The Outlook for Langley's Sewer and Water Systems

presented to

Mayor and City Council

by

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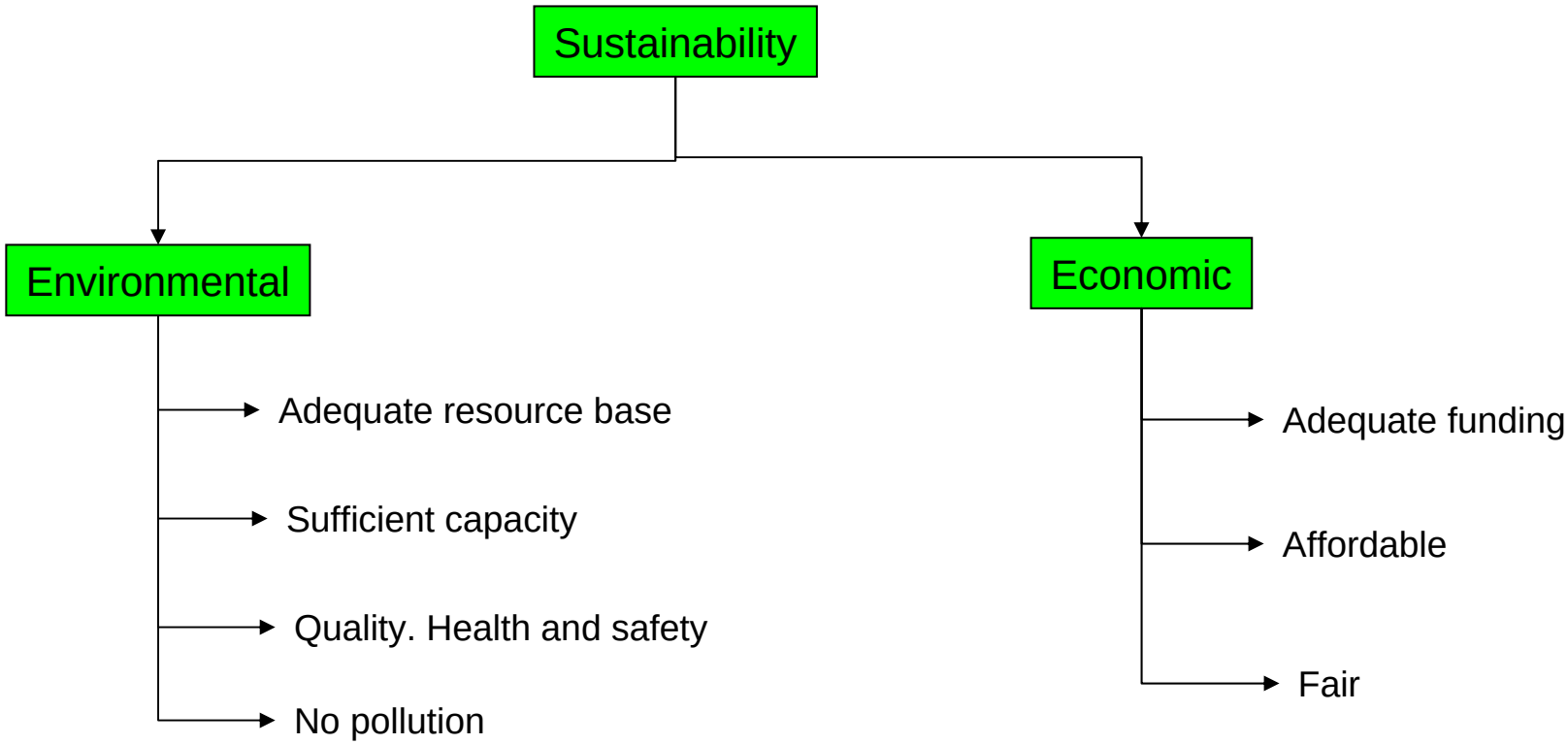
Sustainability is the key analytical concept behind this investigation



Consistent objectives: less water use and sewage generation = lower environmental impact = less operating cost and less or later capital cost

The key questions to be answered:

- Are the water and sewer systems technically and environmentally sustainable, particularly if Langley experiences 50% or more growth?
- Is the City creating adequate financial reserves to fund all reasonable contingencies going forward?
- Are developers paying their fair share of the true economic costs of adding service, and not putting upward pressure on rates?
- Do the technical priorities reflect decisions by elected officials, the Comprehensive Plan and the Growth Management Act?
- Is the structure of charges fair and reasonable?

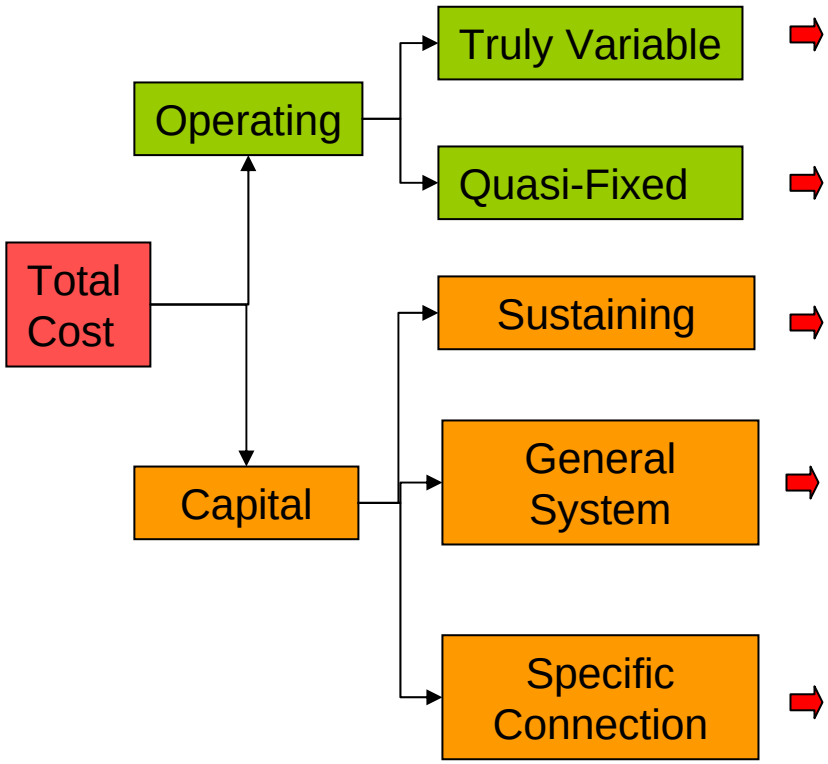
Water system overview

Key Factor	Current Status
Water availability	-Established by pumping tests (trial and error) -Current estimate (State of Washington) = 1372 ERUs -Could be affected by development or climate change
Pumping capacity	-Determined by pumps, currently 525 gpm (1290 ERUs) -Could go to 755 gpm by using standby well
Storage capacity	-Currently 3-4 days supply; probably adequate -Second storage tank is part of longer-term plan for growth/security
Water quality	-Currently good; risk of saltwater intrusion if aquifer is over-pumped; risk of contamination in recharge area -City uses fixed radius wellhead protection; better to base this on aquifer
Conservation potential	-Minimal current budget/effort -11% of water is unaccounted for -Very large seasonal fluctuation in demand, potentially mitigated by changing consumer behavior n(drought resistant plantings)

Sewer system overview

Key Factor	Current Status
Septic systems	-About 60% if the City is covered with sewers -Regulation contracted to Island County; effectiveness unproven -No comprehensive data on system failures -Relationship to bluff failure risk is unclear – probably small
Sewer flow capacity	-Determined by plant design; maximum flows are in winter and utilize about 67% of technical capacity
Organic capacity	-Determined by biochemical oxygen demand; current peak is 350 lbs/day versus capacity of 425 lbs/day -Disproportionately affected by septage acceptance policy
Environmental risk	-Key pumping systems are duplicated and have emergency generators -Leaking pipes are main potential issue
Conservation potential	-Potential exists to reduce stormwater intrusion; progress since 1995 has offset growth in demand -Restaurants cause grease build-up that reduces capacity; need to install grease traps or pay for more frequent cleaning

A cost driver tree can help understand the economics of these utilities….



Costs that are directly proportionate to the volume of water or sewage – power, fuel, chemicals, maintenance, etc

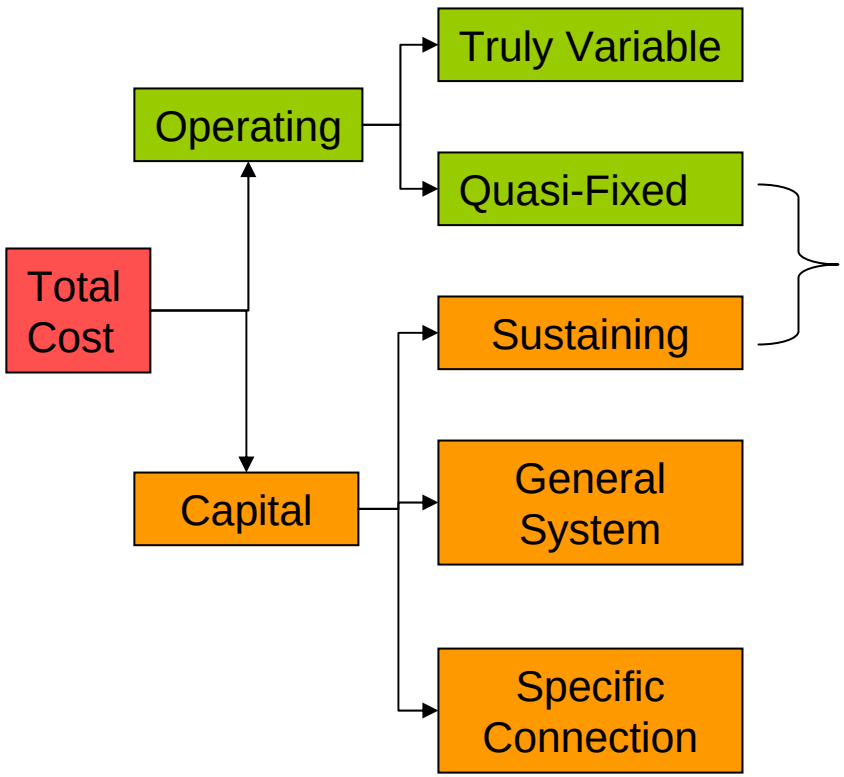
Other operating costs – labor, testing, permitting etc

Costs for replacing the system as it wears out and improving it to meet higher health, safety and environmental standards

Costs for upgrading the capacity of common parts of the system to serve additional loads/demand

Costs for extending the system to serve new developments or currently un-served areas of the city

… and identify the rates that need to be charged



Rate based on the number of gallons consumed or processed

Rate based on the peak demand imposed on the system by the specific consumer

Connection charge based on long-run marginal cost triggered by the new load (same for all new users)

Connection charge based on actual cost of connection (different in each case)

LANGLEY WATER - OPERATING CASH FLOW STATEMENT

Item		2003	2004	2005	2006	2007	2008	2003-2008 Growth	2003-2008 Average
Revenues	Gross	225769	294782	329498	343746	381610	463376	105%	407756
	Excise Taxes	11292	14107	15426	18329	18267	19290	71%	19342
	% of Sales	*5.00%*	*4.79%*	*4.68%*	*5.33%*	*4.79%*	*4.16%*		
	Net	214477	280675	314072	325417	363343	444086	107%	388414
Expenses	Total	138761	159381	167975	201761	195453	222309	60%	217128
of which	Truly Variable Costs	37937	41296	50297	74615	56049	78259	106%	67691
	Quasi-Fixed Costs	100824	118085	117678	127146	139404	144050	43%	149437
	% of total	*72.66%*	*74.09%*	*70.06%*	*63.02%*	*71.32%*	*64.80%*		*68.82%*
	Labor-Related Costs	95794	109740	109051	118108	129063	130889	37%	138529
	Internal	58780	71920	69205	75216	99891	107824		96567
	External	37014	37820	39846	42892	29172	23065		41962
	Other Quasi-Fixed	5030	8345	8627	9038	10341	13161	162%	10908
Operating Cash Flow		75716	121294	146097	123656	167890	221777	193%	171286

- Expenses have grown faster than revenues
- Quasi-fixed costs have grown a bit faster than inflation
- The average surplus is $171,000 per year

LANGLEY WATER - CAPITAL CASH FLOW STATEMENT

Item		2003	2004	2005	2006	2007	2008	2003-2008 Growth	2003-2008 Average
Income	Water Hook Ups	30000	33109	34967	33085	108510	116750	289%	71284
Expenses		48991	42011	66295	53429	335441	137888	181%	136811
	Loan Repayments	46671	42011	39637	38762	37888	37888	-19%	48571
	Water Improvements	2320	0	26658	14667	297553	100000	4210%	88240
Capital Cash Flow		-18991	-8902	-31328	-20344	-226931	-21138		-65527

- Hook-up fees have not covered capital costs
- However, most capital costs have, in practice, been of a sustaining capital nature
- In the new plan, the annual rate of sustaining capital expenditure will probably be in the range $60,000-$65,000/year

LANGLEY SEWER - OPERATING CASH FLOW STATEMENT

Item		2003	2004	2005	2006	2007	2008	2003-2008 Growth	2003-2008 Average
Revenues	Gross	196574	190428	194529	213771	299500	273932	39%	273747
	Excise Taxes	3282	3411	3455	5573	5693	5436	66%	5370
	% of Sales	*1.67%*	*1.79%*	*1.78%*	*2.61%*	*1.90%*	*1.98%*		
	Net	193292	187017	191074	208198	293807	268496	39%	268377
Expenses	Total	158056	165519	178063	191060	212989	213423	35%	223822
of which	Truly Variable Costs	46012	54065	54041	63937	78078	70311	53%	73289
	Quasi-Fixed Costs	112044	111454	124022	127123	134911	143112	28%	150533
	% of total	*70.89%*	*67.34%*	*69.65%*	*66.54%*	*63.34%*	*67.06%*		*67.26%*
	Labor-Related Costs	106543	106676	109660	121941	127970	135024	27%	141563
	Internal	*13110*	*13705*	*29861*	*32692*	*37233*	*39086*		33137
	External	*93433*	*92971*	*79799*	*89249*	*90737*	*95938*		108425
	Other Quasi-Fixed	5501	4778	14362	5182	6941	8088	47%	8970
Operating Cash Flow		35236	21498	13011	17138	80818	55073	56%	44555

- Recent cash flow increases reflects on-time effect of increased septage volumes
- Costs have been well controlled
- Prices have not been adjusted for inflation – operating cash flow is falling in 2008 – outlook questionable

LANGLEY SEWER - CAPITAL CASH FLOW STATEMENT

Item		2003	2004	2005	2006	2007	2008	2003-2008 Growth	2003-2008 Average
Income		47125	35869	72354	67668	202655	111650	137%	107464
	Interest	11342	11363	20251	28525	21903	23090	104%	23295
	Assessments	13302	4503	5162	1022	42936	16000	20%	16585
	Connection Fees	6000	4000	31200	22000	122063	56000	833%	48253
	ULID 8 Surcharges	16481	16003	15741	16121	15753	16560	0%	19332
Expenses		40817	136383	115858	98382	223080	158655	289%	154635
	Loan Repayments	18655	18655	18655	18655	18655	18655	0%	22386
	Capital Expenses on Sewers	21302	104614	80448	70904	193624	25000	17%	99178
	Extensions	860	13114	16755	8823	10801	115000	13272%	33071
Capital Cash Flow		6308	-100514	-43504	-30714	-20425	-47005		-47171

- Capital expenses on the existing system have averaged almost $100,000 a year
- Connection fees have slightly exceeded the cost of sewer extensions

Are the utilities adequately funded?

Item	Water	Sewer
Operating cash flow	$200,000	$50,000
(+) Interest income	$0	$23,000
(-) Sustaining capital costs	-$65,000	-$100,000
(-) Debt servicing cost	-$38,000	-$19,000
(-) Contribution to City overhead	-$75,000	-$76,000
(=) Return on investment	$22,000	-$122,000

- These figures exclude any costs or revenues associated with expansions
- The water system is adequately funded; however there is minimal retained earnings
- The economics of the sewer system are not sustainable in the long-term

The city may need to fundamentally rethink its sewer planning

- Sewers are more expensive than conventional septic systems
  - no provision for alternative systems, composting, conservation etc
- There is no technical rationale in the plan for the proposed extensions to the sewer system
  - no linkage to septic failure, perking capacity etc
- Main un-served areas are subject to development moratorium
  - current sewer plan reflects pre-2008 land use plan
  - may be affected by cluster development, open space etc
- Sewer plans should reflect land use decisions rather than vice versa

Water and sewer rates analysis

- Overall the water rates are adequate to fund the system
- However, the structure of rates does nothing to encourage conservation
    - in particular, cost per gallon is too high and fixed bimonthly charge is too low – and does not reflect impact on capacity of inappropriate/excessive summer consumption
- Fixed water charge to recover quasi-fixed and sustaining capital costs based on consumption rate in prior July-August period
- Review of non-resident water charge is recommended
- Sewer rates need to be increased
- Fixed sewer charge to reflect average consumption rate in the prior November-February period

Connection charges should reflect long-run marginal cost for the system as a whole plus actual identifiable costs

NPV of Expected Future Connection Charges = NPV of Expected Future Capital Costs

This requires the following assumptions

- Forecast growth rate of demand (in ERUs) from City plan
  - faster growth translates to higher required charges
- Forecast future capital increments and related costs from City engineers
  - greater excess capacity translates to lower required charges
- Discount rate relevant to Washington municipalities
  - lower discount rates translates to higher required charges

The city should consider charging for the free connection option granted to properties that chose not to connect to the sewer

The option fee should be paid when the sewer is available and credited against any eventual connection charge

1. Calculate the connection charge in the normal way
2. Deduct the net revenue arising from septage using the capacity “reserved” for this customer
3. Multiply the balance by the probability that the customer will eventually connect

    based on statistical analysis of “events” that trigger connection

Note: this is not the same thing as the fee that the City collects from someone connecting and pays to the developer for the location-specific connection costs – that fee is not affected by this sugestion

Recommendations - financial

General Financial Management - More Transparent and Meaningful

1. Fully segregate the accounts of the water and sewer systems from the rest of the City
2. Institute management accounts based on the cost driver tree concepts
3. Document rationale for allocating city overheads to water and sewer
4. Conduct financial planning over a 30 year time frame
5. Review non-resident water surcharge

Rates - Adequacy and Restucturing for Fairness and Efficiency

6. Increase sewer charges to a financially sustainable level
7. Set rates to cover operating and sustaining capital costs plus city overhead
8. Limit gallonage component of rates to truly variable costs
9. Based fixed component of rates on peak use (Jul-Aug for water, Nov-Feb for sewer)
10. Base general system connection charges on long-run marginal cost analysis
11. Common approach to local connection charges for water and sewer

Recommendations – general policy

Conservation - Reduce Demand and Improve Security

12 Well head protection areas, based on aquifer recharge zones
13 Drought resistant landscaping and general water conservation
14 Health and maintenance of in ground septic systems
15 Elimination of stormwater infiltration and illegal connections to sewers
16 Grease trap installation for restaurants and similar users

Sewer Policy - Fundamental Revision

17 Improve database on septic failures and perking capacity around city
18 Sewer requirements based on planning and environmental criteria
19 Accommodation for alternative, non-conventional systems
20 Further study of possible links between septic discharge and bluff erosion
21 Charge for the current (free) connection option at non-connecting sewer properties