

# LONDON AREA WASTEWATER AND STORM WATER MASTER PLAN

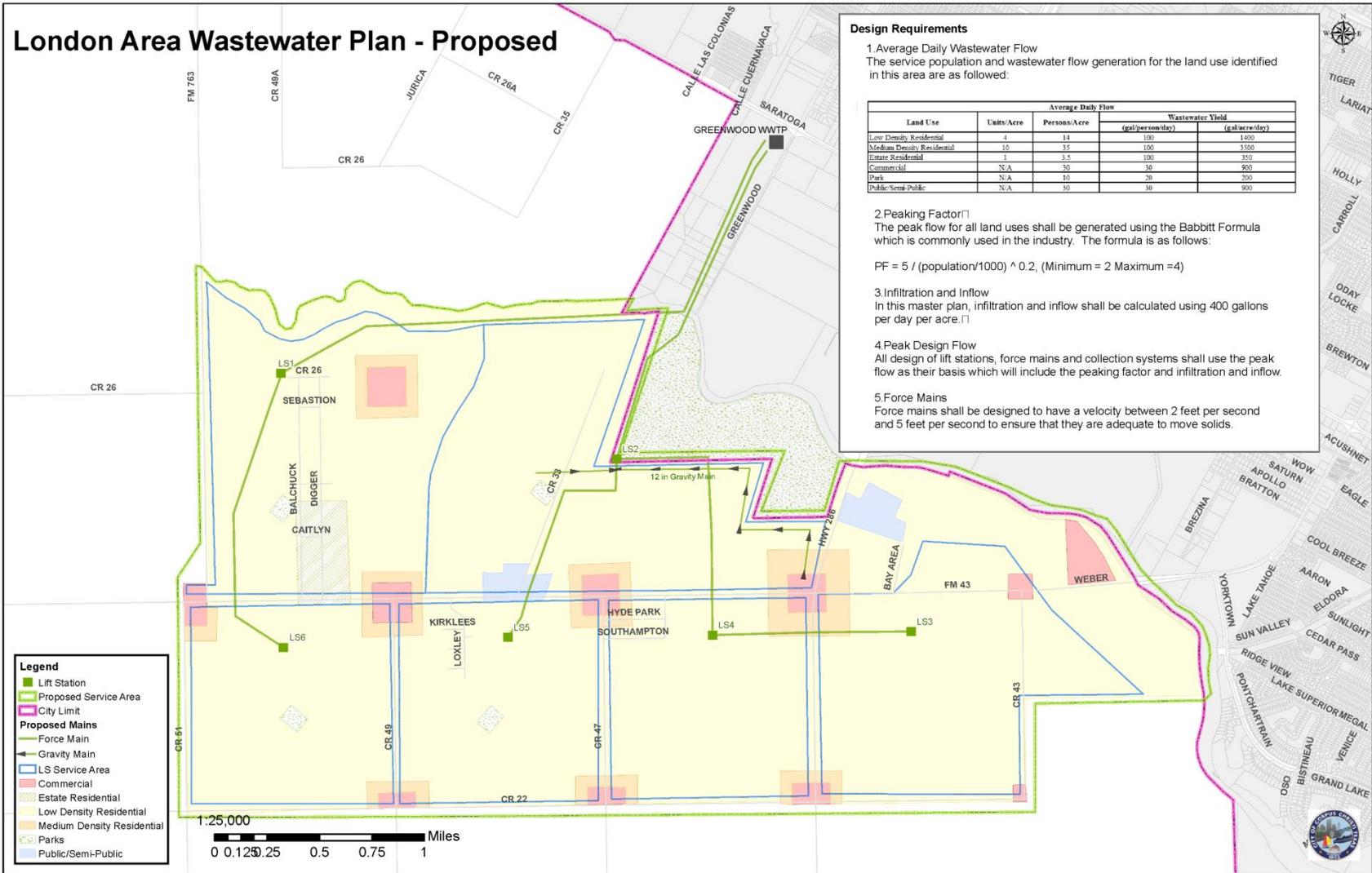


# LONDON AREA

- TOTAL SERVICE AREA = 5,485 ACRES
- ESTIMATED CUSTOMERS (4 HOUSES/AC) = 21,940 HOUSEHOLDS

# WASTEWATER MASTER PLAN

## London Area Wastewater Plan - Proposed



### Design Requirements

1 Average Daily Wastewater Flow  
The service population and wastewater flow generation for the land use identified in this area are as followed:

Land Use	Units/Acre	Persons/Acre	Average Daily Flow	
			Wastewater Yield (gal/person/day)	Wastewater Yield (gal/acre/day)
Low Density Residential	4	14	100	1400
Medium Density Residential	10	35	100	3500
Estate Residential	1	3.5	100	350
Commercial	N/A	30	30	900
Park	N/A	10	30	300
Public/Semi-Public	N/A	30	30	900

2 Peaking Factor  
The peak flow for all land uses shall be generated using the Babbitt Formula which is commonly used in the industry. The formula is as follows:

$$PF = 5 / (\text{population}/1000) ^ 0.2, (\text{Minimum} = 2 \text{ Maximum} = 4)$$

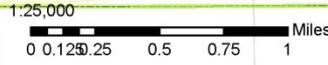
3 Infiltration and Inflow  
In this master plan, infiltration and inflow shall be calculated using 400 gallons per day per acre.

4 Peak Design Flow  
All design of lift stations, force mains and collection systems shall use the peak flow as their basis which will include the peaking factor and infiltration and inflow.

5 Force Mains  
Force mains shall be designed to have a velocity between 2 feet per second and 5 feet per second to ensure that they are adequate to move solids.

**Legend**

- Lift Station
- Proposed Service Area
- City Limit
- Proposed Mains**
- Force Main
- Gravity Main
- LS Service Area
- Commercial
- Estate Residential
- Low Density Residential
- Medium Density Residential
- Parks
- Public/Semi-Public



Map showing surrounding streets: TIGER, LARIAT, HOLLY, CARROLL, ODAY LOCKE, BREWTON, ACUSHNET, WOV, SATURN, APOLLO, BRATTON, EAGLE, COOL BREEZE, AARON, ELDORA, SUNLIGHT, CEDAR PASS, RIDGE VIEW, LAKE SUPERIOR, MEGAL, PONTCHARTRAIN, SUN VALLEY, LAKE TAHOE, YOKOYAMA, BRESTINA, WOODRIDGE, BRATTON, OSO, BISTINEAU, VENICE, GRAND LAKE.

# WASTEWATER COSTS TO DEVELOPERS

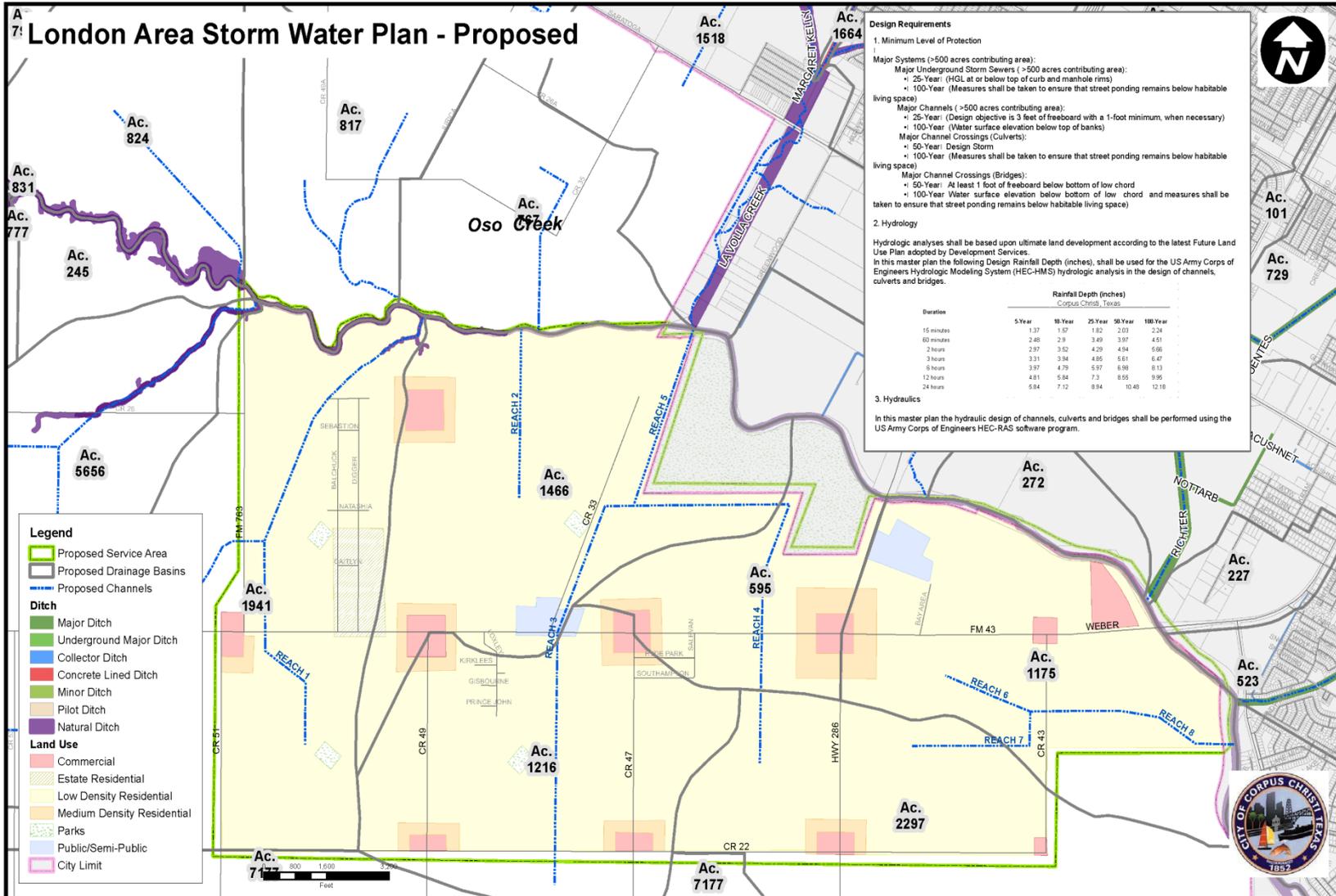
TRUNK MAIN ESTIMATE									
ID	Pipe Diameter	Length	Depth Range	Unit Cost	Construction Sub-Total	Contingency (30%)	Construction Sub-Total	Administrative Subtotal (30%)	Project Total
	(in)	(ft)	(ft)	(\$/LF)	(\$)	(\$)	(\$)	(\$)	(\$)
LS 1	15	1800	Over 18'	\$515.00	\$927,000	\$280,000	\$1,207,000	\$370,000	\$1,577,000
LS 1	24	2000	Over 18'	\$600.00	\$1,200,000	\$360,000	\$1,560,000	\$470,000	\$2,030,000
LS 2	15	1800	Over 18'	\$515.00	\$927,000	\$280,000	\$1,207,000	\$370,000	\$1,577,000
LS 2	18	1600	Over 18'	\$550.00	\$880,000	\$270,000	\$1,150,000	\$350,000	\$1,500,000
LS 3	15	3000	14' - 18'	\$400.00	\$1,200,000	\$360,000	\$1,560,000	\$470,000	\$2,030,000
LS 4	15	2600	14' - 18'	\$400.00	\$1,040,000	\$320,000	\$1,360,000	\$410,000	\$1,770,000
LS 5	15	2600	14' - 18'	\$400.00	\$1,040,000	\$320,000	\$1,360,000	\$410,000	\$1,770,000
LS 6	15	2600	14' - 18'	\$400.00	\$1,040,000	\$320,000	\$1,360,000	\$410,000	\$1,770,000
<b>Trunk Main Subtotal</b>					<b>\$8,254,000</b>	<b>\$2,510,000</b>	<b>\$10,764,000</b>	<b>\$3,260,000</b>	<b>\$14,024,000</b>

LIFT STATION & FORCE MAIN ESTIMATE									
ID	Size	Length	Depth	Unit Cost	Construction Sub-Total	Contingency (30%)	Construction Sub-Total	Administrative Subtotal (30%)	Project Total
	(in) or (mgd)	(ft)	(ft)	(\$/in-LF)	(\$)	(\$)	(\$)	(\$)	(\$)
LS 1	6	N/A	30	N/A	\$2,500,000	\$750,000	\$3,250,000	\$980,000	\$4,230,000
	18	15400	5	\$200	\$3,080,000	\$930,000	\$4,010,000	\$1,210,000	\$5,220,000
LS 2	10	N/A	30	N/A	\$3,500,000	\$1,050,000	\$4,550,000	\$1,370,000	\$5,920,000
	18/8	18000	5	\$175	\$3,150,000	\$950,000	\$4,100,000	\$1,230,000	\$5,330,000
LS 3	2	N/A	25	N/A	\$1,500,000	\$450,000	\$1,950,000	\$590,000	\$2,540,000
	12	5000	5	\$150	\$750,000	\$230,000	\$980,000	\$300,000	\$1,280,000
LS 4	5	N/A	20	N/A	\$2,250,000	\$680,000	\$2,930,000	\$880,000	\$3,810,000
	18	11800	5	\$200	\$2,360,000	\$710,000	\$3,070,000	\$930,000	\$4,000,000
LS 5	2	N/A	25	N/A	\$1,500,000	\$450,000	\$1,950,000	\$590,000	\$2,540,000
	12	6000	5	\$150	\$900,000	\$270,000	\$1,170,000	\$360,000	\$1,530,000
LS 6	2	N/A	25	N/A	\$1,500,000	\$450,000	\$1,950,000	\$590,000	\$2,540,000
	12	7800	5	\$150	\$1,170,000	\$360,000	\$1,530,000	\$460,000	\$1,990,000
<b>Lift Station Subtotal</b>					<b>\$24,160,000</b>	<b>\$7,280,000</b>	<b>\$31,440,000</b>	<b>\$9,490,000</b>	<b>\$40,930,000</b>

# WASTERWATER SERVICE AREA

- **LIFT STATION, FORCE MAIN & TRUNKLINE PROJECT TOTAL = \$54,954,000**
- **COST PER HOUSEHOLD = \$2,580**

# STORM WATER MASTER PLAN



# STORM WATER COSTS TO DEVELOPERS

CHANNEL ESTIMATE										
ID	Bottom Width	Length	Depth	Unit Cost	Structures	Construction Sub-Total	Contingency (30%)	Construction Sub-Total	Administrative Subtotal (30%)	Project Total
	(ft)	(ft)	(ft)	(\$/CY)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Reach 1	10-15	12000	8-14.5	\$14.00	\$500,000.00	\$7,100,000	\$2,130,000	\$9,230,000	\$2,769,000	\$11,999,000
Reach 2	6	4100	10	\$14.00	\$300,000.00	\$1,300,000	\$390,000	\$1,690,000	\$507,000	\$2,197,000
Reach 3	20	13100	8-10	\$14.00	\$700,000.00	\$4,200,000	\$1,260,000	\$5,460,000	\$1,638,000	\$7,098,000
Reach 4	15	8350	8-10	\$14.00	\$500,000.00	\$2,900,000	\$870,000	\$3,770,000	\$1,131,000	\$4,901,000
Reach 5	40	4500	8-11	\$14.00	\$200,000.00	\$1,600,000	\$480,000	\$2,080,000	\$624,000	\$2,704,000
Reach 6	8	2300	8	\$14.00	\$250,000.00	\$700,000	\$210,000	\$910,000	\$273,000	\$1,183,000
Reach 7	8	3800	8	\$14.00	\$400,000.00	\$2,700,000	\$810,000	\$3,510,000	\$1,053,000	\$4,563,000
Reach 8	12	5500	10	\$14.00	\$400,000.00	\$3,600,000	\$1,080,000	\$4,680,000	\$1,404,000	\$6,084,000
						<b>\$20,500,000</b>	<b>\$6,150,000</b>	<b>\$26,650,000</b>	<b>\$7,995,000</b>	<b>\$34,645,000</b>

- **COST PER HOUSEHOLD = \$1,579**

QUESTIONS???