	OK	2.4	18	8.6	250	176	ft	44,000
353	13789_13788				12	0.0030	1.16	0.30	1.29	2.24	OK	DS	DS	2.4	18	20.4	359	383	ft	138,000
352	13788_13787				12	0.0020	1.13	0.27	1.29	2.23	OK	IS	IS	2.4	18	14.4	500	218	ft	109,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - E. Country Haven Lateral

Project ID: R-242

Base Construction Cost	238,000
Contingency (30%)	71,000
Construction Budget Amount	310,000
Engineering & Administration (25%)	78,000

NOTES: Surcharging will be significantly reduced by downstream improvements; however, buildout flows are predicted to significantly exceed pipe capacity so an improvement should be planned. Future flows should be monitored to verify the need for this improvement. Depending on project timing, Helvetia growth area flows could alternately be diverted from the downstream end of these sewers to the future North Plains force main and thus relieve these sewers if the North Plains force main is sized adequately.

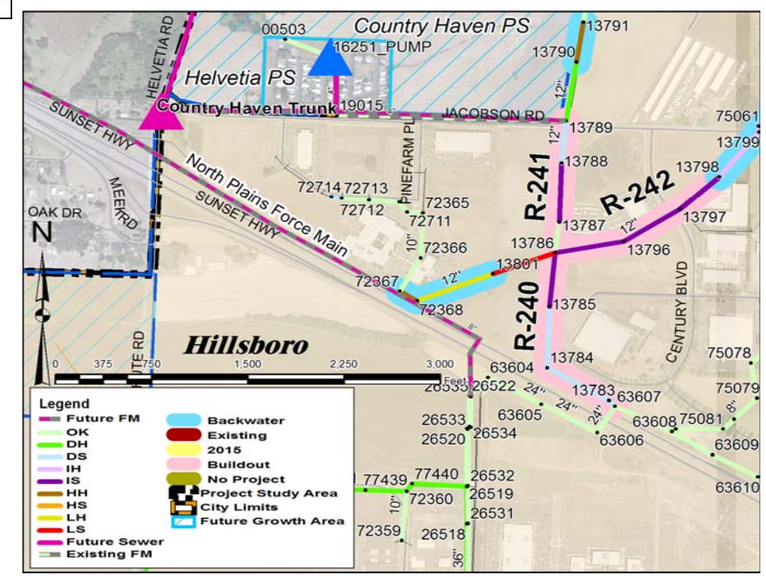
Location:	Near Sunset Hwy and Helvetia Rd in Hillsboro.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	Upsize ~1,450 ft of 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Capital Improvement Cost Total[1]: 388,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
360	13798_13797				12	0.0030	1.15	0.71	0.73	1.44	OK	OK	IS	2.6	15	10.4	408	170	ft	70,000
359	13797_13796				12	0.0020	1.12	0.71	0.73	1.44	OK	OK	IS	2.6	15	9.2	514	162	ft	83,000
358	13796_13786				12	0.0020	1.13	0.71	0.73	1.44	OK	OK	IS	2.6	15	9.4	520	164	ft	85,000

Special Considerations: (Included in Unit Costs)	NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Bendemeer Re-Route

Project ID: R-250

Base Construction Cost	271,000
Contingency (30%)	81,000
Construction Budget Amount	350,000
Engineering & Administration (25%)	88,000
Capital Improvement Cost Total[1]:	**438,000**

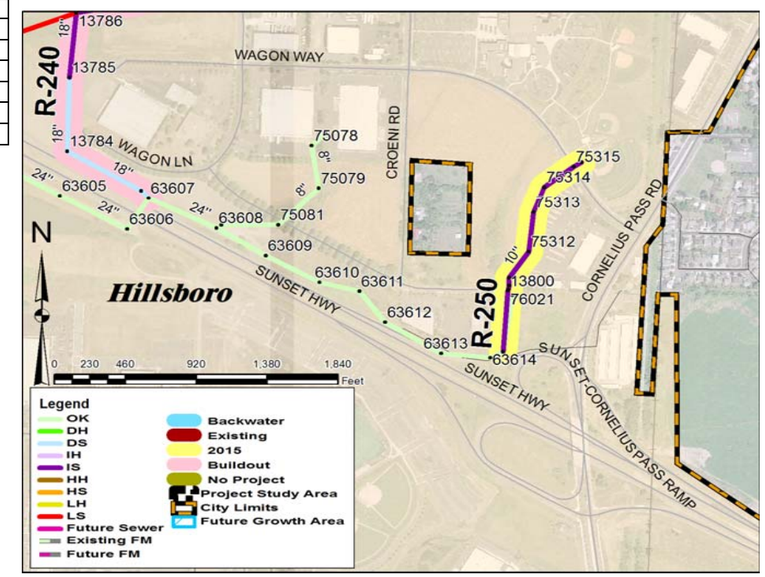
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Project is needed to serve anticipated industrial development. Variability in actual flows vs. planned potential flows for industrial/commercial areas may result in substantially lower flows and less need for this project.

Location:	Intersection of Sunset Hwy and Cornellius Pass Rd to Wagon Wy.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	Upsize ~1,510 ft of 8-inch and 10-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
8771	75316_75315				8	0.0040	0.49	0.84	0.88	1.24	DS	DS	IS	2.9	15	15.3	55	204	ft	11,000
8773	75315_75314				10	0.0030	0.75	0.84	0.88	1.24	DS	DS	IS	2.9	15	14.9	240	201	ft	48,000
8775	75314_75313				10	0.0030	0.75	0.84	0.88	1.24	DS	DS	IS	2.9	15	13.6	190	192	ft	37,000
8777	75313_75312				10	0.0030	0.75	0.84	0.88	1.24	DS	DS	IS	2.9	15	12.4	278	184	ft	51,000
8779	75312_75311				10	0.0030	0.75	0.84	0.88	1.24	IS	IS	IS	2.9	15	11.0	225	174	ft	39,000
8781	75311_75310				10	0.0010	0.32	0.84	0.88	1.24	IS	IS	IS	2.9	15	10.6	60	172	ft	10,000
8783	75310_76021				10	0.0040	0.94	0.84	0.88	1.24	IH	IH	IS	2.9	15	10.3	25	170	ft	4,000
8869	76021_13800				10	-0.0660	0.00	0.84	0.88	1.24	IS	IS	IS	2.9	15	9.5	10	164	ft	2,000
8785	13800_13802				10	0.0030	0.76	0.84	0.88	1.24	IS	IS	IS	2.9	15	9.3	421	163	ft	69,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

WEST YOST ASSOCIATES

WYA - March 2009
517-03-06-14

Clean Water Services
Our commitment is clear.

Sanitary Sewer Master Plan Update

PROJECT - 28th Avenue Lateral

Project ID: R-260

Base Construction Cost	363,000
Contingency (30%)	109,000
Construction Budget Amount	470,000
Engineering & Administration (25%)	118,000
Capital Improvement Cost Total[1]:	**588,000**

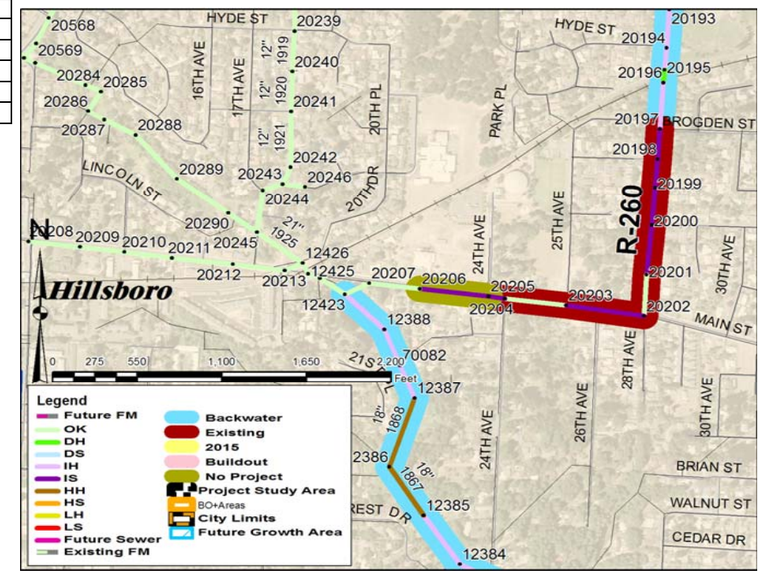
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Little or no flow increase is predicted, but surcharging under existing conditions could be significant. Flows should be verified before initiating design. In addition, a substantial inflow source was recently identified at the upstream end of this sewer. Correction of that inflow source might provided adequate reduction in flows, but would need to be verified through monitoring.

Location:	On 28th Avenue and Main Street.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	Upsize ~2,400 ft of 10-inch diameter sanitary sewer to 12-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
1856	20197_20198				10	0.0030	0.82	1.06	1.06	1.06	IS	IS	IS	3.7	12	11.9	225	160	ft	36,000
1857	20198_20199				10	0.0020	0.69	1.06	1.06	1.06	IS	IS	IS	3.7	12	11.5	210	158	ft	33,000
1858	20199_20200				10	0.0030	0.76	1.06	1.06	1.06	IS	IS	IS	3.7	12	10.7	280	153	ft	43,000
1859	20200_20201				10	0.0030	0.78	1.06	1.06	1.06	IS	IS	IS	3.7	12	10.6	350	153	ft	53,000
1860	20201_20202				10	0.0110	1.50	1.06	1.06	1.06	OK	OK	OK	3.7	12	10.8	293	153	ft	45,000
2005	20202_20203				10	0.0040	0.89	1.06	1.06	1.06	IS	IS	IS	3.7	12	10.4	500	151	ft	76,000
1883	20203_20204				10	0.0110	1.51	1.26	1.26	1.28	OK	OK	OK	3.8	12	9.3	423	144	ft	61,000
1884	20204_20205				10	0.0050	1.01	1.26	1.26	1.28	IS	IS	IS	3.8	12	8.9	115	142	ft	16,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Hall Blvd Lateral

Project ID: R-270

Base Construction Cost	257,000
Contingency (30%)	77,000
Construction Budget Amount	330,000
Engineering & Administration (25%)	83,000

NOTES: Although apparently built-out, the substantial service area upstream of this sewer produced predicted flows that significantly exceed the modeled pipe capacity. The need for and sizing of this project should be assessed through verification of peak flows and inspection for evidence of surcharging.

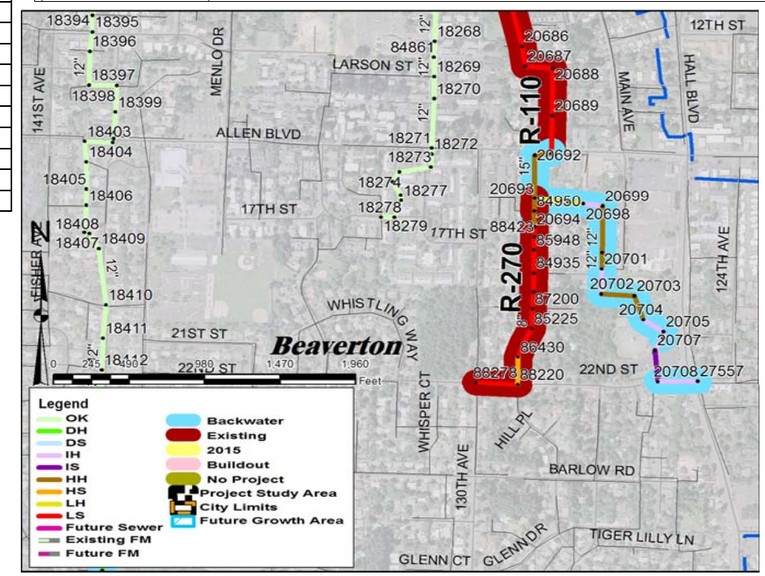
Capital Improvement Cost Total[1]: 413,000

(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

Location:	22nd St and Dale Ave
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Beaverton
Local/Regional:	-
Brief Description:	Upsize ~1,600 ft of 8-inch and 12-inch diameter sanitary sewer to 15-inch diameter sanitary sewer.

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd Existing (2006)	2015	Buildout	HGL Rank Existing	2015	Buildout	Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
9132	88278_88220				8	0.0040	0.49	1.33	1.33	1.33	LS	LS	LS	15.6	15	9.2	268	162	ft	44,000
9152	88220_86430				8	0.0210	1.13	1.33	1.33	1.33	HS	HS	HS	15.6	15	10.0	193	168	ft	32,000
9150	86430_86593				8	0.0200	1.10	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.5	100	158	ft	16,000
9148	86593_85225				8	0.0150	0.97	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.4	121	157	ft	19,000
9146	85225_87200				8	0.0150	0.95	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.9	139	160	ft	22,000
9144	87200_84465				8	0.0040	0.50	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.6	119	159	ft	19,000
9142	84465_84935				8	0.0070	0.65	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.3	132	157	ft	21,000
9140	84935_85948				8	0.0040	0.49	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.4	160	157	ft	25,000
9138	85948_88423				8	0.0040	0.46	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.2	93	156	ft	14,000
9136	88423_20694				8	0.0090	0.75	1.33	1.33	1.33	LS	LS	LS	15.6	15	8.7	70	159	ft	11,000
9134	20694_84950				12	0.0050	1.55	1.33	1.33	1.33	HH	HH	HH	15.6	15	9.9	111	167	ft	19,000
9153	84950_20693				12	0.0030	1.24	1.33	1.33	1.33	HH	HH	HH	15.6	15	10.0	90	168	ft	15,000

Special Considerations: (Included in Unit Costs) NA



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade

PROJECT - Turner Creek Basin (Hillsboro East Interceptor)

Project ID: R-310

Base Construction Cost	0
Contingency (30%)	0
Construction Budget Amount	0
Engineering & Administration (25%)	0
Capital Improvement Cost Total[1]:	**0**

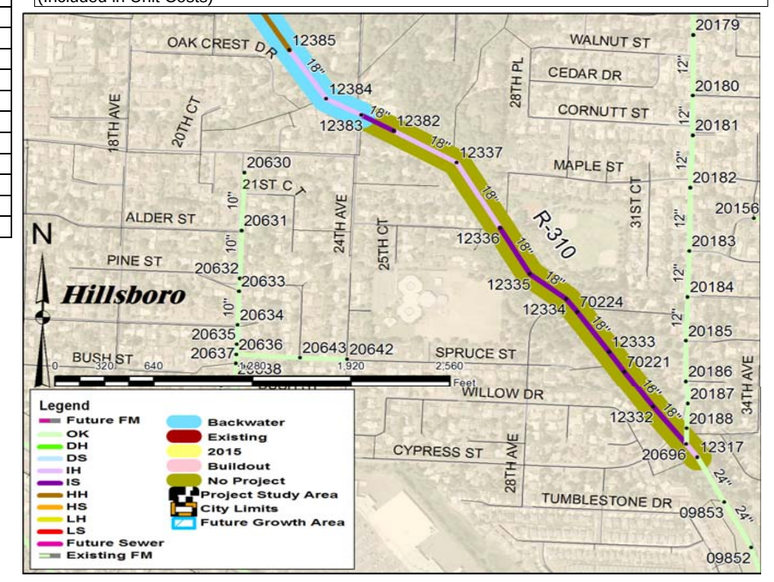
(1) Cost rounded. ENR CCI = 8602 average of 20 Cities, November 2008

NOTES: Predicted buildout surcharging remains deeper than 3 feet from the surface. Flows are not expected to increase significantly between existing and buildout conditions. In 2009, a large storm produced apparently higher flows and greater than predicted surcharging. District staff reports that one large upstream inflow source has been identified and will be reduced or eliminated. Continue to monitor flows and pursue further I&I reduction in the upstream service area. No pipeline improvement is recommended at this time. See calibration report, Appendix Q. Costs to be determined; action plan is defined by City of Hillsboro/District Intergovernmental Agreement dated March 2009.

Location:	32nd Ave to Oak Crest Drive along Rock Creek.
Treatment Plant Basin:	Rock Creek
Jurisdiction:	Hillsboro
Local/Regional:	-
Brief Description:	An alternative analysis study will be undertaken by District and the City of Hillsboro to identify rehabilitation and construction project(s).

Model G_ID	Manhole IDs USMH_DSMH	Condition Rating (yr)			Existing Diameter, inches	Existing Slope	Full-pipe Capacity, mgd	Peak Flows, mgd			HGL Rank			Buildout Peaking Ratio, PH/ADWF	Upsize Diameter, inches	Depth, ft	Length, ft	Unit Cost, $	Unit	Base Construction Cost (w/o Contingency), $
								Existing (2006)	2015	Buildout	Existing	2015	Buildout							
1866	12385_12384				18	0.0040	4.33	4.22	4.22	4.33	IH	IH	IH	4.3	0	8.1	400	0.00	ft	0
1865	12384_12383				18	0.0040	4.56	4.22	4.21	4.32	IH	IH	IH	4.3	0	9.7	243	0.00	ft	0
1864	12383_12382				18	0.0040	4.05	4.51	4.51	4.61	IH	IH	IS	4.5	0	9.5	217	0.00	ft	0
1863	12382_12337				18	0.0040	4.33	4.50	4.49	4.61	IH	IH	IH	4.5	0	7.7	460	0.00	ft	0
2004	12337_12336				18	0.0040	4.34	4.61	4.60	4.72	IH	IH	IH	4.5	0	8.5	532	0.00	ft	0
2169	12336_12335				18	0.0040	4.33	4.72	4.71	4.83	IH	IH	IS	4.6	0	9.2	371	0.00	ft	0
2053	12335_12334				18	0.0040	4.34	4.72	4.71	4.83	IH	IH	IS	4.6	0	8.5	288	0.00	ft	0
2052	12334_70224				18	0.0040	4.32	4.72	4.71	4.83	IH	IH	IS	4.6	0	7.8	114	0.00	ft	0
8176	70224_12333				18	0.0040	4.34	4.79	4.77	4.89	IH	IH	IS	4.6	0	8.4	354	0.00	ft	0
2051	12333_12332				18	0.0040	4.33	4.78	4.77	4.89	IS	IH	IS	4.6	0	9.0	163	0.00	ft	0
8178	70221_12332				18	0.0040	4.34	4.78	4.77	4.89	IH	IH	IS	4.6	0	9.4	303	0.00	ft	0
2050	12332_20696				18	0.0040	4.36	4.78	4.77	4.89	IH	IH	IS	4.6	0	9.5	387	0.00	ft	0
2100	20696_12317				18	0.0050	4.97	4.96	4.94	5.06	IH	IH	IH	4.7	0	10.2	150	0.00	ft	0

Special Considerations: (Included in Unit Costs) Runs along Rock Creek creek bed.



Project Driver

- ☐ Residential development [in area _____]
- ☐ Industrial development
- ☐ High I/I
- ☐ Pump station upgrade