Alberta Water Reuse and Stormwater Use Policy

Status Update for Water North Coalition

May 11 2017

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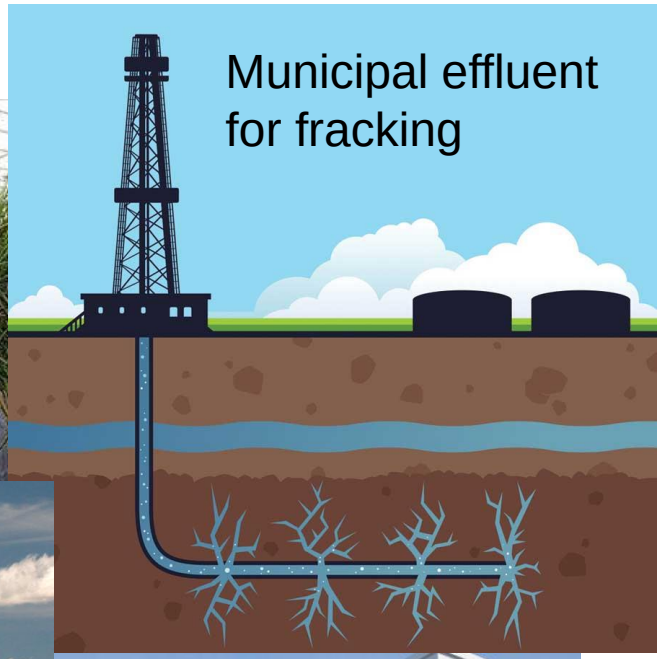
Outline

- Policy drivers
- Policy outcomes
- Policy shifts
- Risk guidebook

Examples of Reuse and Stormwater Use

Greywater for gardening

Municipal effluent for fracking

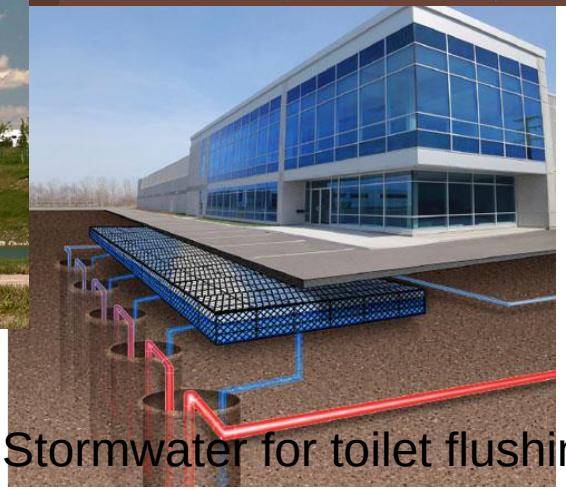


Effluent for irrigation

Stormwater for industrial

Car wash water reuse

Stormwater for toilet flushing



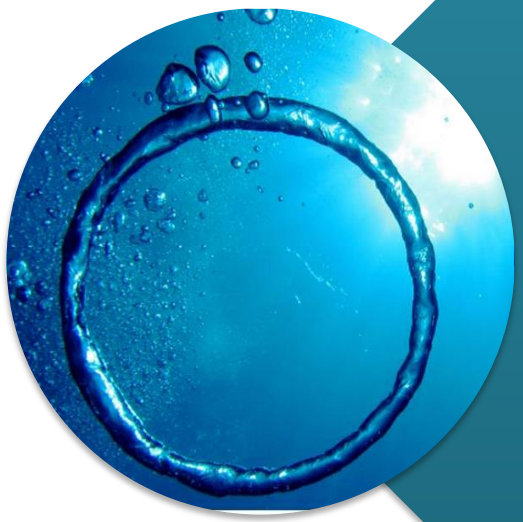
Policy Drivers in Alberta

GOA
Water Conversation outcome (2013)
Focus of policy work for last decade
Many interim policies
Enable economic opportunities
Update policy to reflect new water ethic
More than one regulator
Lack of health guidelines
Lack of consistent process
Regulatory barriers

South Saskatchewan Region
Want access to stormwater (residential; commercial; industrial)
Closed basin to new licences
Municipal discharge restrictions

Upstream Oil and Gas Industry
Water and wastewater sharing
Multi-user approaches
Reuse of frack flow back fluid

Policy Outcomes



- offset river and other natural water body withdrawals
- improve water quality by reducing pollutant loadings to systems
- increase resiliency of the water supply
- maximize the benefit of water taken out of the environment
- mitigate the impacts of drought
- contribute to Water for Life goals
  - Safe secure drinking water
  - Healthy aquatic ecosystems
  - Reliable, quality water supplies for a sustainable economy

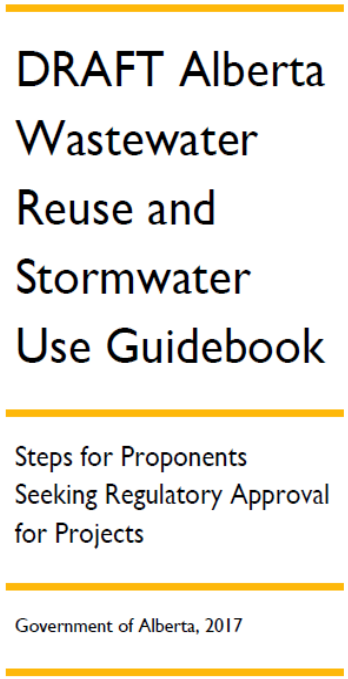
Proposed Policy Shifts

Old (barriers; gaps)	New
Alternative water streams viewed as nuisance (effluent, stormwater)	Alternative water streams viewed as potentially valuable resources
Reuse and stormwater use not clearly enabled	Reuse and stormwater use enabled as a water management option
Potable water for all uses	“Fit for use” approach
Unclear right to use wastewater streams	Clear right to use wastewater streams
Unclear approach to decision making and authorizations	Clear and consistent approach to decision making using a risk management approach

Risk Assessment Guidebook

**** This guidebook is in a draft stage and has not been yet formally vetted; it is subject to change***

Guidebook Purpose



- Defines terminology
- Outline roles and responsibilities of proponent and regulators
- Step by step instructions for recommended risk management approach to accompany regulatory applications (Water Act; EPEA; Safety Codes Act)
- Incorporates Alberta Health and Municipal Affairs guidelines
- Streamlines low risk projects
- Designed to provide regulators with adequate information on which to make an informed decision

Steps

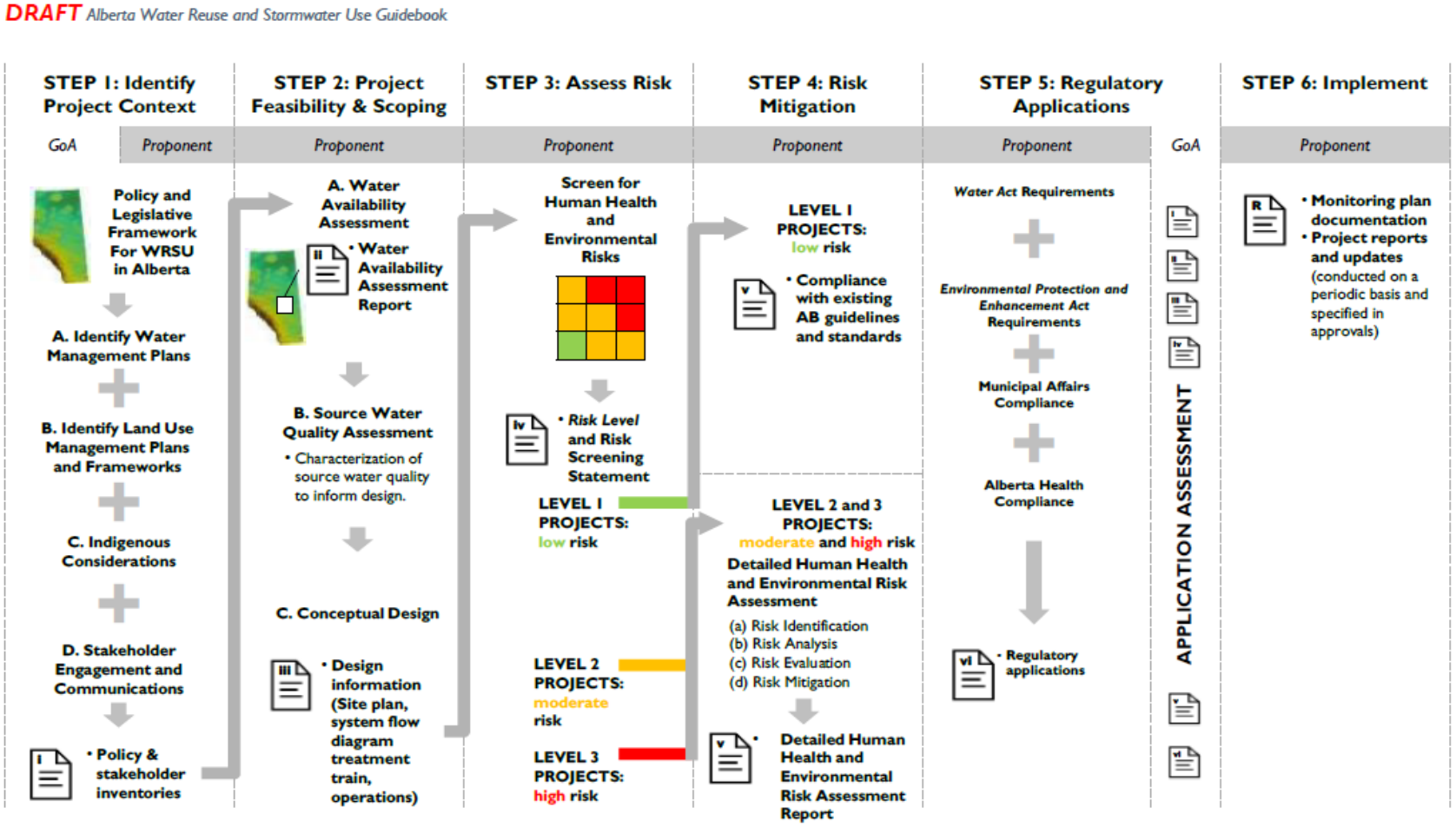
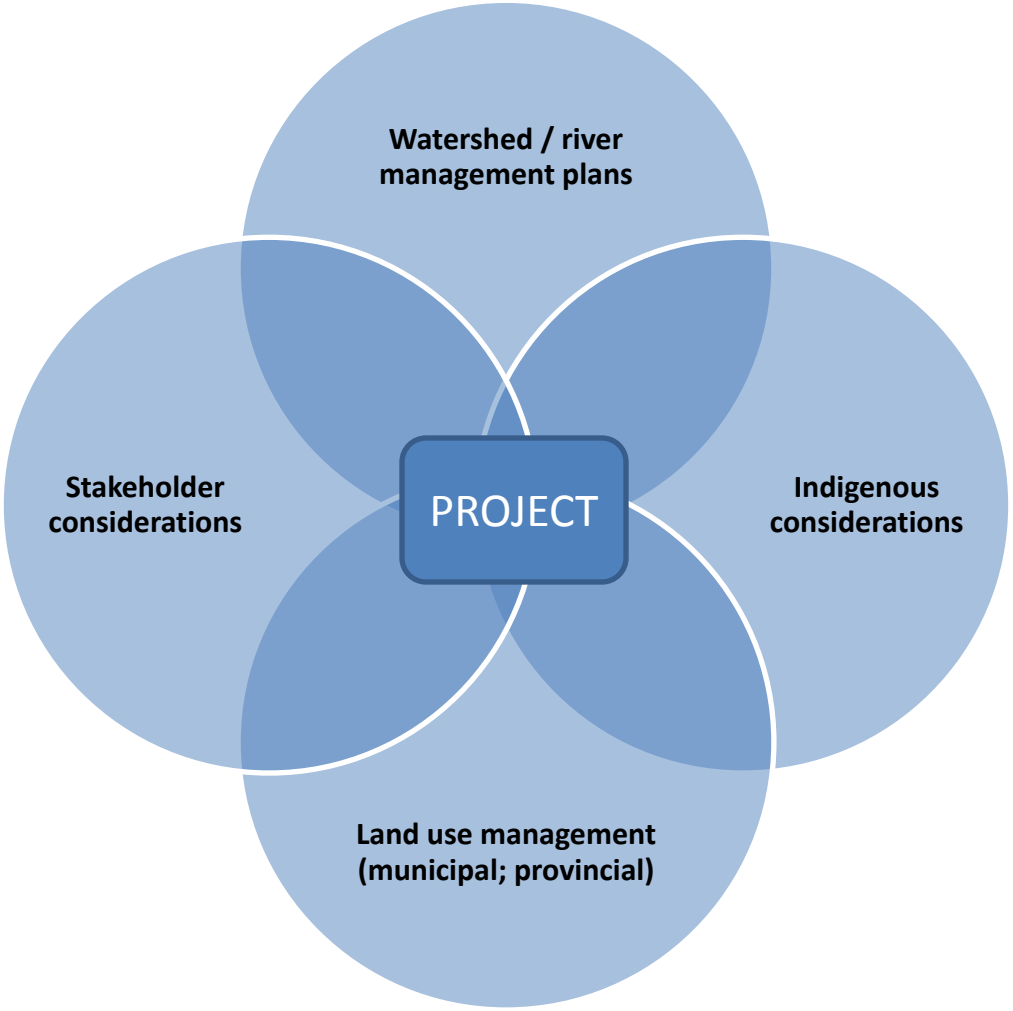


Figure 3: Six-Step process for WRSU project regulatory applications

Step 1: Identify Project Context

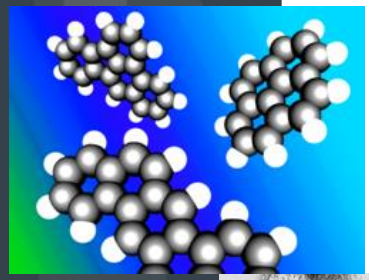


Step 2a: Water Availability Assessment

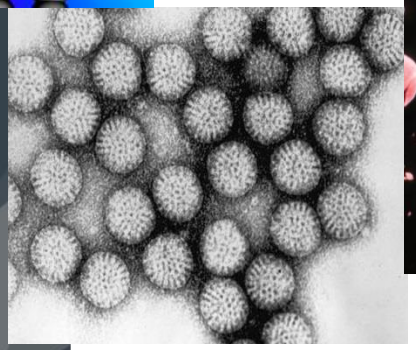
- **Will the removal of this water from the hydrologic cycle have impacts to downstream users or the environment?**
- **More important in southern Alberta where there are water scarcity issues**
- **Stormwater and wastewater are different analyses**
- **Not required for:**
  - Small scale rooftop rainwater collection
  - Household greywater

Step 2b: Source Water Quality Assessment / Treatment Design

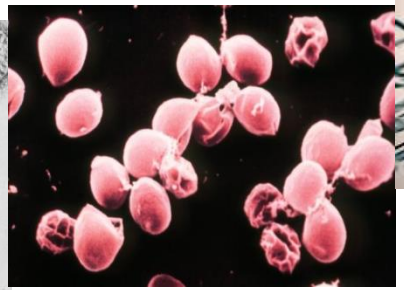
- ***Assessment of source water quality risks***
  - *Chemical, physical and biological parameters*
- ***Compare to end use needs***
- ***Design treatment***



PAHs



rotavirus



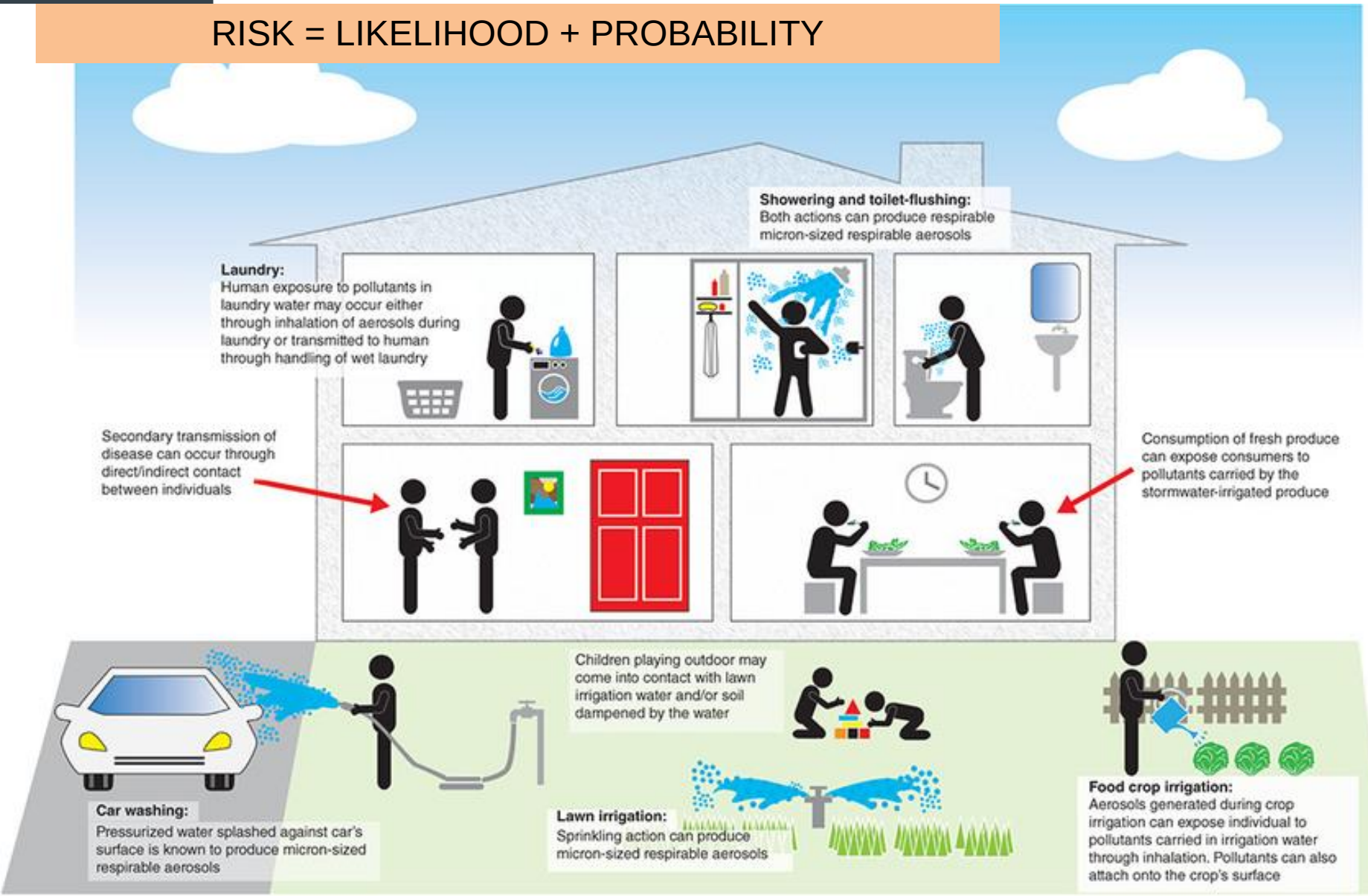
cryptosporidium

Heavy metals

pesticides

Step 3: Assess Risk

RISK = LIKELIHOOD + PROBABILITY



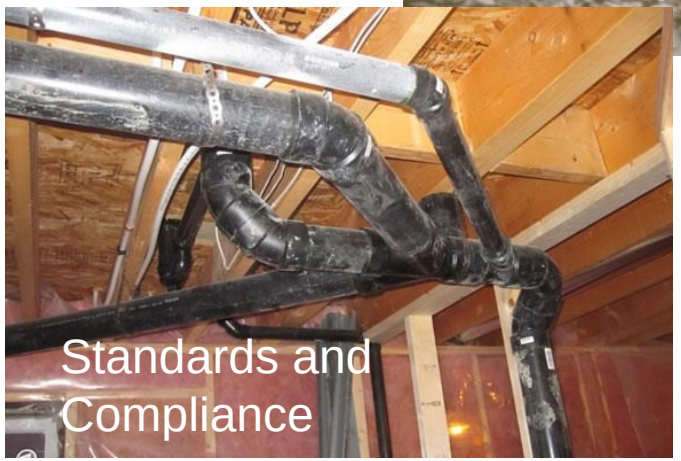
Step 4: Mitigate Risk

Signage

Night irrigation

Monitoring and reporting

Occupational health and safety



Standards and Compliance

Step 5: Regulatory Application

Criteria	Required Regulatory Approvals
Project is stormwater use for oil, gas or coal projects.	*Water Act* approval required from Alberta Energy Regulator. *EPEA* authorization required from Alberta Energy Regulator.
Project is stormwater use for applications other than oil, gas or coal projects.	*Water Act* approval required from Alberta Environment and Parks. *EPEA* authorization required from Alberta Environment and Parks.
Project involves food preparation and/or processing (not agricultural production).	Project requires approval from Canadian Food Inspection Agency.
Project involves plumbing structures within private buildings.	*Safety Codes Act* approvals from Municipal Affairs.

All could require AHS review (depending on end use)

Step 6: Monitoring and Reporting

- ***Within AEP, monitoring and reporting requirements are incorporated in regulatory approvals***

Table 1: Best practices in WRSU system monitoring and reporting (from Sharvelle et al. 2017)

Monitoring and Reporting System Element	Description
Validation of system performance	Validate unit processes prior to installation. Validation includes an evaluation study conducted using challenge testing with target or surrogate pathogens over a defined range of operating conditions.
Continuous monitoring	Use continuous monitoring systems to monitor water quality in real time.
Control and automation alarms	Operate systems (including shut down and start up) based on a specific set of monitoring conditions. Create automated alarms for appropriate parties using critical malfunction conditions. Characterize these alarms by the degree of response required.
Field verification	Manually collect water samples for microbial analysis to check system performance in achieving log10 reduction targets (LRTs). The need and scope of field verification depends on the characteristics of the WRSU system, including complexity and risk.
Continuous process verification	Provide ongoing confirmation of system performance using sensors to observe selected parameters on a continuous basis, including surrogate parameters correlated with pathogen LRT requirements.
Data reporting	Log and preserve data for a prescribed period and share this data with identified parties. Telemetry systems are used commonly for real-time web-based data monitoring. Provide periodic summary reports to the regulator, preferably in electronic format, and include performance verification by a qualified professional.

Thanks!!!

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