ECOLIBRA

Passion and vision

Water, our greatest treasure

ECOLIBRA
Passion and vision

- *To support environment.*
- *To introduce human friendly, simple, effective technology .*
- *To make water available widely for people.*
- *To educate , how to use water wisely.*

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Passion and vision

Our company has developed CWWT, technology that is:

- *Friendly to people and the environment,*
- *Simple in operation*
- *Very economical.*
- *Ideal for use in remote areas.*
- *Very compact*
- *Flexible for fluctuating inflow*

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The CWWT consists of:

- *Mechanical operations,*
- *Chemical reactions*
- *Uses safe, non-toxic, soil-friendly chemicals.*
- *Raw WW is transformed into valuable recovered resources.*
- *Odor-free, clear, clean, bacteria-free water and nutrient/fertilizer.*

Fundamentals of Wastewater Treatment

Fundamentals of Wastewater Treatment

What is Wastewater Treatment?

- *Cleaning-up a polluted water*

How does water become polluted anyway?

- *Through human activities*
  - *domestic*
  - *commercial*
  - *industrial*
  - *agricultural*

Fundamentals of Wastewater Treatment

- *Introduction to Wastewater Treatment*
- *Types of WW treatment.*
- *Sludge Handling, Treatment, and Disposal*

Fundamentals of Wastewater Treatment

Overview of Treatment Methods

1. *Mechanical- settling, floating, straining, adsorbing, filtering*
   - *Example - Lagoon*
2. *Biological -degradation of contaminants by microorganisms*
   - *Example -Conventional mechanical-biological technology*
3. *Combination of above methods*
   - *Example -MBR*
4. *Chemical*
   - *Example -CWWT*

Fundamentals of Wastewater Treatment

Main Objectives of Wastewater Treatment.

- *Clean the water so it will not have an adverse impact on users:*
  - *Human*
  - *Fish*
  - *Animals*
  - *Plants*

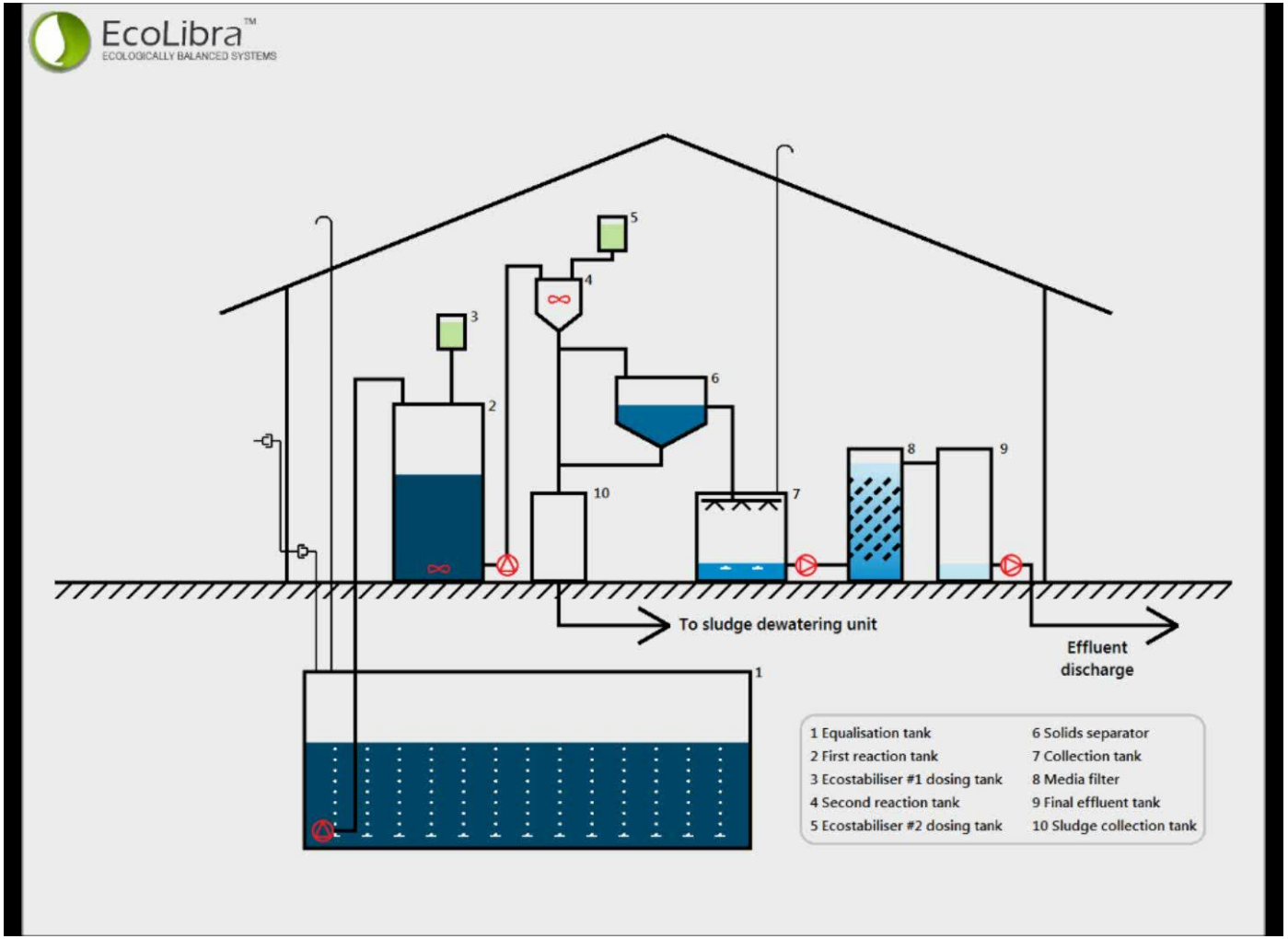
Fundamentals of Wastewater Treatment

Why is Wastewater Treatment Important?

- *Drinking water - health, taste*
- *Process water - product, industrial*
- *Irrigation water - crops (agriculture)*
- *Recreation - fishing, swimming, boating*

Introduction to Chemical Waste Water Treatment

Block diagram for CWWT technology



Main features of CWWT technology

- *Simple in operating*
- *Compact = much smaller footprint*
- *Efficient technologically and economically*
- *Reliable in various weather conditions*
- *Cheap*
- *Short construction time*
- *Mobile version available.*
- *No harmful chemicals*
- *Discharging valuable products for reuse*

ETV Certificate

Environmental Technology Verification Program

.....enhancing the credibility of environmental technologies

EcoLibra Systems Inc.

When installed and operated in accordance with the manufacturer's standard operating conditions and specifications, the EcoLibra R2S-MS treated influent wastewater with average characteristics no higher than:

Temperature 0.4-26.2°C, pH 7-9, BOD_5 153 ± 48 mg/L, TSS 195 ± 128 mg/L, TN 44 ± 7 mg/L, TP 7 ± 2 mg/L, Total Coliform $63x10^6 \pm 40x10^6$ MPN/100ml, $CBOD_5$ 124 ± 50 mg/L, TDS 1815 ± 725 mg/L, NH_3-N 33 ± 7 mg/L, TKN 44 ± 7 mg/L, NO_3-NO_2 N 0.4 ± 0.6 mg/L, SP 4 ± 1 mg/L, E. Coli $3.8x10^6 \pm 1.8x10^6$ MPN/100ml, Fecal Coliform $1.9x10^6 \pm 1.0x10^6$ ct/100ml, and COD 641 ± 230 mg/L.

To produce:

1. Treated water with the following characteristics:
Temperature 5.8-22°C, pH 7-9, BOD_5 < 3.5 mg/L, TSS < 7.7 mg/L, TN < 8.9 mg/L, TP < 1 mg/L, Total Coliform < 292 MPN/100ml, $CBOD_5$ < 3.3 mg/L, TDS < 1200 mg/L, NH_3-N < 5.6 mg/L, TKN < 8.5 mg/L, NO_3-NO_2 N < 0.48 mg/L, SP < 1.05 mg/L, E. Coli < 1.7 MPN/100ml, Fecal Coliform < 1.7 ct/100ml, and COD < 11.5mg/L with 95% confidence (excluding temperature and pH);

2. Sludge with the following characteristics:
TKN < 4750 µg/g, C < 13.7%, Hg < 0.19 µg/g, As < 0.96 µg/g, Cd < 0.5 µg/g, Ca < 268000 µg/g, Cr < 7.15 µg/g, Co < 0.87 µg/g, Cu < 49.5 µg/g, Pb < 1.82 µg/g, Mo < 1.05 µg/g, Ni < 7.1 µg/g, P < 4650 µg/g, Se < 0.69 µg/g, Na < 6500 µg/g, and Zn < 105 µg/g with 95% confidence (excluding temperature and pH); and

3. Leachate with the following characteristics:
Hg < 0.072 µg/L, Al < 0.005 mg/L, Ba < 0.15 mg/L, Be < 0.001 mg/L, B < 0.125 mg/L, Cd < 0.001 mg/L, Cr < 0.0045 mg/L, Co < 0.0031 mg/L, Cu < 0.235 mg/L, Fe < 0.001 mg/L, Pb < 0.002 mg/L, Mn < 0.001 mg/L, Mo < 0.007 mg/L, Ni < 0.022 mg/L, Si (soluble) < 0.11 mg/L, Ag < 0.001 mg/L, Sr < 0.82 mg/L, Ti < 0.001 mg/L, V < 0.002 mg/L, Zn < 0.005 mg/L, and Zr < 0.002 mg/L with 95% confidence (excluding temperature and pH).

The EcoLibra R2S-MS achieved the treated water and sludge qualities specified at high, mid level, and low temperature conditions (0.4 – 26.2°C). The EcoLibra R2S-MS treatment processes do not employ chlorine or chlorine compounds in its operation.

Verified* Performance June 2009

License Number: ETV 2009 - 4
Issued to: EcoLibra Systems Inc.
Expiration Date: June 2012

Kevin Jones
President and CEO

Canada

* Refer to Technology Fact Sheet for additional information on the verification of this performance claim.

Advantages over main competitors

- *Simplicity*
- *Easy to start - Easy to stop.*
- *Flexibility in inflow*
- *Temperature resistance*
- *Small footprint*

R2S technology

- *Main driving forces to apply CWWT technology.*
  - *Simplicity*
  - *Cost*
  - *Flexibility against temperature and fluctuating inflow*
  - *Resistant to big season's differences*
- *Main groups of potential users.*
  - *Municipalities*
  - *Exploring camps*
  - *Developers*
  - *Military*
  - *Remote civil objects (e.g. camps, prisons, hotels)*

PILOT – CWWT UP TO 10m3/d

Hoodoo WWTP 150m3/d

EXAMPLE of BUILD UNITS


TK1500

MBR

SPECIAL PRODUCT FOR SPECIAL TASKS

MBR

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MBR

SPECIAL PRODUCT FOR SPECIAL TASKS