Decommissioning of Pyramid Mountain Microwave Facility

Masten Brolsma, P.Eng.
Senior Environmental Engineer

Court Sandau, Ph.D., P.Chem.
Senior Risk Assessor

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Presentation Overview

- Site Description
- Decommissioning and Assessment Activities
- Remedial Action Plan / Options
- Remediation
- Screening Level Risk Assessment
Site Description

- Mountain top Microwave facility constructed 1960’s
- Private tram to summit with associated support facilities
- Bulk storage of diesel fuel to run generators for tram and microwave tower
Site Description

- Located on leasehold within Jasper National Park
- Approximately 10 km northwest of the Town of Jasper, Alberta
- Access via 12 km fire road from Pyramid Lake
Site Description

SnoCat Garage (elev. 4000’ / 1220 m)

• Approx. 250 m off Pyramid Lake
• Storage of SnoCat to plow road for all-season access
• Minor vehicle maintenance / lubricant storage
Site Description

Tram Base
(elev. 6529’ / 1990 m)

- < 100 m from stream
- Bulk diesel storage
- UST Removed in 1994
- Generator / Tram Building
- 2 x 1200 L ASTs on tram for fuel transfer
Site Description

Summit
(elev. 9065’ / 2763m)

- Generator for Microwave
- Bulk Fuel Storage
- 4 x 10,000 L USTs replaced with 3 x 9000L ASTs in 1994
- Remedial excavation of UST basin in 1994
- Tram ASTs for fuel transfer
Previous Environmental Assessments

- **Unitel Pyramid Mountain Microwave Facility Upgrading – Project Description and Environmental Screening Report**, February, 1994;
- **Unitel Pyramid Mountain Microwave Facility – Contamination Cleanup Monitoring Report**, report prepared for Unitel Communications Inc. September, 1994;
- **Phase I Environmental Site Assessment, Microwave Tower Site, Tramway Terminal Site and Tramway Right of Way, Locator Number 1029, Pyramid Mountain, Alberta**, dated September 26, 2002, prepared by Jacques Whitford Environment Limited
Remediation Criteria

• Federal Land / National Park
• Return Lease to condition “satisfactory” to Parks Canada
• Canadian Council of Ministers of the Environment (CCME) Canada Wide Standards based on Eco-soil and/or freshwater aquatic life pathways
• CCME Soil Quality Guidelines with Parkland settings
• CCME Freshwater Aquatic Life guidelines
Decommissioning and Remediation Objectives

• Removal of all site facilities (buildings, tram line, debris on mountain)
• Remediate any contamination to “satisfaction” of Parks Canada
• Revegetation of tram base area
• Removal of culverts and reduce road width to hiking trail (last 4 km of access road)
**Summit – Assessment**

**AST Area**

- Hand augers
- Testpitting with mini-excavator
- Visible staining and elevated soil vapours
Summit – Assessment

Results

• Visible staining and elevated soil vapours

• Diesel impacts identified in AST nest

• Probable impacts under slab

Hydrocarbon staining in interstitial space
Summit - Assessment

Slope Below Tram Station

- Surface Sampling
- Visible staining
- Waste Oil impacts (F3 & F4 Petroleum Hydrocarbons and barium)
Summit – Remedial Action Plan

**AST Area**
- Slab to remain for future use
- Economics of Removing Slab Footing

Excavate Accessible Soils

Screening Level Risk Assessment &
Risk Manage Residual Impacts
Summit – Remedial Action Plan

Slope Area
- Limited Access due to slope angle
- Limited ecological or human exposure pathways
- Screening Level Risk Assessment
- Cover with Clean Backfill
Summit – AST Remediation

- 80 m³ (160 tonnes) excavated
- 900 kg (2000 lbs) per/ tram load to base
- Tandem trucks to landfill outside Jasper National Park
Summit – AST Remedial Excavation
Summit – AST Remediation

- Confirmatory Soil Sampling finds residual F1, F2, F3 > CCME CWS
- Regulatory Update
- Environmental Liner Installation then Backfilling
<table>
<thead>
<tr>
<th>Location (Sample No.)</th>
<th>Depth (m)</th>
<th>Date</th>
<th>Vapour (ppm)</th>
<th>Benzene</th>
<th>Toluene</th>
<th>Ethyl-benzene</th>
<th>Xylenes</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
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<td>South Wall (2)</td>
<td>0.6</td>
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<td>&lt; 0.10</td>
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<td>1900</td>
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### Reference Criteria

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<tr>
<th>CCME (2002) Soil Quality Guidelines</th>
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<th>NA</th>
<th>0.5</th>
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<th>1.2</th>
<th>1</th>
<th>NA</th>
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<td>CCME (2001) CWS for coarse-grained surface soils</td>
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<td>Soil Ingestion</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>8,000</td>
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<td>230</td>
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<td>400</td>
<td>2,800</td>
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1. - soils vapours measured with MiniRae 2000 photoionization detector (PID)
3. - Canadian Council of Ministers of the Environment "Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil" (May 2001)
Summit – Liner Installation
Summit – AST Area Remediation

Liner

Drainage
Summit – AST Area Remediation

Drainage from Excavation
Cover of Liner with Clean Backfill
Summit – Slope Remediation

Minimum 0.5 m of clean cover
No rebar in concrete backfill or visible debris
Risk Assessment

A process that evaluates the likelihood that adverse:

• Human/ecological effects may occur or are occurring as a result of
• exposure to one or more stressors
Screening Level Risk Assessments

• are conservative in nature
• incorporate uncertainty in a precautionary manner

Purpose:

to assess the need, and if required, the level of effort necessary, to conduct a detailed or “baseline” human health or ecological risk assessment for a particular site or facility

• SLRAs can be designed to provide definitive estimates of actual risk, only if they are based upon site-specific assumptions
Purpose of SLRAs

provide a general indication of the potential for risk (or lack thereof) and may be conducted for several purposes including:

1) to estimate the likelihood that a particular risk exists,

2) to identify the need for site-specific data collection efforts,

3) to focus site-specific risk assessments where warranted
Screening Level Tasks

• Screen media concentrations against environmental guidelines (ie. CCME)
• Identify site-specific human/ecological receptors
• Identify complete and incomplete exposure pathways
• Evaluate impacts to receptors
## Screen in CoPCs

### Summary of CoPCs in Soil – Parkland Land Use

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<tr>
<td>Zinc</td>
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<td>200</td>
<td>nv</td>
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<tr>
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<td>0.67</td>
<td>nv</td>
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<tr>
<td>F1 (C&lt;sub&gt;6&lt;/sub&gt; – C&lt;sub&gt;10&lt;/sub&gt;)</td>
<td>370</td>
<td>nv</td>
<td>130</td>
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<tr>
<td>F2 (&gt;C&lt;sub&gt;10&lt;/sub&gt; - C&lt;sub&gt;16&lt;/sub&gt;)</td>
<td>4800</td>
<td>nv</td>
<td>450</td>
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<td>23000</td>
<td>nv</td>
<td>400</td>
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<tr>
<td>F4 (&gt;C&lt;sub&gt;32&lt;/sub&gt;)</td>
<td>12000</td>
<td>nv</td>
<td>2800</td>
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Potential Receptors
Pathways

Ingestion/Dermal contact – soil/dust
Ingestion/Dermal contact – ground/surface water
Ingestion of vegetation
Pathways

Inhalation of vapours (indoor and outdoor air)
SLRA

No exposure pathways = no risk

Canadian Council of Ministers of the Environment (CCME), 1996
SLRA Results

Potential on-site pathways do not pose significant health risk:

- CoPCs have been covered and are not accessible to human or ecological receptors
- Site located on mountain summit, edible vegetation very limited
- High dilution potential for soil vapours to outdoor air (environmental liner and grouting to isolate residual soil impacts)
Tram Base – Assessment

- Hand Augers for Surface Stained Areas
- Testpitting for Deeper Impacts
- Monitoring Well Installation with Excavator
Tram Base – Remedial Action Plan

- Cold Climate
- Long Term Liability and Monitoring Costs
- Potential Freshwater Exposure Pathway
- Quantitative Risk Assessment / Site Specific Target Levels vs. Generic Criteria Based Remediation
- Owner Decides on Criteria Based Remedial Excavation
Garage – Remediation

- Surficial sampling → Hydrocarbon Impacts
- Excavation → Confirmatory sampling
- Impacted Soils to landfill
Summary - Challenges

- Contractor Logistics
- Short construction season
- Weather
- Ecological Setting (National Park)
- Access (road and air)
Company Profile
Jacques Whitford Limited
An Environment of Exceptional Solutions!

- One of Canada’s Largest Multidisciplinary Risk Management, Environmental Sciences & Engineering Consulting Firms
- Established in 1972
- Corporate headquartered in Dartmouth, NS
- Calgary Office: Western head office
- Recent joining of Axys Environmental Consulting Ltd. to become the premier environmental consultants in Western Canada
- More than 45 offices across Canada, USA and Internationally with near 1,400 highly qualified professionals worldwide
- Over 40 Risk Assessment Professionals across the country
- ISO9001 / 14001 Registered QMS