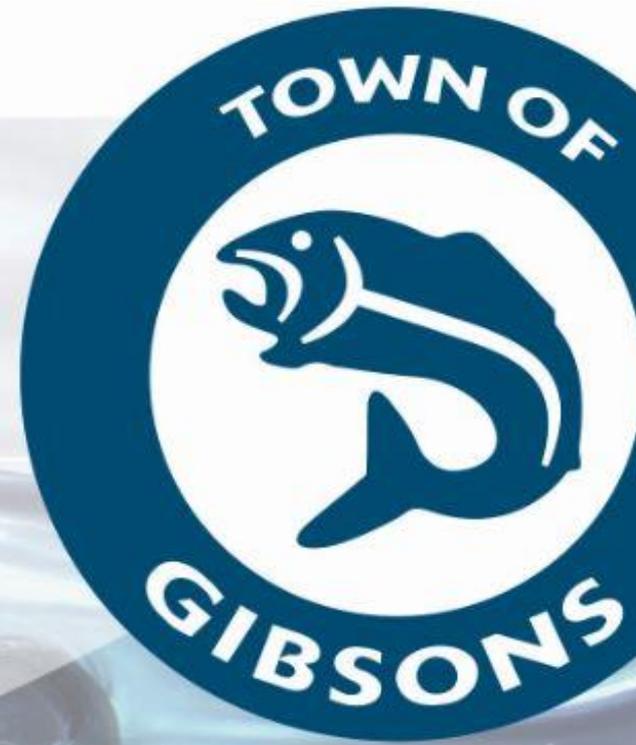
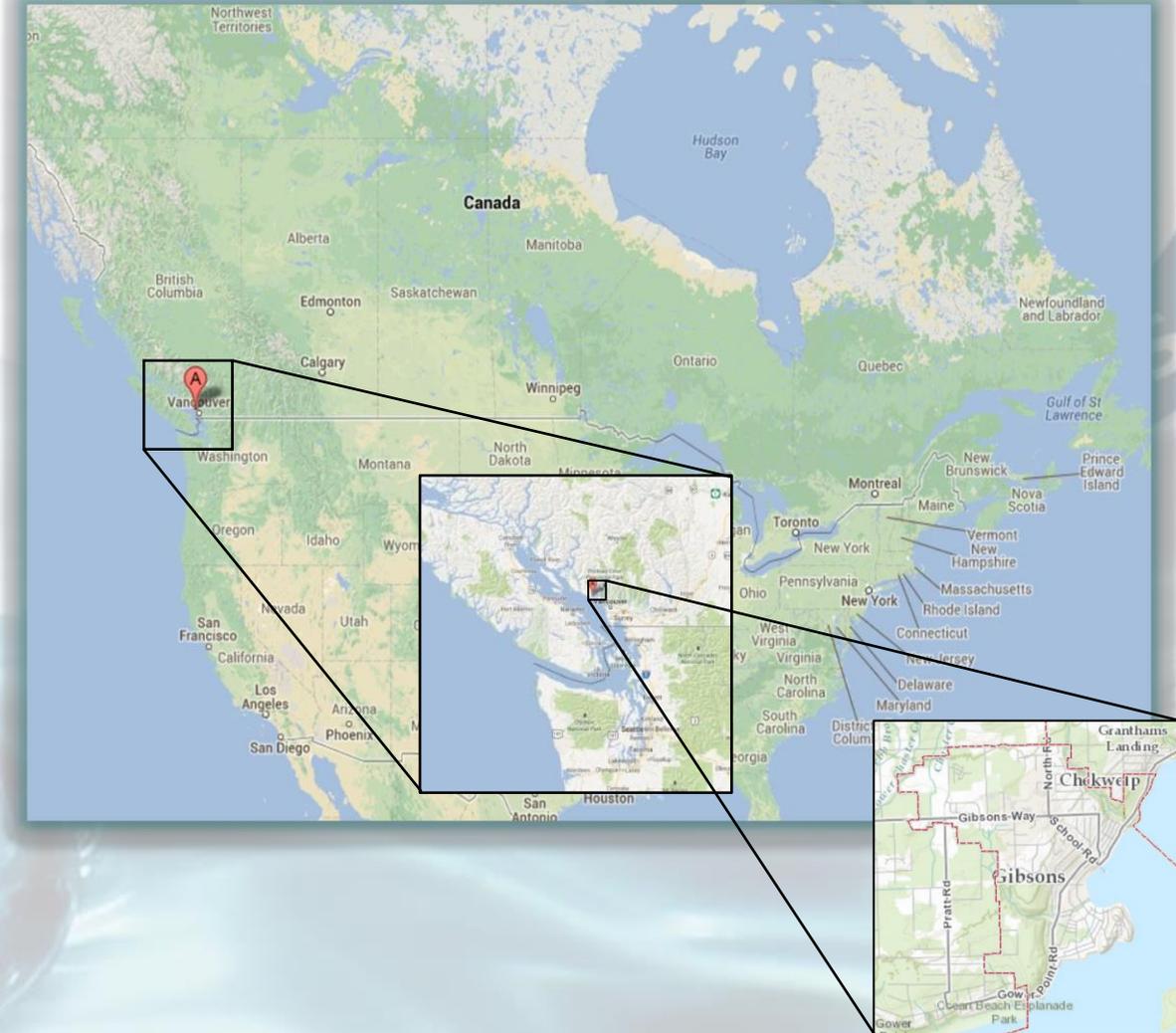


Natural Asset Management



Where is Gibsons?

- Coastal Community
 - Lower BC mainland
 - Accessible by ferry
- Population:
 - 4500 +/-
- Area:
 - 1.6 square miles



Presentation Overview

- Asset Management 101
- What are Natural Assets?
- Why are Natural Assets important to us?
- Case Studies:
 - Gibsons Aquifer
 - Whitetower Park
- Strategy and Policy
- Communication



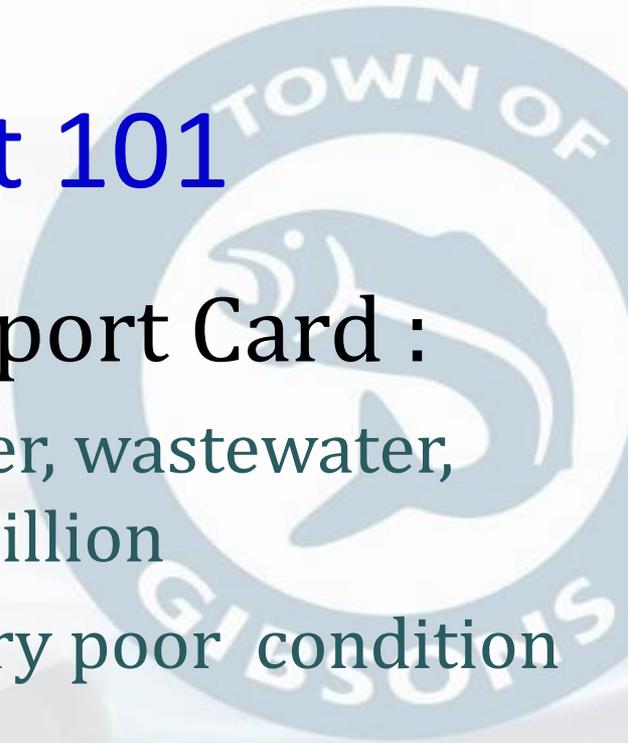
Setting the stage...

- This is Asset Management
- Early stages
 - More questions than answers
- A desire to raise awareness
 - Other municipalities/consultants
 - Council
 - Public
- Collaboration/partnerships
 - Lack adequate in-house staffing resources
 - Desire collaboration with other municipalities



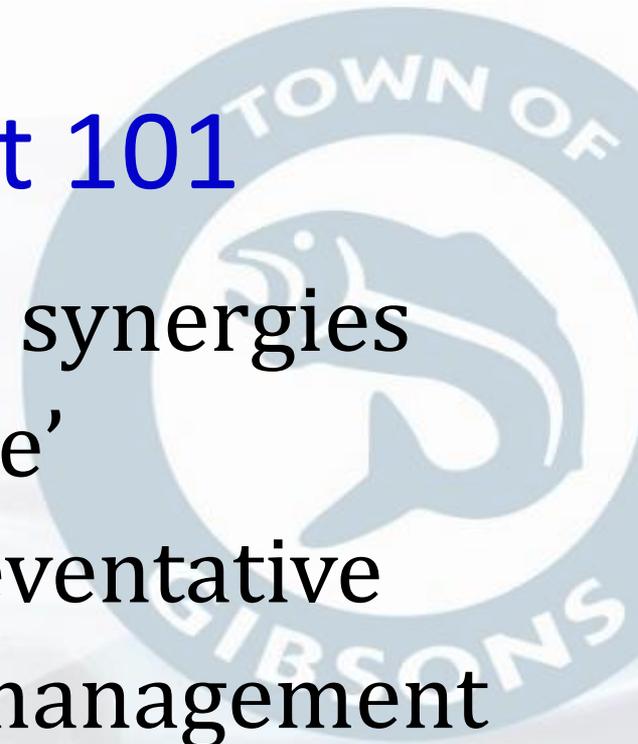
Asset Management 101

- **Canadian Infrastructure Report Card :**
 - Value of Canadian municipal water, wastewater, stormwater and roads = \$538.1 billion
 - \$171.8 billion (32%) in fair to very poor condition
- **Municipality funding crunch**
 - We collect \$0.08 of every tax dollar
 - We maintain 50% of Canada's core infrastructure
 - Existing model is not working



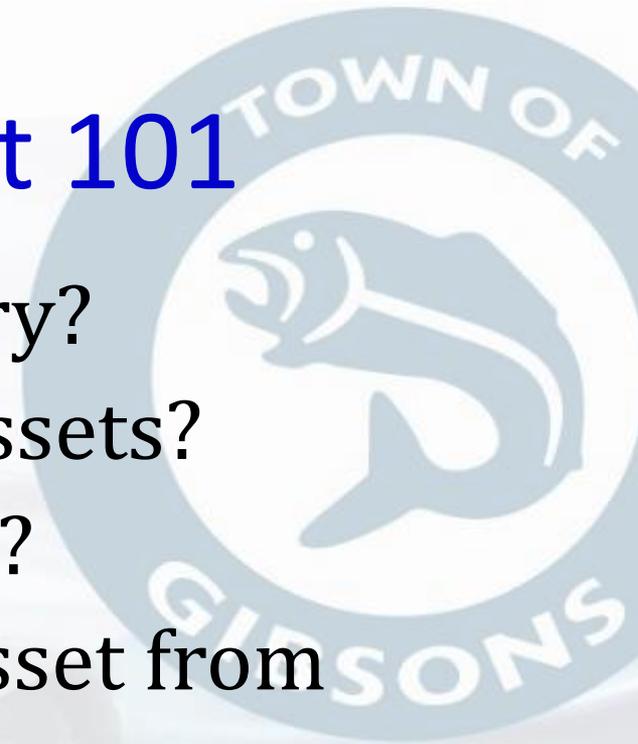
Asset Management 101

- Looking for efficiencies and synergies
- Thinking 'outside of the pipe'
- Moving from reactive to preventative
- Creating a culture of asset management
- Team approach
 - Finance
 - Engineering
 - Public Works
 - Parks and Recreation...



Asset Management 101

1. What is your asset inventory?
2. What is the value of your assets?
3. What is the asset condition?
4. What is the impact on an asset from increased demand?
5. What is your operation and maintenance plan?
6. What is your financial plan to operate, maintain and replace your assets over the full service life?



What are Natural Assets?

Features in the natural environment that provide equivalent civil (engineered) municipal services



Examples of Natural Assets

- Rivers and streams (*stormwater conveyance*)
- Swamps and wetlands (*stormwater treatment*)
- Aquifers (*drinking water storage and filtration*)
- Eelgrass (*foreshore erosion protection*)
- Trees (*stormwater management, slope erosion protection*)
- Soil (*stormwater management*)



Holistic Approach

- Natural Assets:
 - Creeks, soil, trees, wetlands...
- Engineered Assets:
 - Storm pipes, reservoirs, roads, buildings...
- Biomimicry: *emulating nature's genius*
 - Ditches, ponds



Natural Assets in a Local Government Context

- Only include assets in your inventory that perform a civil function and are the responsibility of the (local) government
- Stay focused, avoid scope creep



Why Natural Assets?

- Less funding required
 - Operations, maintenance and monitoring only
 - Implement stewardship and monitoring programs
 - No funding required for replacement
 - Must be properly managed
 - Do not depreciate
 - Must be properly managed
- Carbon neutral or even carbon positive



Why Natural Assets?

- **Common Ground**
 - Provides an opportunity for a meeting of the minds
 - Opportunities for synergy (environment/civil)
 - Applying established AM processes to a new concept
- **Draws attention and finances to ignored assets**
 - Budgets include O&M for all assets (engineered/biomimicry/natural)



Goals and Objectives

- Save costs
 - Manage Natural Assets
 - Provide services with potentially lower O&M costs
 - No budget required for replacement
- Manage Risk
 - Clear understanding of services provided
 - Flood prevention
 - Rainwater management
 - Provision of drinking water
 - Impacts of asset failure
 - Impacts of replacement or major rehabilitation



Goals and Objectives cont.

- Maintaining healthy ecosystems
 - Apply established AM strategies
- Managing the asset
 - Provide services for future growth without condition degradation



Case Study #1

Applying Asset Management Principles to the Gibsons Aquifer

- Confined aquifer
- Untreated supply
- Provides potable water to 75% of Gibsons residents
 - Balance of the Town supplied treated surface water from Sunshine Coast Regional District
- Ultimately projected to supply a population of 7,300 +/-

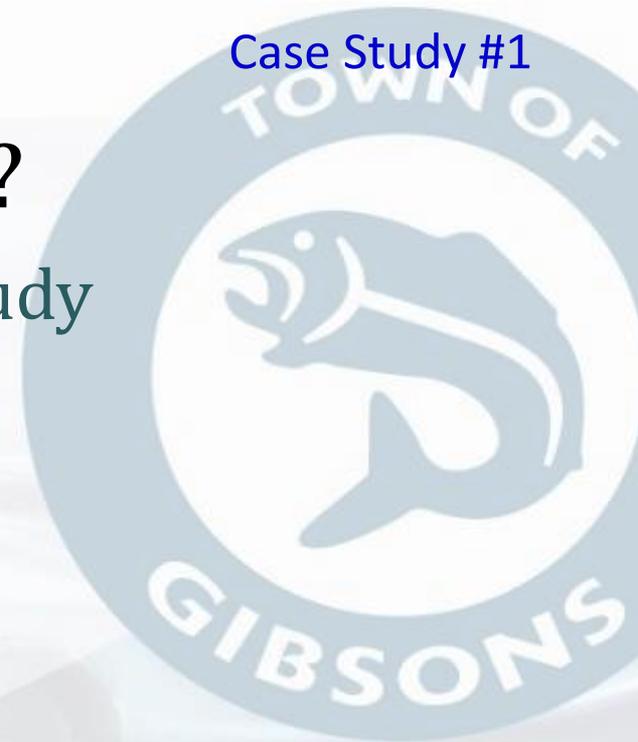


1. What assets do you “own”?

- 2009-2013 Aquifer Mapping Study
 - ✓ Mapped extents
 - Fringe area agreements required
 - ✓ Determined recharge area

2. What is the asset worth?

- What is the cost of establishing a new water source?
- What are the financial impacts of ‘running dry’?
- Where is the financial justification?

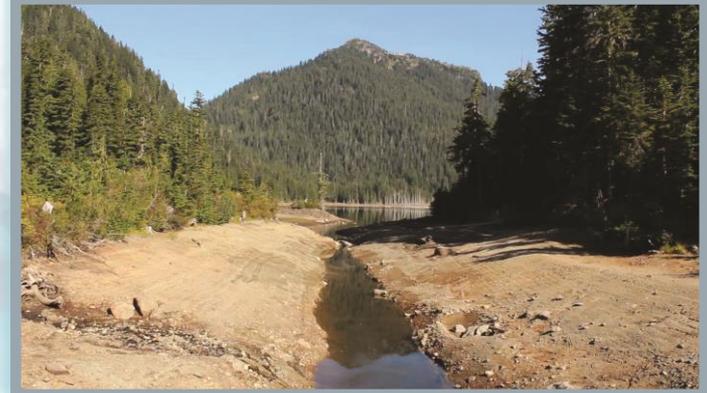
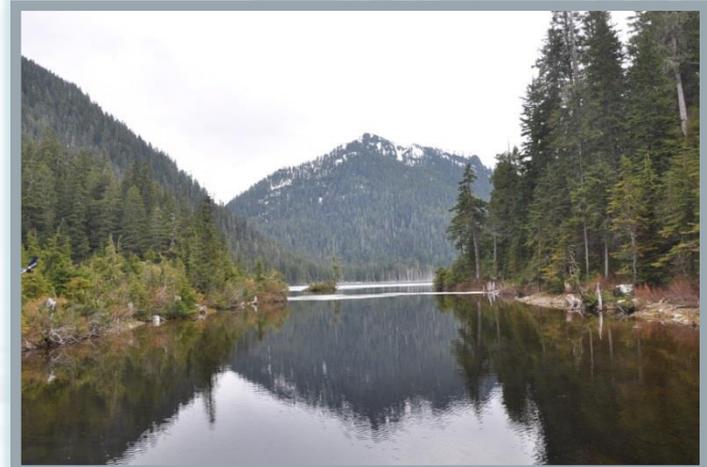


3. What is the asset condition?

- ✓ Study included analysis
- ✓ Annual groundwater sampling program

4. What is the impact of increased demand?

- ✓ Study determined adequate water for 75% of population (present and future)



Above - SCRD Water Source

Easier to see condition and impact from demand.

In comparison, Gibsons Aquifer is out of sight and could be out of mind

5. What is your operation and maintenance plan?

- ✓ Aquifer Protection Development Permit Area
- ✓ Water Regulation Bylaw
- ✓ Official Community Plan
- ✓ AM Policy, including Natural Assets
 - *Managing Town of Gibsons Engineered and Natural Assets by implementing appropriate Asset Management strategies and appropriate financial resources for those assets*



6. Establishment of a financial plan

- ✓ Identify stakeholders
 - Share information
 - Establish levels of service
- ✓ Includes ongoing monitoring in O&M budgets (not capital)
- ✓ Setting appropriate water rates

7. Ongoing assessment

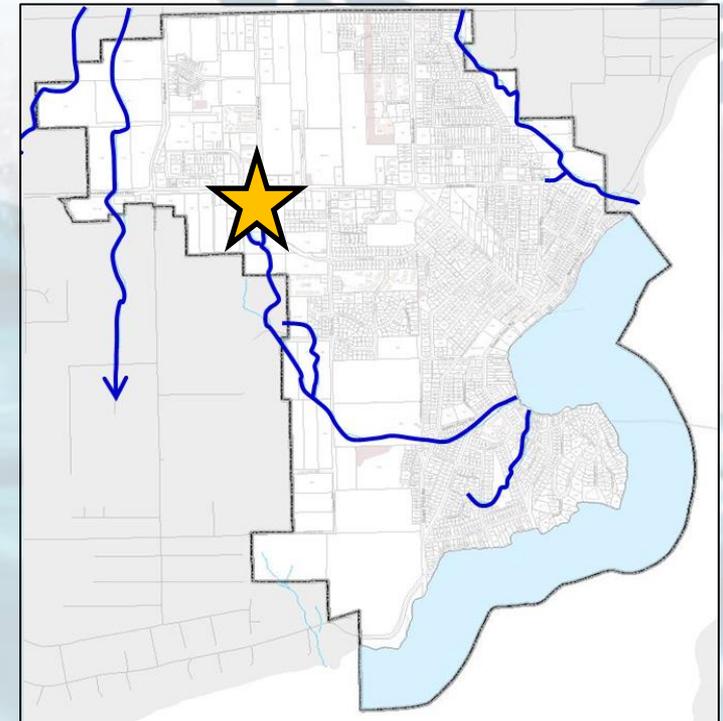
- ✓ Annual monitoring program
- ✓ Revising projections based on actual demand



Case Study #2

Whitetower Park Stormwater Management

- Headwaters of Charman Creek
- Natural & biomimicry
- Stormwater management
- Provides recreation opportunities
- Educational trail system

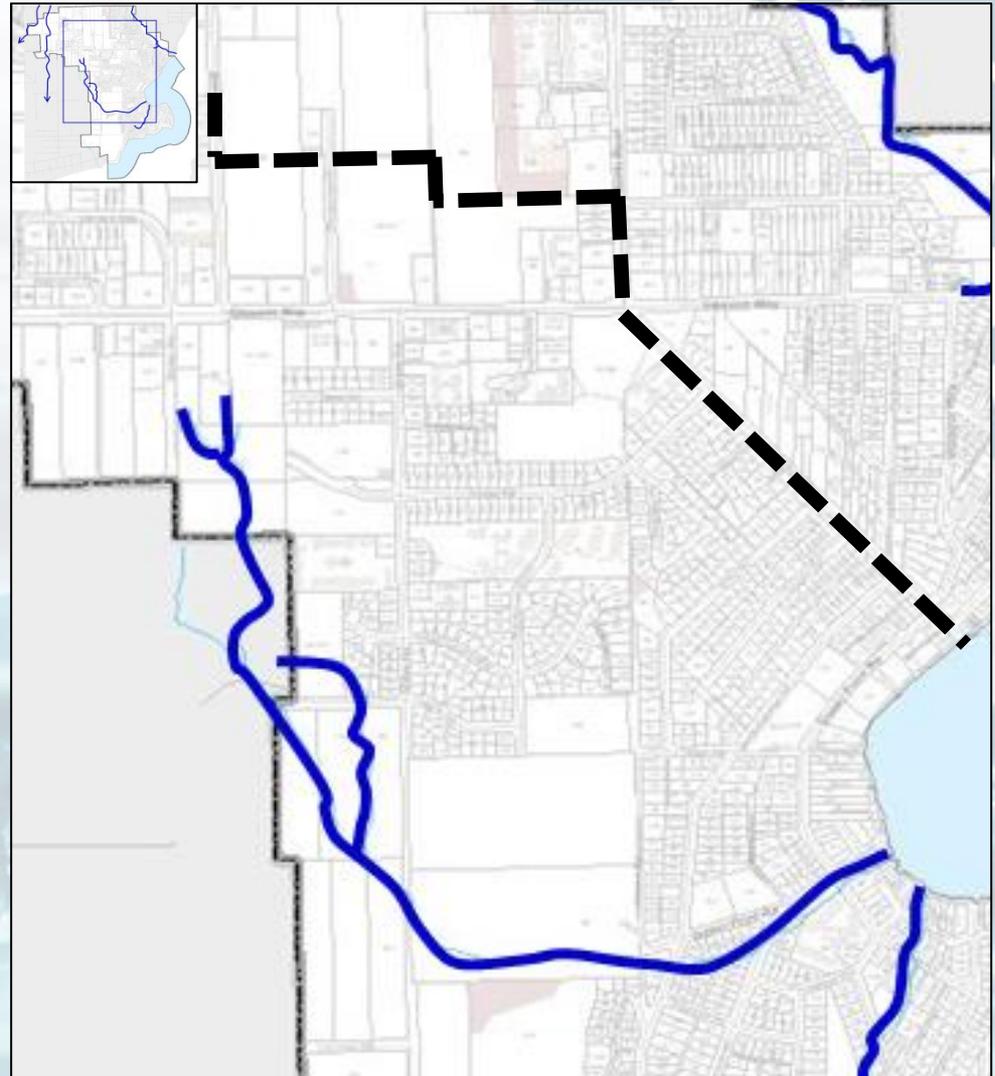


- Ponds allow settlement prior to discharge & release at a controlled rate
- Trees and soil retain rain water



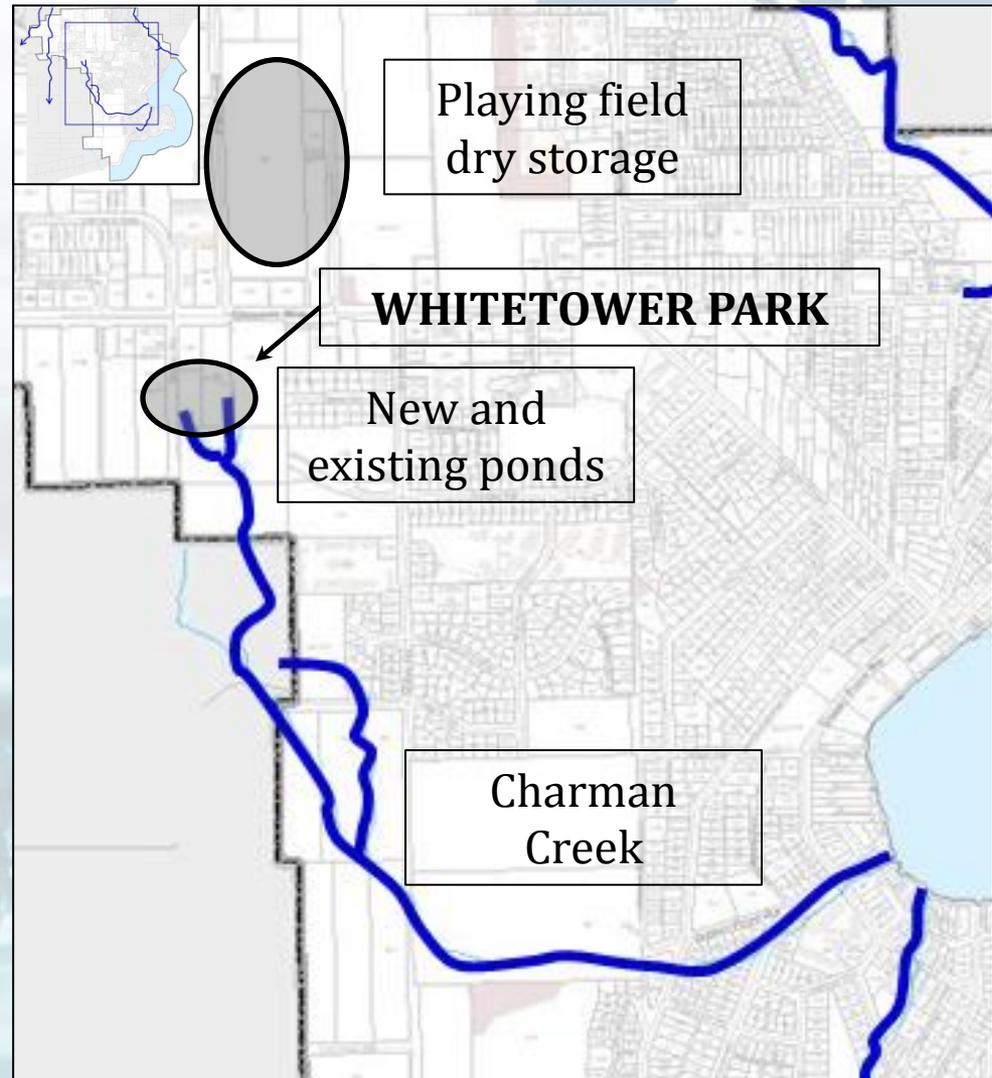
Option #1 – Engineered Solution

- 2km trunk
- Required for growth
- \$4 million +
- Majority of pipe must be in place for any development to occur

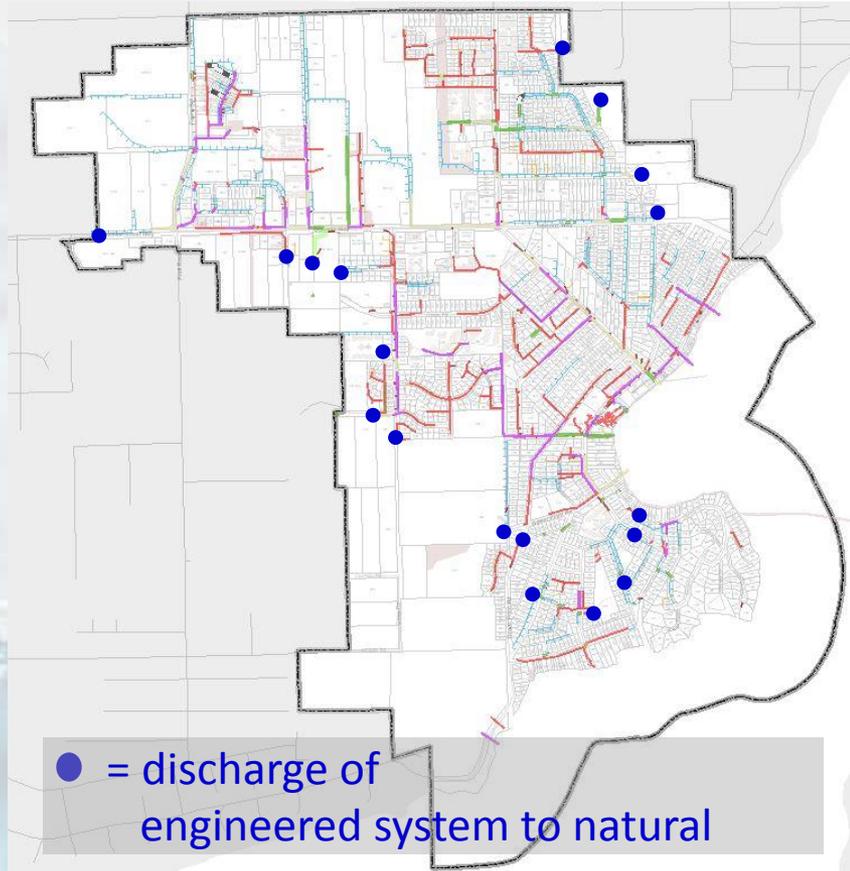


Option #2 – Natural and Biomimicry Solution

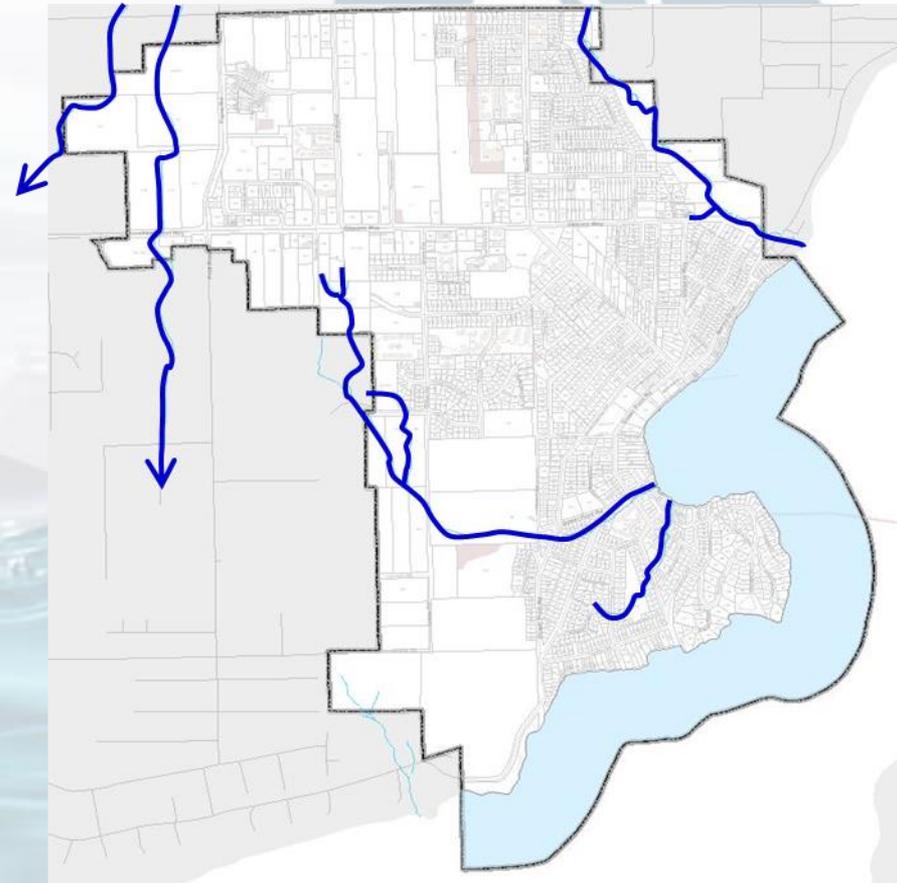
- 2km natural asset 'in place'
- Currently exploring costs
- Required for growth but may be constructed in stages as growth occurs



Storm System Engineered & Natural Assets



22km Engineered drainage
Including 4 km of 500mm or
greater diameter pipe

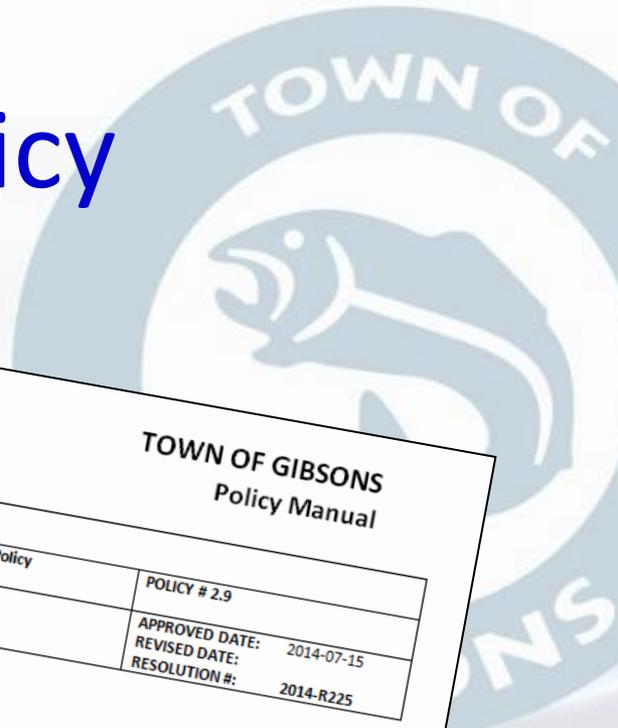


6 km Natural drainage
within Town boundaries

Cross Departmental Responsibility for O&M



Strategy and Policy



TOWN OF GIBSONS

TOWARDS AN ECO-ASSET STRATEGY IN THE TOWN OF GIBSONS

Nature plays an important role in a municipal infrastructure

TOWN OF GIBSONS
Policy Manual

SECTION:	FINANCE	
TITLE:	Asset Management Policy	
EFFECTIVE DATE:	2014-07-15	POLICY # 2.9
	APPROVED DATE: 2014-07-15	REVISED DATE:
		RESOLUTION #: 2014-R225

1 PURPOSE

To set guidelines for implementing consistent Asset Management processes within the Town of Gibsons. The following terms are used within this policy and are defined as follows:

Asset Management: an integrated, lifecycle approach to effective stewardship of infrastructure assets to maximize benefits, manage risk and provide satisfactory Levels of Service to the public in a Sustainable manner. The majority of the services that the Town provides are related to Asset Management.

Engineered Assets: assets that have been constructed and are owned by the Town (e.g., water mains, roads, streetlights, buildings), land that is owned by the Town and supports assets (e.g., land under roads or buildings), or land that is undeveloped and owned by the Town. These assets must be operated, maintained, managed, and, with the exception of land, ultimately replaced as they wear out.

Level of Service: the service level delivered to the public by the Town. This can take the form of the selection of services that are provided (e.g., bike lanes, doggie bags, or a new pool), the standard of infrastructure in place (e.g., concrete sidewalks versus gravel paths), or the standard to which an asset is maintained (e.g., the frequency of scheduled curb sweeping). The desire of Council or the public for a particular Level of Service will directly affect utility fees or taxation.

Natural Assets: naturally occurring land or subsurface features which perform or support service delivery to the Town (e.g., the Gibsons Aquifer, which filters and stores water, and the creeks, which convey and treat stormwater run-off). This category also includes artificial features that mimic naturally occurring features (e.g., ditches, ponds and wetlands). If these assets did not exist, Engineered Assets would be required to provide these services. Natural Assets must be operated and maintained but, if managed appropriately, require no replacement.

Risk: analysis of the 'likelihood' and the 'consequences' of a given event. Establishing the risk associated with lower infrastructure performance due to Levels of Service or postponement of asset replacement will identify system vulnerabilities and assist in

Communication

Town of Gibsons Asset Highlights: WATER SYSTEM (Natural Assets)

Funding required to operate, maintain and replace asset: \$44,000/vr
 Projected financial contributions: \$ _____/vr
 Shortfall: \$ _____/vr

Fast Facts

- It takes about 10 years for a drop of water falling on Mount Elphinstone and entering the aquifer to make its way to the Town wells.
- The aquifer is not an underground river or lake – it is gravel and sand that is saturated by water.
- About 75% of the Town's water is provided by the Gibsons Aquifer and 25% is supplied by SCRD from Chapman Creek
- Water consumption has dropped by approximately 43% since 2008

Litres per capita per day (Residential, Business and System Losses)



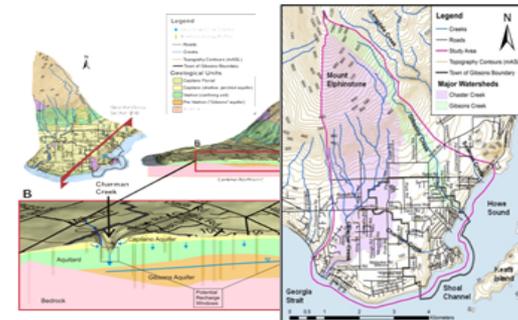
Community Goals

Pending

Levels of Service

Higher service levels (higher costs)

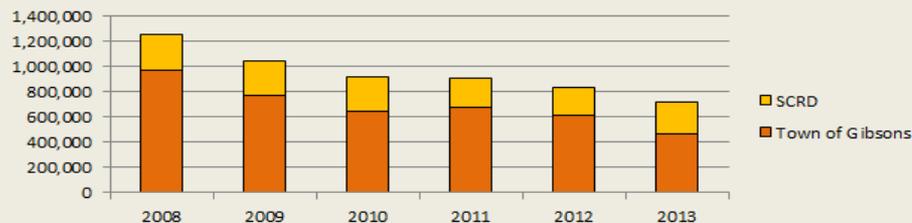
- Annual monitoring program allows early response to changing conditions.
- Communication keeps the public informed and aware of the value of water, the need to protect our resource and the reasons behind water conservation



Low service level (lower cost)

- Numerous recommendations were made in the Aquifer Mapping Study. Some of these recommendations could be abandoned or postponed. Examples of these recommendations are: Community Engagement, Well Maintenance Program, installation of additional monitoring wells, surface water monitoring, etc.

Water volume pumped (cubic metres)



Conclusions

- Lots left to do...
- To start:
 - Identify your Natural Assets
 - Establish policy/strategy
 - Apply Asset Management principles to Natural Assets
 - Educate stakeholders
 - Share successes and challenges

“The best time to plant a tree was 20 years ago; the second best time is now”

Chinese Proverb



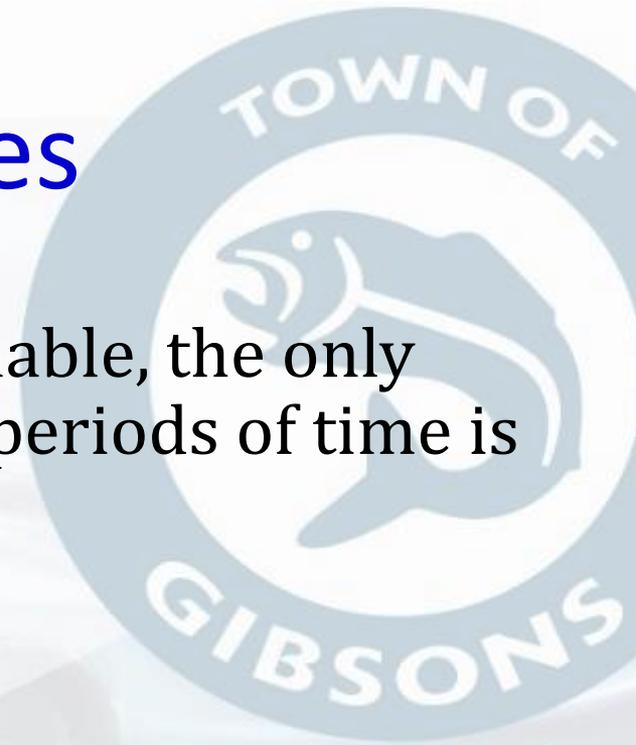
Quotable Quotes

“When we look at what is truly sustainable, the only real model that has worked over long periods of time is the natural world.”

-Janine Benyus

“You could look at nature as being like a catalog of products, and all of those have benefited from a 3.8 billion year research and development period. And given that level of investment, it makes sense to use it.”

-Michael Pawlyn



Thank you Questions?

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www.facebook.com/TownofGibsons



Towards and Eco-Asset Strategy in the Town of Gibsons

<http://www.gibsons.ca/eco-assets>

References:

https://csce.ca/custom-content/uploads/2012/06/Infrastructure_Report_Card_ENG_Final1.pdf?ef655a

https://www.fcm.ca/Documents/reports/Building_Prosperty_from_the_Ground_Up_Restoring_Municipal_Fiscal_Balance_EN.pdf