

# Sunchild First Nation

## Developing Sustainable Waste Management Solutions



May 12, 2016

# Agenda

- Community Description
- Waste Management Practices
- Current Issues
- Examine Community Needs
- Disposal Site Options
- Options Assessment
- Transfer Station Considerations
- Site Selection
- Conceptual Designs

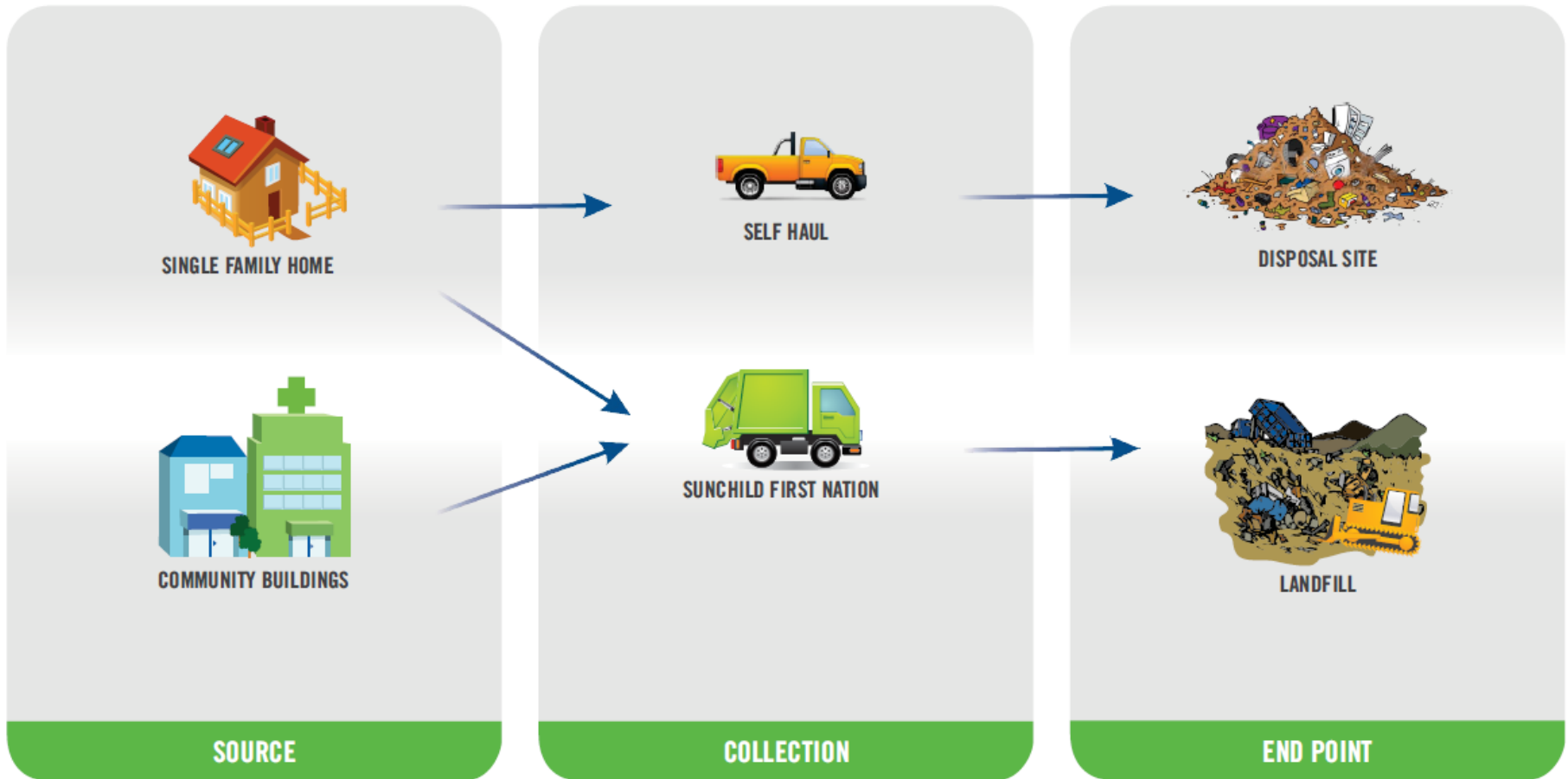
# Community Description

- Located 2 hours NE of Calgary (near Rocky Mountain House)
- 1000 people
- 190 households
- Population rapidly growing
- About 250 t/yr of garbage generated



Sunchild First Nation

# SOLID WASTE MANAGEMENT - FLOW DIAGRAM CURRENT



# Waste Management Practice

## Household Collected Waste

- 200 tonnes/year (1 tonne/hhd/yr)
- Waste collected weekly
- Waste taken to Rocky Landfill
- \$19,000 /year



# Current Issue – What doesn't get picked up

## Existing Disposal Site

- Environmental issues at the disposal site
- Strategy to clean-up site to mitigate future liabilities
- Disposal at site about 50 t/yr (self haul)



# Community Needs

- Consult with Band members
- Conduct workshop to explain options
- Obtain Feedback to address community needs



# Disposal Site Waste Options

1. Status Quo
2. Construct landfill on Sunchild reserve
3. Construct transfer station on Sunchild reserve
4. Use alternative facilities (off reserve)

# Options Assessment

| Criteria                       | Status quo | Construct a landfill on reserve | Construct a transfer station on reserve | Use alternative transfer station (off reserve) |
|--------------------------------|------------|---------------------------------|-----------------------------------------|------------------------------------------------|
|                                | Score      | Score                           | Score                                   | Score                                          |
| Community Acceptance           | 0          | 2                               | 5                                       | 1                                              |
| Environmental & Health Impacts | 0          | 3                               | 5                                       | 2                                              |
| Ease of Implementation         | 5          | 1                               | 4                                       | 3                                              |
| Cost                           | 5          | 1                               | 3                                       | 5                                              |
| <b>TOTAL SCORE</b>             | <b>10</b>  | <b>7</b>                        | <b>17</b>                               | <b>11</b>                                      |

# Transfer station considerations

- ✓ Materials
- ✓ Location
- ✓ Hours of operation
- ✓ Nuisances (e.g. litter, smell)
- ✓ Health & safety (e.g. distance from houses)
- ✓ Environmental considerations (e.g. flood plain)
- ✓ Job creation

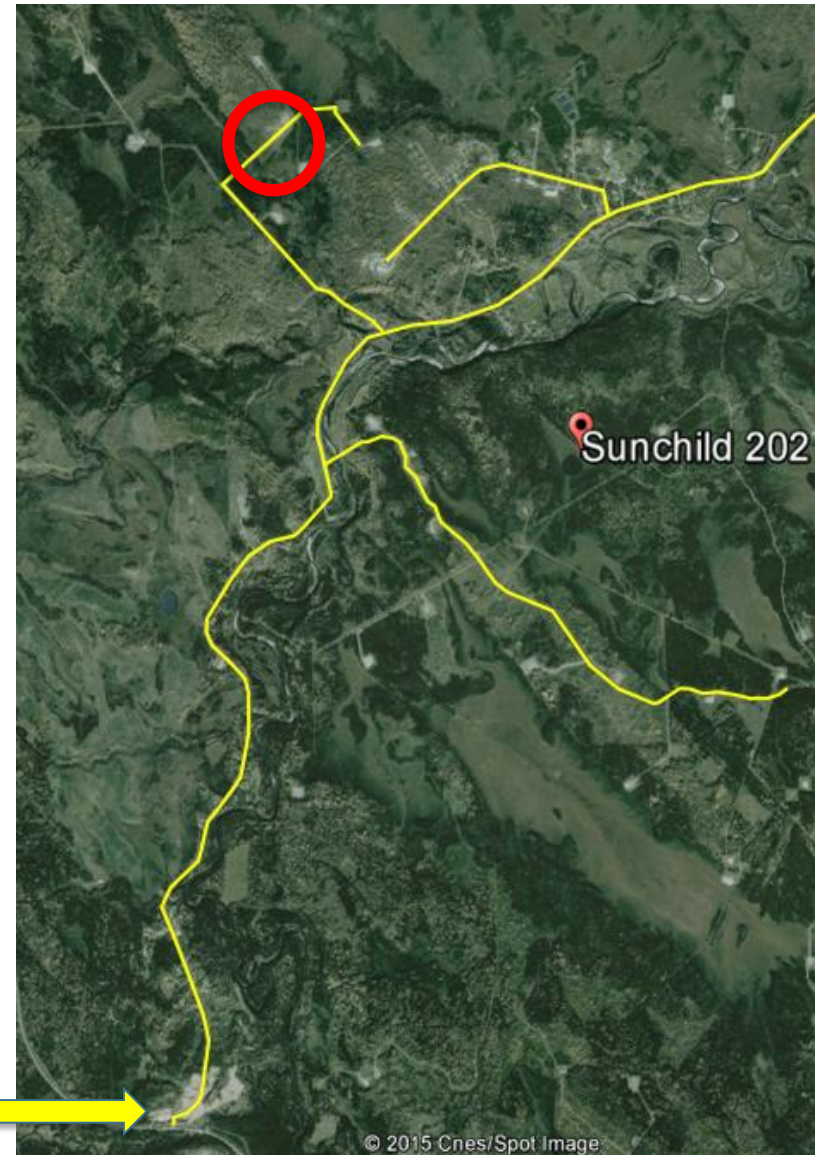
# Transfer station site considerations

- ✓ Location
  - ✓ Convenience
  - ✓ Health & safety (e.g. away from houses, trucks on reserve)
  - ✓ Nuisance avoidance (e.g. litter, smell)
  - ✓ Siting elements (e.g. flood plain)
  - ✓ Site access (e.g. road improvements)
- ✓ Design elements (Bins and materials)
- ✓ Operating criteria (and job creation)

# Site Selection

1. Current disposal site
2. Near works yard
3. By entrance to community

# Location 1 – Current disposal site



Entrance

© 2015 Cnes/Spot Image

# Location 2 – Near Public Works Yard



Entrance



# Location 3 – Old Gravel Pit (Optimal)



Entrance



# Design Elements

- Keep it simple
  - Bins people can drive up to
  - Easy maintenance
  - Garbage contained
- Site secured (fencing)
- Clear signage
- Good road access



# Materials

- Tires
- Electronics
- Appliances
- Wood waste
- Yard waste
- Hazardous waste
- Metal
- Garbage
- Recyclables



# Transfer Station Operation

## Community feedback:

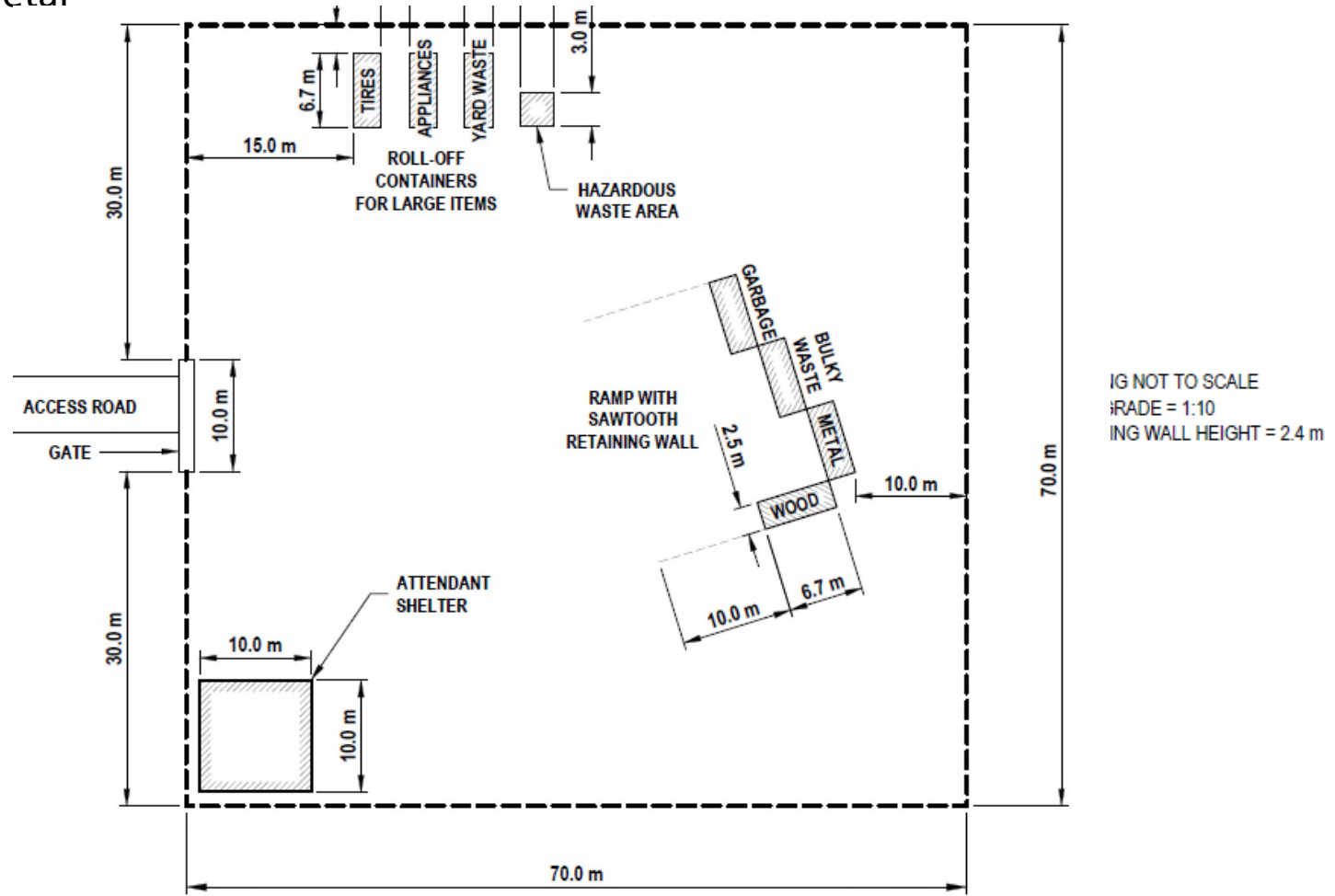
- Open minimum 3 days per week
- Secure area
- Operator to monitor and help members
- Operator / camera at night
- Large Item Pick Up – summer students
- Recycling bins in community buildings
- Free recycling bins for members
- **AND** Close up & fence off existing disposal site

# Transfer Station Options Summary

- **Option 1** – Bulky garbage, yard waste, tires, appliances, hazardous waste, wood, and metal
- **Option 2** – Bulky items plus household recyclables. Recyclables brought to transfer station by residents
- **Option 3** – Bulky items plus household recyclables. Recyclables collected from households (with garbage) and sorted into separate streams by transfer station staff

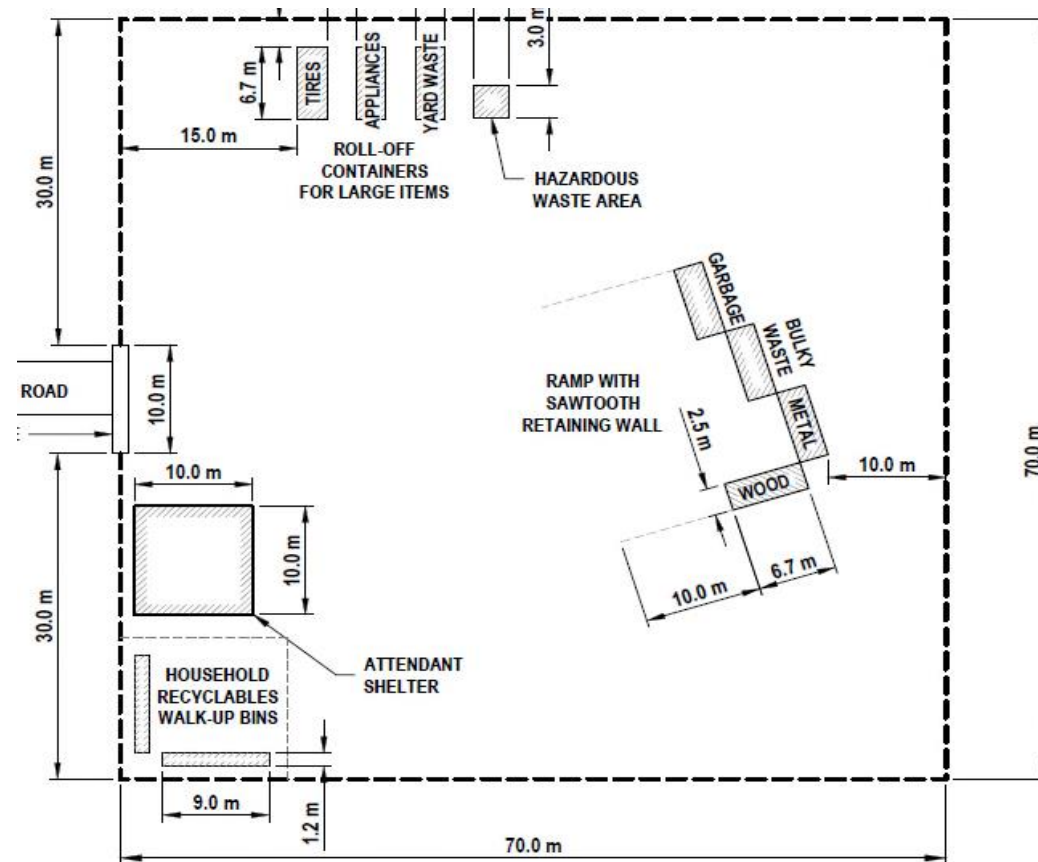
# Option 1

- Accepts bulky garbage, yard waste, tires, appliances, hazardous waste, wood, and metal



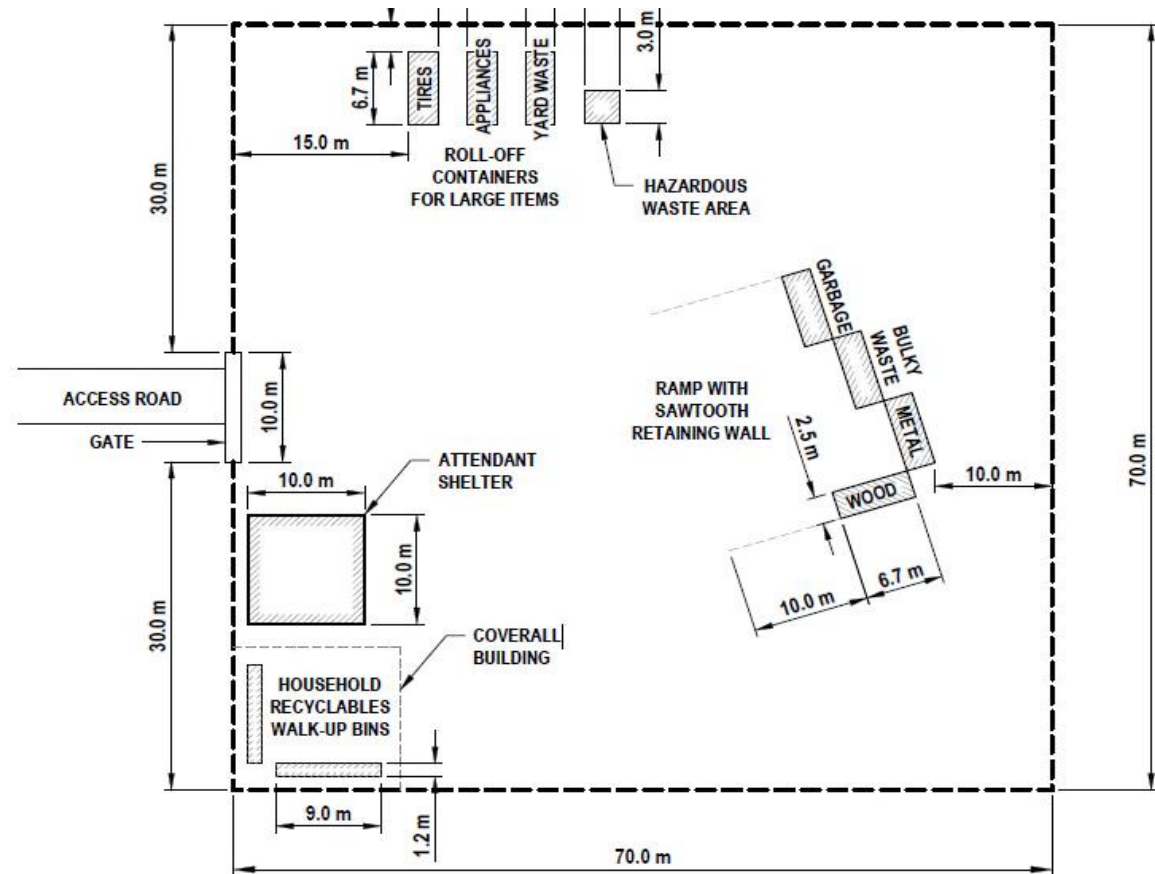
# Option 2

- Accepts bulky garbage, yard waste, tires, appliances, hazardous waste, wood, and metal plus household recyclables.



# Option 3

- Accepts bulky garbage, yard waste, tires, appliances, hazardous waste, wood, and metal plus household recyclables.



# Transfer Station Area



# Cost Summary: Location 3

| Option | Description                                 | Capital | Operating (Annual) | Total Cost (20 years) |
|--------|---------------------------------------------|---------|--------------------|-----------------------|
| 1      | TS without recycling drop-off area          | \$843k  | \$74k              | \$2,900k              |
| 2      | TS with recycling drop-off area             | \$858k  | \$76k              | \$3,260k              |
| 3      | TS with recycling drop-off and sorting area | \$931k  | \$120k             | \$4,250k              |

## Includes

- Engineering design
- Access road improvement
- Surface water management
- Geotechnical preparation

## Does not include

- Clearing up the disposal site
- Truck

# Advantages / Disadvantages

- **Option 1**

- Simple system to manage
- Diverts appliances, metal, wood, HHW, tires etc.
- No diversion for household recyclables

- **Option 2**

- Simple system to manage
- Diverts appliances, metal, wood, HHW and tires
- Includes diversion of household recyclables

- **Option 3**

- Includes collection and sorting of mixed household recyclables
- More convenient for residents
- Increased employment opportunities
- Higher O&M costs (primarily labour)