Managing a Subsurface Landfill Fire in the Subarctic

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CAT
YKFD RESCUE

Objectives

1. Outline the set of conditions that make subsurface fire (oxidation event) unique in the context of a remote, subarctic landfill.

2. Detail the thought process employed when dealing with this oxidation event.

3. Share the lessons learned in dealing with a subsurface oxidation event in Yellowknife

A note on terminology

…it was really a subsurface oxidation event

…but once someone calls it a fire…well…

Two areas for waste disposal

1. Construction & Demolition Landfill

2. Engineered MSW lined cells

Key Milestones

1974: Siting of dump
1993: Baling Facility constructed
1998: Weigh-In Scale installed
2011: Cell 1 MSW constructed
2020: on site compaction

October 30

Staff notice warm spots at C&D. Cover with snow and monitor. Fire Dept on notice.

November 25

Retained excavator and water trucks. Filled trenches with snow. Carefully started excavating within the burn zone. Nervous about sinkholes and flare up.

January 7

Stood up EOC/IC. Full support from City. Figured out plan for water access on site. Waiting game for logistics.

January 21

Active firefighting phase began. Weeks of occasional flare ups. Covered with foam at the end of every workday

February 7

Situation under control. Monitoring continues.

Our Approach

- Created a perimeter.
- Slowly excavated the surface of the burn zone, each bucket vetted by FD and placed in berm based on temperature
- Covered the burn zone with Class A foam till next day activities.
- Hired security unit to check on site after hours.
- Rinse and Repeat

How did this happen?

1. Evacuation Brush
2. Concrete Drop-Off Area
3. Uncovered Slopes
4. Old concrete road at perimeter of C&D

Main Challenges

water

cover

compaction

equipment

Weather & Conditions

snow

Access roads

EOC training

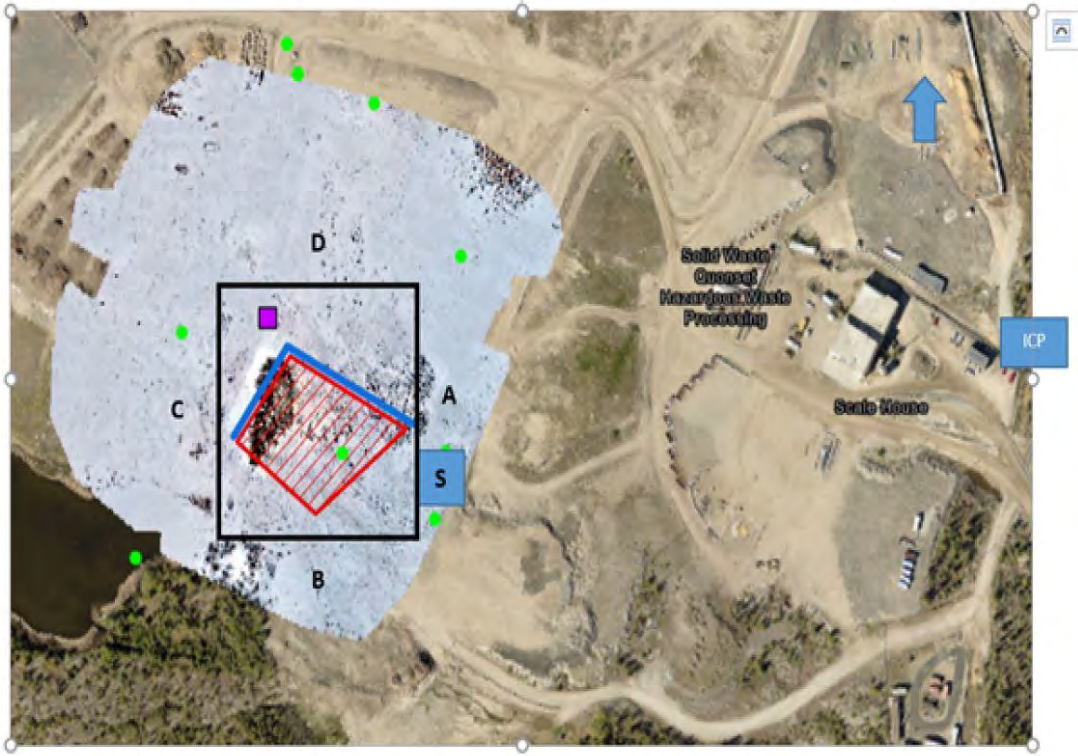
Rapport with Contractors

What worked in our favour

EOC and Record Taking

1. INCIDENT NAME/NUMBER	2. DATE PREPARED	3. TIME PREPARED
25-01 LANDFILL SUBSURFACE FIRE	JAN 24, 25	1544

4. MAP SKETCH



8. CURRENT AND PLANNED ACTIONS, STRATEGIES AND TACTICS

Time:	Actions:
0800	get equipment ready
0830	SWF
0835	safety meeting
0900	set up
0930	start excavation of pile
1200	foam suspected hot spot
1300	excavate original site
1500	assess situation and deterime how to make safe
	- foam, trench, pile,
1630	pack up and finish activity on site for weekend

5. SITUATION SUMMARY AND SAFETY BRIEFING

SWF to Monitor subsurface fire - pack any vents with snow, reduce O2 to fire
order materials and supplies
Have YKFD staff prepare for deployment - tanker 1 / Red 2 / Hazmat trailer / Herman Nelson / Generator / Jerry cans of fuel / water and snack items / Hoses and nozzles
Recommend a barrier for the fire apparatus, blocks wind reduces environmental impact on truck and reduces pictures and public viewing, area is on the top of a barren and open hill
Fire has not made to surface at this time, packing vents has reduced activity and quieted down the smoke
Meet Security briefing at 1500

ICS 201-CAN	6. PREPARED BY (Name and Position)	SIGNATURE

Lessons Learned

Safety is priority

- Landfill fire training
- Appropriate PPE and equipment

Contractors and Fire Department Rapport

- Invite them to site regularly
- Understand the limits of their equipment

Lessons Learned

Equipment and Resources

- Excavator
- Cover
- FD equipment

Control the Story

- Name the event before the media does
- Let the public know what you plan to do and what to expect.

Have a Plan…know that the Plan will change

THANK YOU.
QUESTIONS?