

## **APPENDIX I**

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# **PERFORMANCE MEASURES**

The following is a 4-page excerpt from the National Water and Wastewater Benchmarking Initiative 2002-2003 Report. The initiative was originally a pilot project in Canada which included participants from Canadian cities, Earth Tech, and the National Research Council. These performance measures identify areas to be monitored that will ultimately aid to improving the quality and performance of the Wastewater system.

GWA requests that the PMC develop a monitoring and reporting program to track the performance measures listed.

☆ = Graphs that are included in this report

PMs in red are new or changed for 2001

Wastewater Collection Performance Measures	What do they measure?	
<b>Goal 1 – Operate a Reliable and Sustainable Sewerage and Drainage Infrastructure</b>		
Number of Blocked Sewers / 100 km Length	☆	System reliability
Number of Blocked Sewers (by causes) / 100 km Length	☆	System reliability
Percentage of Blocked Sewers That Were Repeat Occurrences	☆	System reliability
Number of Blocked Service Connections / 1000 Service Connections		System reliability
Number of Pump Station Failures / Number of Pump Stations	☆	Pump station reliability
Number of Pump Station Failures / Total Pump Station Hp		Pump station reliability
Number of Pump Station Repairs / Number of Pump Stations		Pump station condition and reliability
Number of Pump Station Repairs / Total Pump Station hp		Pump station condition and reliability
Number of Service Connection Repairs / 1,000 Service Connections		Planned: Preventative maintenance Emergency : System condition/reliability
Number of Sewer Repairs / 100 km Length	☆	Planned: Preventative maintenance Emergency : System condition/reliability
Number of Manhole Repairs / 1,000 Manholes		Planned: Preventative maintenance Emergency : System condition/reliability
Length CCTV Inspected / 100 km Length	☆	Preventative maintenance
Length Cleaned / 100 km Length	☆	Preventative maintenance
Capital Reinvestment / Replacement Value	☆	Level of infrastructure reinvestment
Capital Reinvestment + Average Contribution to Reserves / Replacement Value		Level of infrastructure reinvestment
<b>Goal 2 – Accessible and Sufficient Sewerage &amp; Drainage Infrastructure</b>		
Number of Connections with Sanitary Flooding / 1,000 Service Connections	☆	Sufficiency of system to prevent damage to property
Number of Reported Overflows Due to Capacity/ 100 km Length	☆	Sufficiency of pipe capacity
<b>Goal 3 – Meet Service and Performance Requirements at Sustainable Cost</b>		
Field FTEs / 100 km Length	☆	Field staffing levels
O&M FTEs / 100 km Length	☆	O&M staffing levels
Pump Station Field FTE's / Number of Pump Stations		Pump Station staffing levels

Wastewater Collection Performance Measures		What do they measure?
O&M Labour Cost / km Length		Cost effectiveness of inhouse and contract labour
Total Operating Cost <b>with Actual Indirect Charge-back</b> ('000) / km Length	☆	Operating cost effectiveness
<b>Total Operating Cost with Activity-based Indirect Cost</b> ('000) / km Length	☆	Operating cost effectiveness
O&M Cost ('000) / km Length	☆	O&M cost effectiveness
O&M Cost + Capital Reinvestment Cost ('000) / km Length	☆	O&M cost effectiveness
Pump Station O&M Costs / Total Pump Station Hp	☆	Pump Station O&M cost effectiveness
Sick Days Taken per Field Employee	☆	Indicator of staff morale & absenteeism
Total Available Field Hours / Total Paid Field Hours	☆	Staff availability
Unplanned Maintenance Hours / Total Maintenance Hours	☆	Maintenance planning
CCTV Length / Day		CCTV crew productivity
Cleaning Length / Day		Cleaning crew productivity
Cost of CCTV / Length CCTV	☆	CCTV cost efficiency
Cost of Cleaning / Length Cleaned	☆	Cleaning cost efficiency
Cost of Planned Sewer Repairs / Repair		Sewer repair cost efficiency
Cost of Planned Service Connection Repairs / Repair		Service connection repair cost efficiency
<b>Goal 4 – Enhance Quality of Life</b>		
Number of Reported Overflows / 100 km Length	☆	Environmental impact from inadequacies in system capacity and reliability
<b>Goal 5 – Safe Work Environment</b>		
Number of Field Staff Accidents with Lost Time / 1,000 Labour Hours	☆	Field accident frequency
Field Staff Hours Lost Due to Accidents / 1,000 Labour Hours	☆	Field accident and injury severity
<b>Goal 6 – Satisfied Customers</b>		
Number of Sewer Related Customer Complaints / 1000 People Served	☆	Customer satisfaction with sewers



WWTP Performance Measures	What do they measure?
<b>Goal 1 – Operate a Reliable and Sustainable Sewerage and Drainage Infrastructure</b>	
Number of Reported Surcharges (copied from Goal 4)	Environmental compliance
Capital Reinvestment / Replacement Value ☆	Level of infrastructure reinvestment
Capital Reinvestment + Average Contribution to Reserves / Replacement Value	Level of infrastructure reinvestment
<b>Goal 2 – Accessible and Sufficient Sewerage &amp; Drainage Infrastructure</b>	
Percentage of Design AAF Capacity Utilized ☆	Proximity of plant flow to design capacity
<b>Goal 3 – Meet Service and Performance Requirements at Sustainable Cost</b>	
Field FTEs / 1,000 ML Treated ☆	Field staffing levels
Field FTEs / 1,000,000 kg TSS removed (for primary plants only) ☆	Field staffing levels
O&M Labour Cost / ML Treated	Cost effectiveness of inhouse and contract labour
O&M FTE's / 1,000 ML Treated ☆	O&M staffing levels
O&M FTE's / 1,000,000 kg TSS removed (for primary plants only) ☆	O&M staffing levels
Total Operating Cost with Actual Indirect Charge-back / ML Treated ☆	Operating cost effectiveness
Total Operating Cost with Activity-based Indirect Cost / ML Treated ☆	Operating cost effectiveness
Total Operating Cost with Actual Indirect Charge-back / kg of TSS Removed (for primary plants only) ☆	Operating cost effectiveness
O&M Cost / ML Treated ☆	O&M cost effectiveness
O&M Cost / kg of TSS Removed (for primary plants only) ☆	O&M cost effectiveness
(O&M Cost + Capital Reinvestment) / ML Treated ☆	O&M cost effectiveness
Biosolids Storage & Disposal Cost / Dry Tonnes Remaining after Processing ☆	Cost effectiveness of biosolids storage and disposal
Biosolids Management Cost / Dry Tonnes Delivered for Processing ☆	Cost effectiveness of biosolids management
Energy Consumed / ML Treated ☆	Energy consumption
Energy Consumed / kg of TSS Removed (for primary plants only) ☆	Energy consumption

WWTP Performance Measures		What do they measure?
Cost of Purchased Energy / ML Treated	☆	Energy cost (accounts for energy recovery)
Sick Days Taken per Field Employee	☆	Indicator of staff morale & absenteeism
Total Available Field Hours / Total Paid Field Hours	☆	Staff availability
Unplanned Maintenance Hours / Total Maintenance Hours	☆	Maintenance planning
<b>Goal 4 – Enhance Quality of Life</b>		
Number of Regulated Tests Out of Compliance	☆	Environmental compliance
Number of Reported Surcharges	☆	Environmental compliance
Number of Lab Tests / Number of Regulated Lab Tests		Effort above regulated tests
kg of BOD Discharged to Environment per Capita	☆	BOD loading on environment from plant
<b>Goal 5 – Safe Work Environment</b>		
Number of Field Staff Accidents with Lost Time / 1,000 Labour Hours	☆	Field accident frequency
Field Staff Hours Lost Due to Accidents / 1,000 Labour Hours	☆	Field accident and injury severity
<b>Goal 6 – Satisfied Customers</b>		
Number of Odour Complaints / 1000 People Served	☆	Customer satisfaction with odour (residential proximity)

