

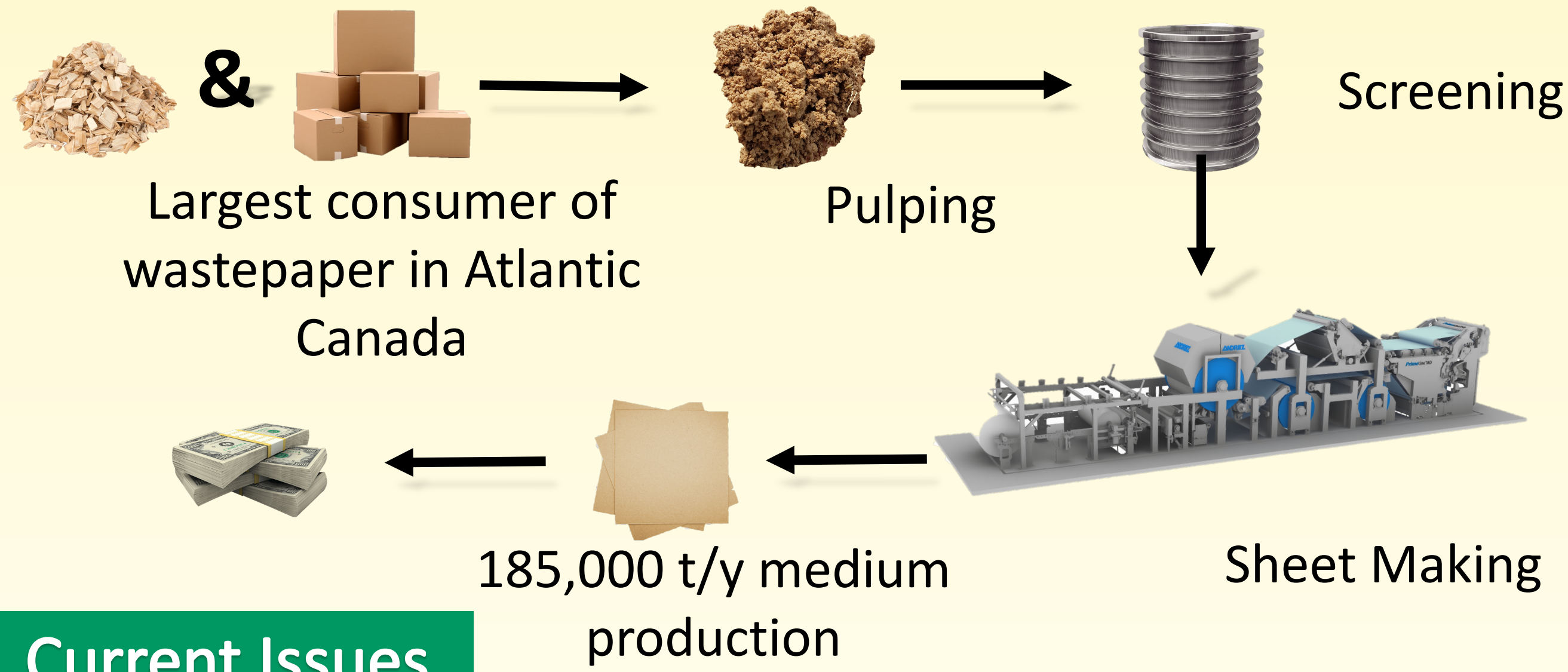
Improved Fibre Recovery At Lake Utopia Paper



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1 Abstract and Introduction

Lake Utopia Paper's Process



Current Issues

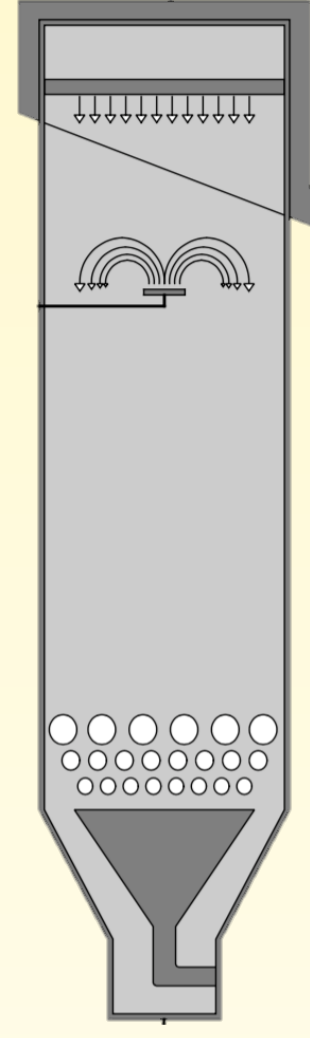
Primary Sludge is currently recycled back into the process to recover valuable fibre. However, this sludge contains **grit**, **hydrocarbons**, and **plastics** which cause wear on the equipment and decreases plant reliability.

Objectives

- Remove grit and plastics from the process to reduce paper machine downtime.
- Remove hydrocarbons from the wastewater to prevent downstream treatment issues.
- Recover valuable fibre.
- Minimize capital investment.

3 Equipment & Costing

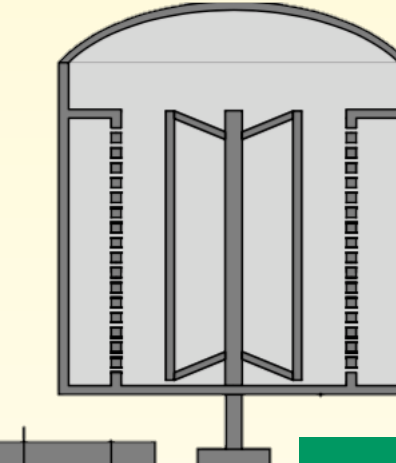
Column Flotation



= \$ 0.89 M

Uses a counter-current flow of water and air bubbles to remove hydrocarbons and plastics from the OCC and paper machine sewers.

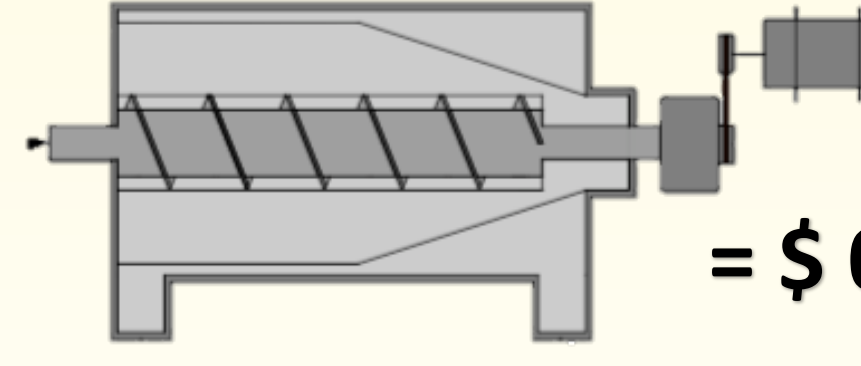
Pressure Screen



= \$ 0.35 M

Contains a perforated basket to capture long, valuable fibre from white water while short fibre passes through.

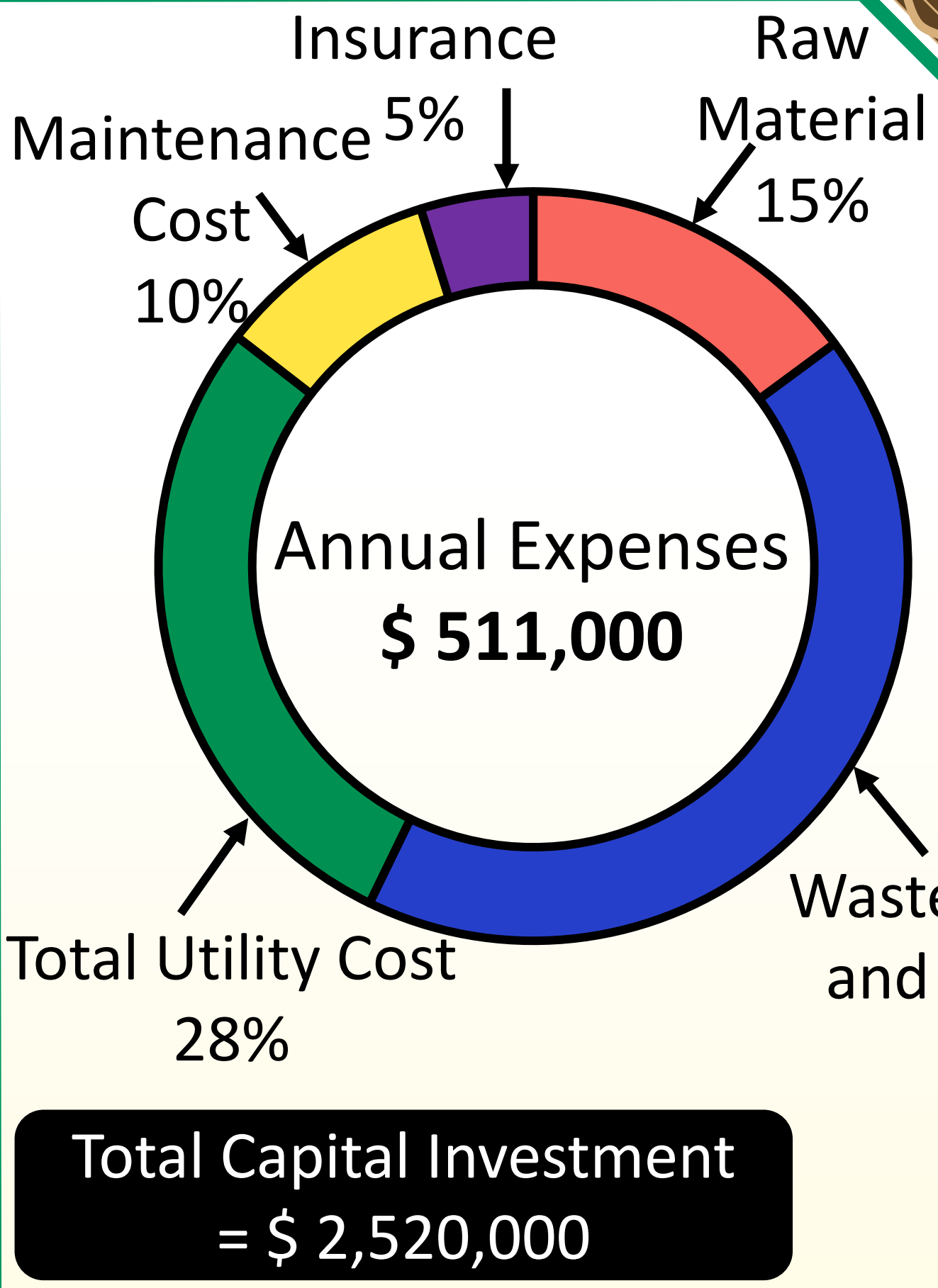
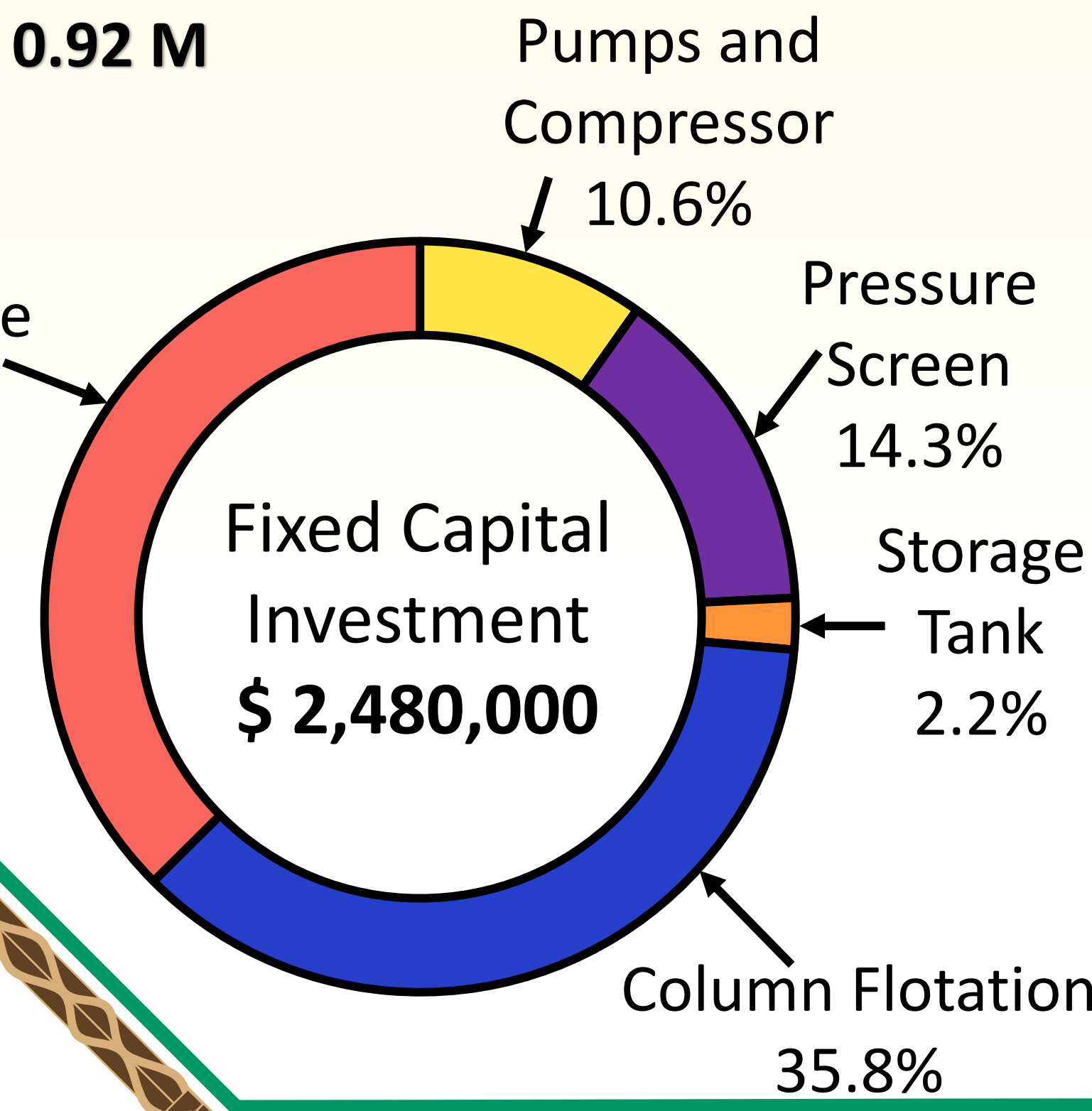
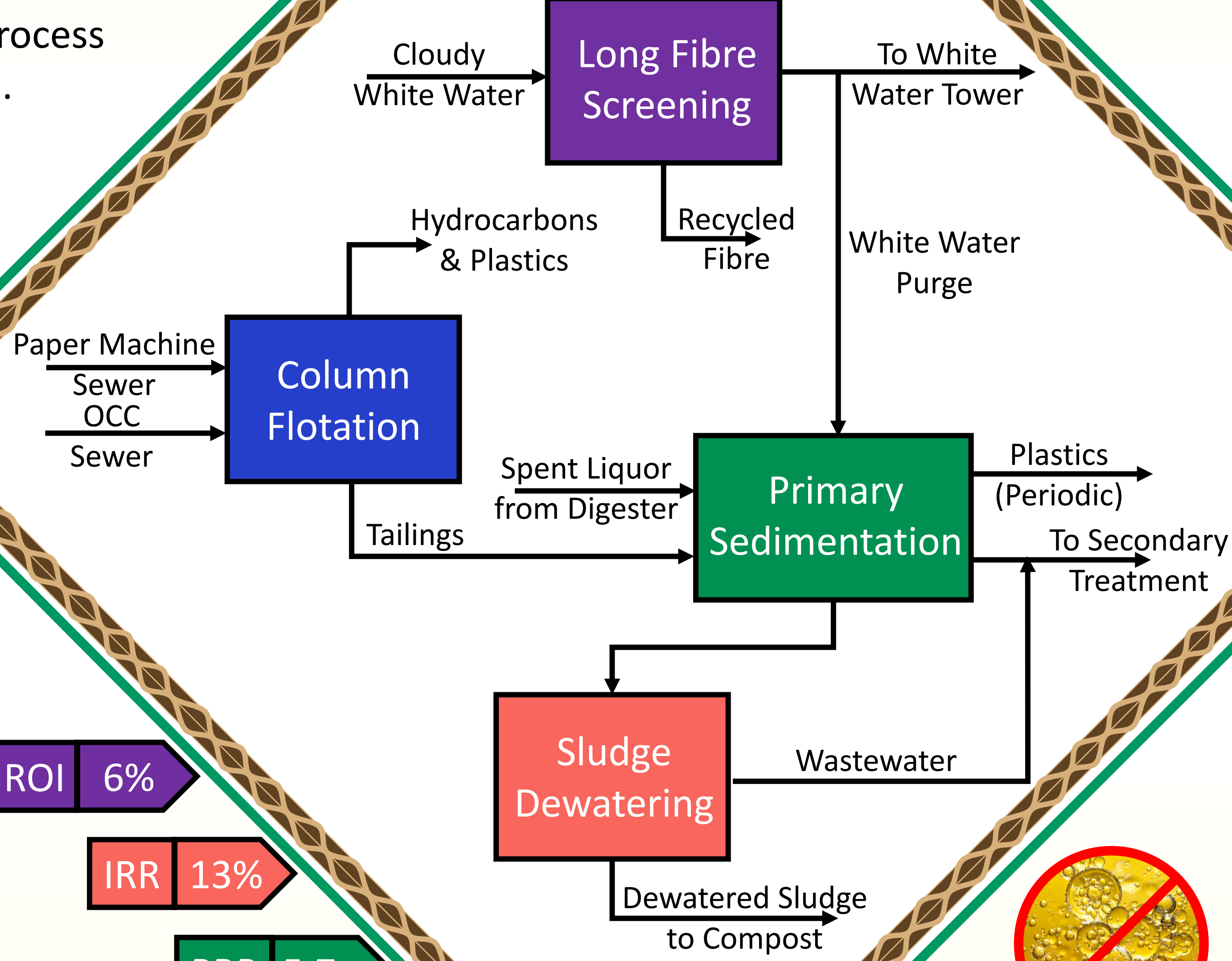
Centrifuge



= \$ 0.92 M

Uses fast rotation of a cylindrical bowl to separate the sludge solids from the liquid.

2 Proposed Process



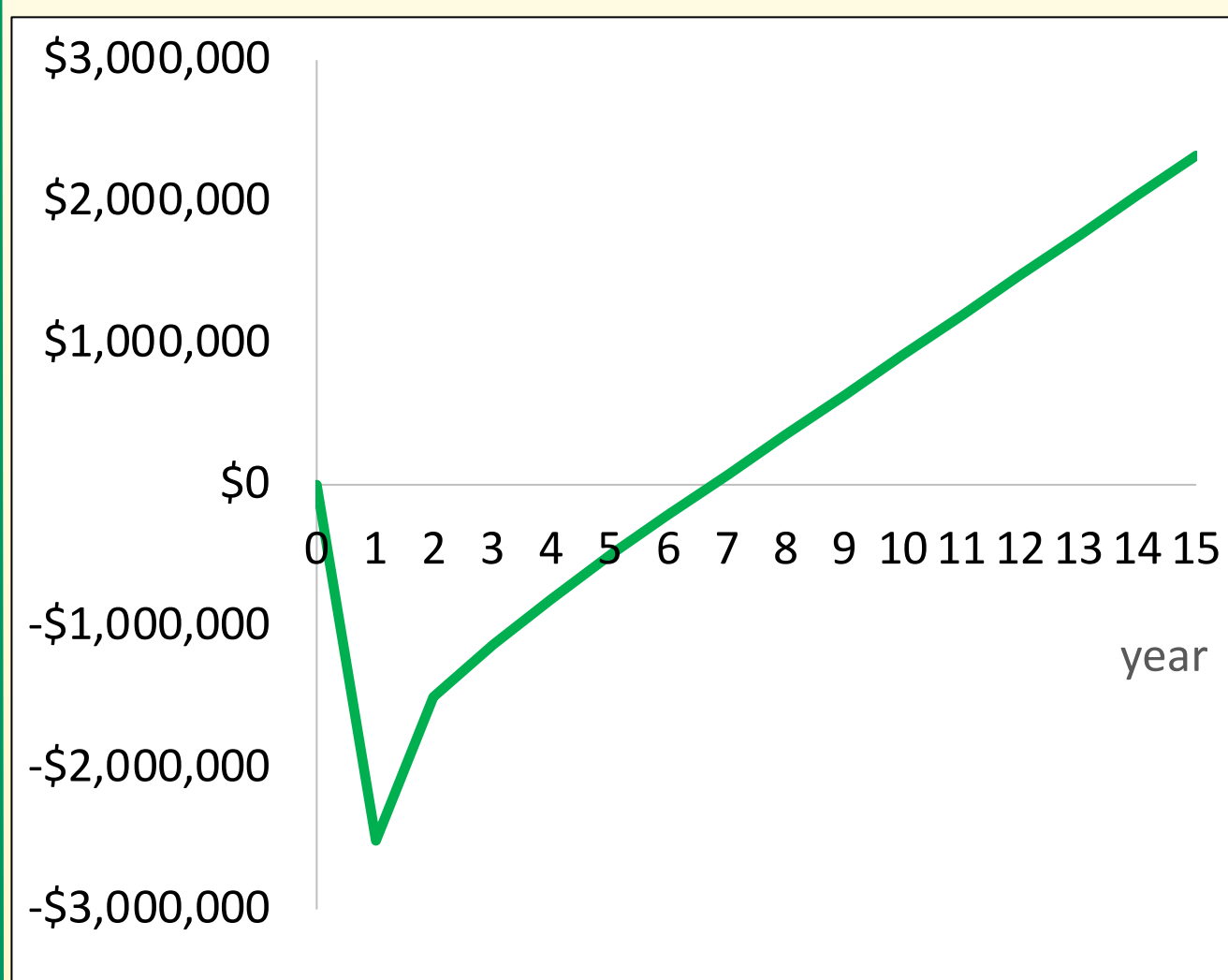
ROI 6%
IRR 13%
PBP 5.7 y
Annual Saving 0.9 M
Startup Expenses 0.04 M

Total Capital Investment = \$ 2,520,000

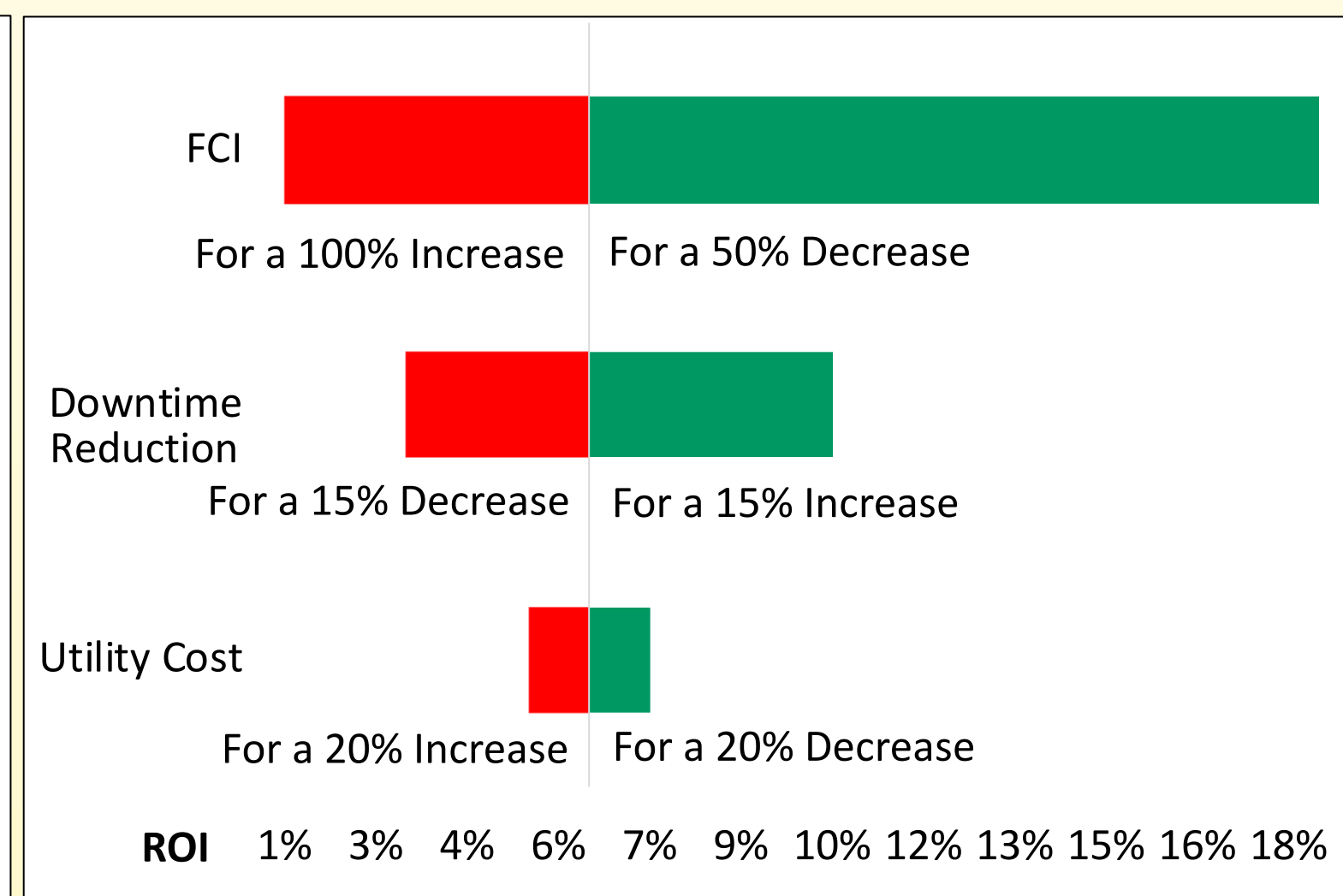
Goals Achieved

- ✓ Recovered Valuable Fibre Through the use of a pressure screen.
- ✓ Hydrocarbon Removal Through the use of column flotation.
- ✓ Solid contaminant Removal No longer recycling the OCC and paper machine sewers back into the process.

Cumulative Cash Flow



Sensitivity Analysis



4 Economic Analysis

5 Conclusions & Recommendations

Conclusions

The proposed design is economically feasible with a total capital investment of \$ 2.5 M, annual expenses of \$ 0.5 M, and a 5.7-year payback period.

Recommendations

- Move on to the detailed designed stage.
- Upgrade the polymer system used for the centrifuge.