

TERVITA

Implementing Fully Integrated Waste Management Solutions Direct At Source in Oil Sands Operations.



EARTH MATTERS

- Tervita – Integrated solutions for oil sands operations
- Waste Production in Oil Sands Operations
- **Where to start?** Detailed waste assessment audit

- **What is an audit?** What does it accomplish, what are the benefits?
- **Onsite management model:** Treat waste direct at source
- **Selecting a waste partner:** Key considerations for selecting a full lifecycle waste management partner

- **The Facts & Figures:** Case Study – Real metrics from a real project



INTEGRATED SOLUTIONS FOR OIL SANDS



EARTH MATTERS

INTEGRATED SOLUTIONS FOR OIL SANDS

- Geotechnical Drilling Services
- Energy Marketing
- Well Servicing
- Sulphur Services
- Oilfield Equipment Rentals
- Pipeline Integrity & Compliance
- Drilling & Coring Services
- Metals Recycling



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- Remediation & Reclamation
- Demo & Decommissioning
- Civil & Environmental Construction
- Construction Drilling & Shoring
- Spill & Incident Response
- Engineered Landfill Construction
- Bioremediation Solutions



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Tailings Management
 NORM Management
 Industrial Water Treatment



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Waste Classification, Tracking
 & Regulatory
 Engineered Landfill Disposal
 Waste Transportation
 TRD
 Onsite Waste Management
 Specialized Waste Containers
 Caverns & Oilfield Waste Management
 NORM Management



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OIL SANDS – COMMON WASTE PRODUCTION



With ~ 2.0 m b/d production comes a lot of waste

Leachate
Catalyst
Sand Blast Grit
Produced Water
Contaminated Soil
Produced Water
Metal Drums, Poly Drums & Containers
Absorbents
Scrap Metal
Corrosive Liquids
Evaporator Blow Down Water
Amine Liquids
Production Filters

Solid Waste – Landfill & Hazardous & Non-Hazardous
Spill Waste
Aerosol Cans
Plastic
Solvents
Concrete
Tires
Compost
Oil Filters
Naturally Occurring Radioactive Material (NORM) Waste

Paint
Grease
Used Lube Oil
Batteries
Self Heating Solids – Iron Sulphides
Slop Oil & Tank Bottoms
Cardboard
Basal Water

Lime Sludge
Absorbents
Oily Rags
Flammable Liquids
Florescent Light Tubes
Drilling Mud



STEP 1: DETAILED WASTE ASSESMENT AUDIT

WASTE STREAM CHARACTERIZATION & EVALUATION OF DISPOSAL PRACTICES

Waste stream tier & optimize = Maximized Returns
 All waste, volumes & Frequencies = Improvements

Waste consolidation = Reduce transportation
 Waste diversion = Improve sustainability



IDENTIFYING WASTE SEGRATION PRACTICES

Onsite personnel education = Reduce at source
 Re-direction of waste streams

Right sized containers = Improve containment
 Reuse containers = Carbon footprint reduction



EVALUATING & DOCUMENTING WASTE RECYCLABLES

Improve recycling, recovery & landfill diversion

Improve labelling & manifesting = Efficiency



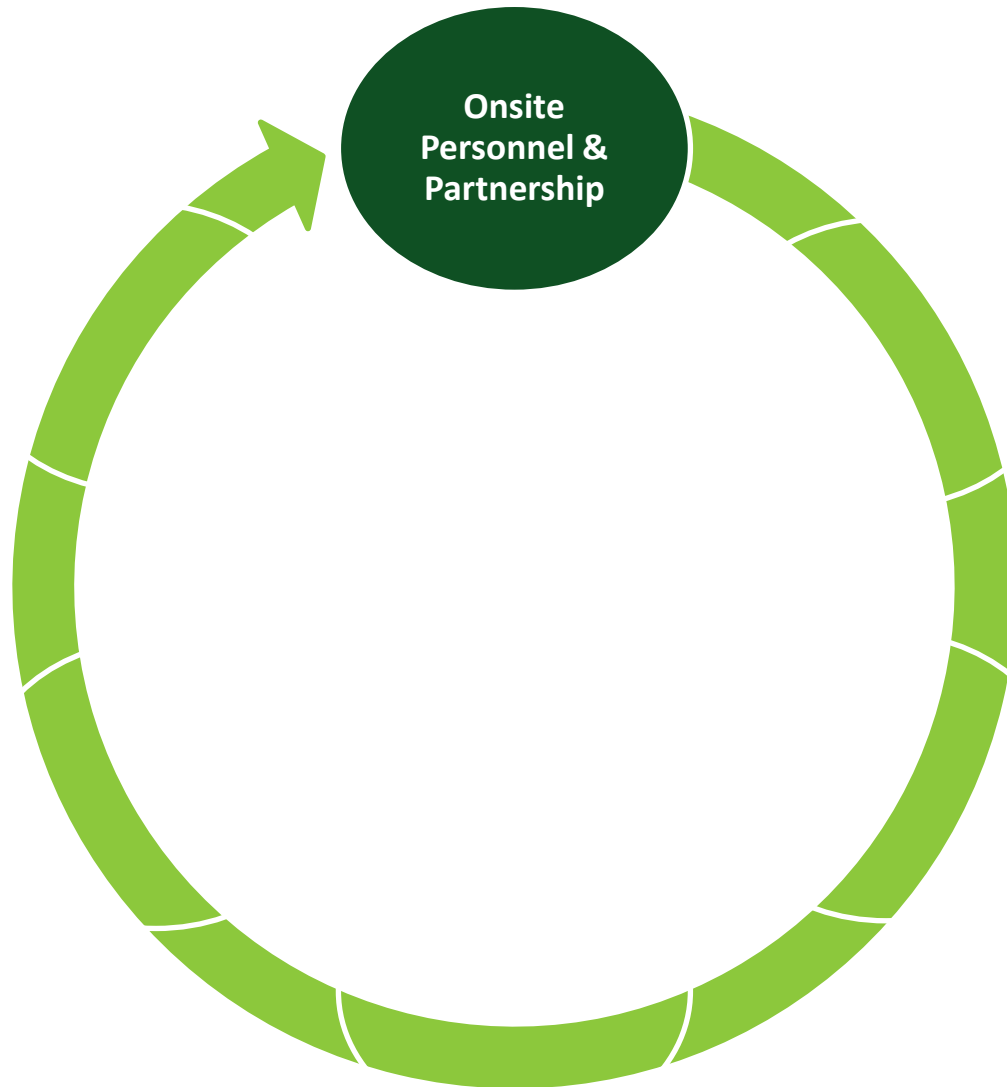
EVALUATION OF END DISPOSAL OPTIONS – ALL WASTE HAS IT'S PLACE

Identifies precise & most efficient disposal option

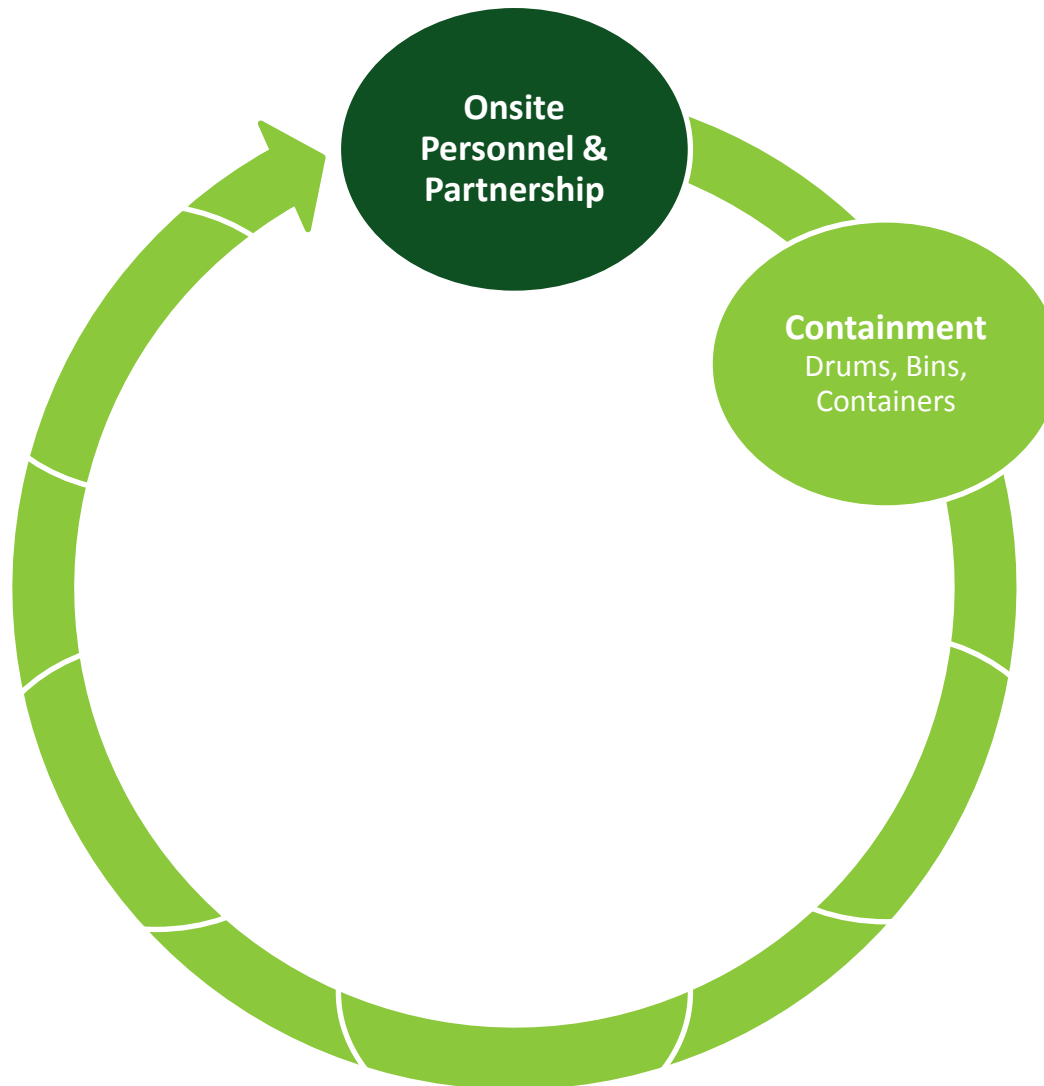
Network of disposal options (regional & owned) =
 Reduce transportation, Improve liability



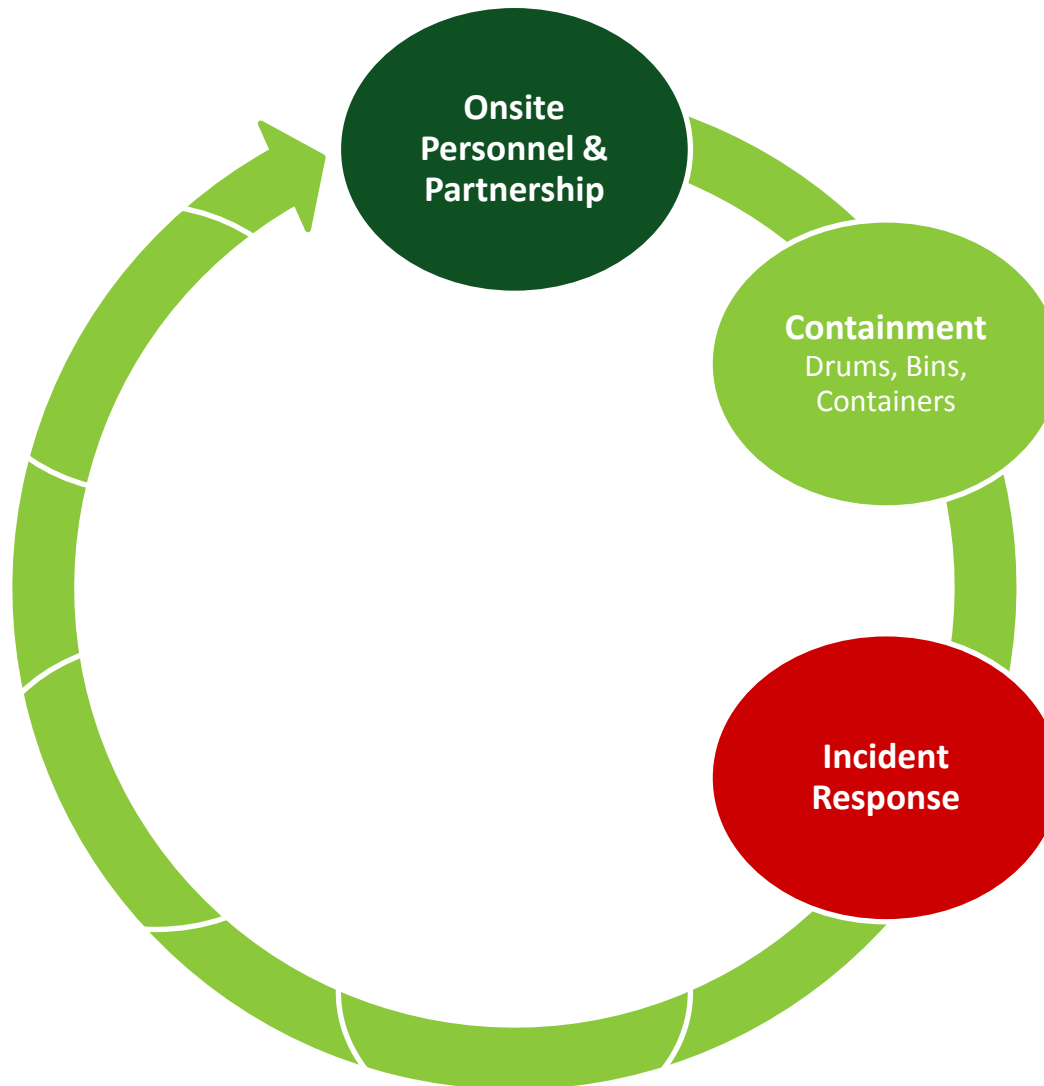
CHOOSING A PARTNER: KEY CONSIDERATIONS



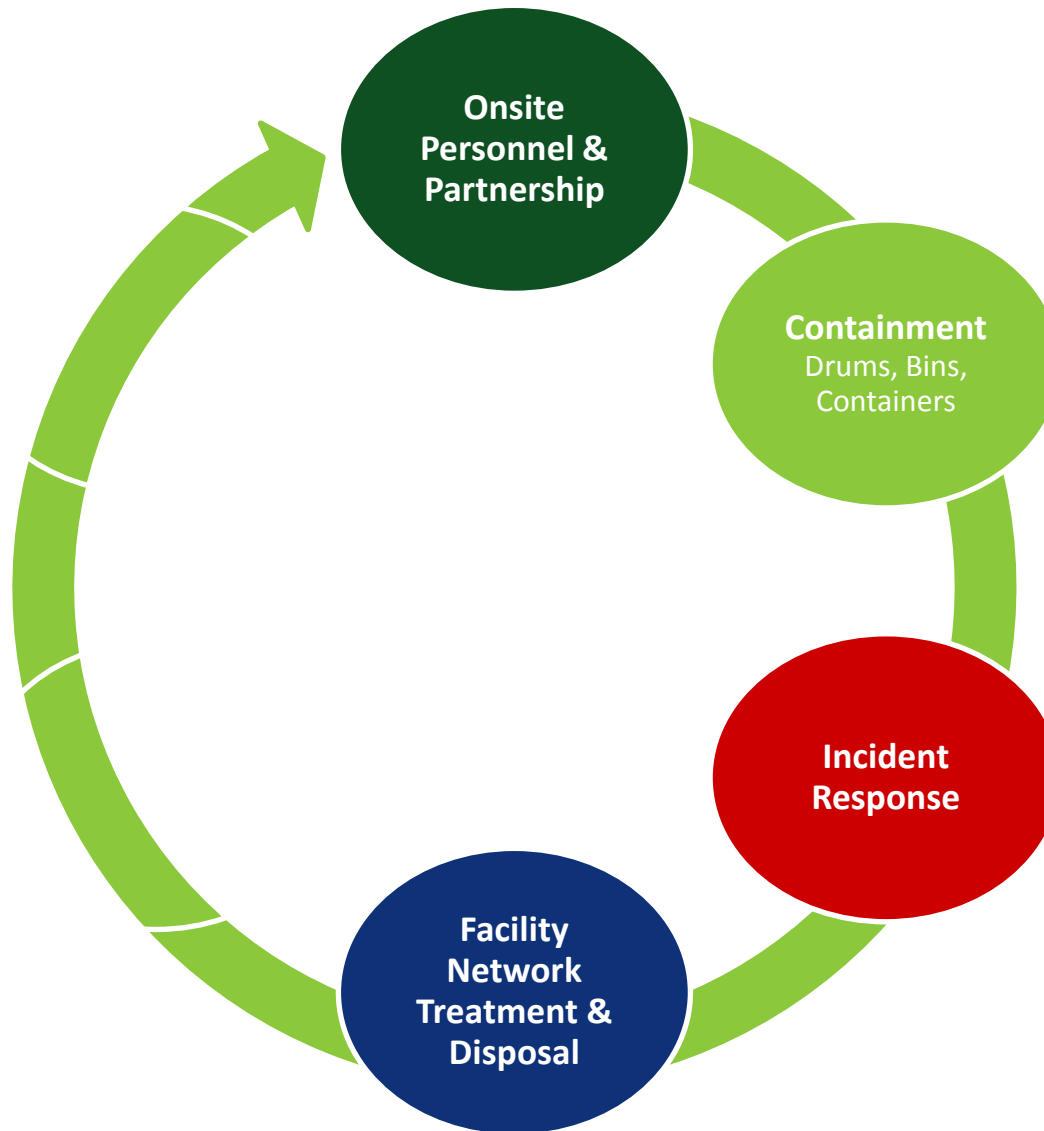
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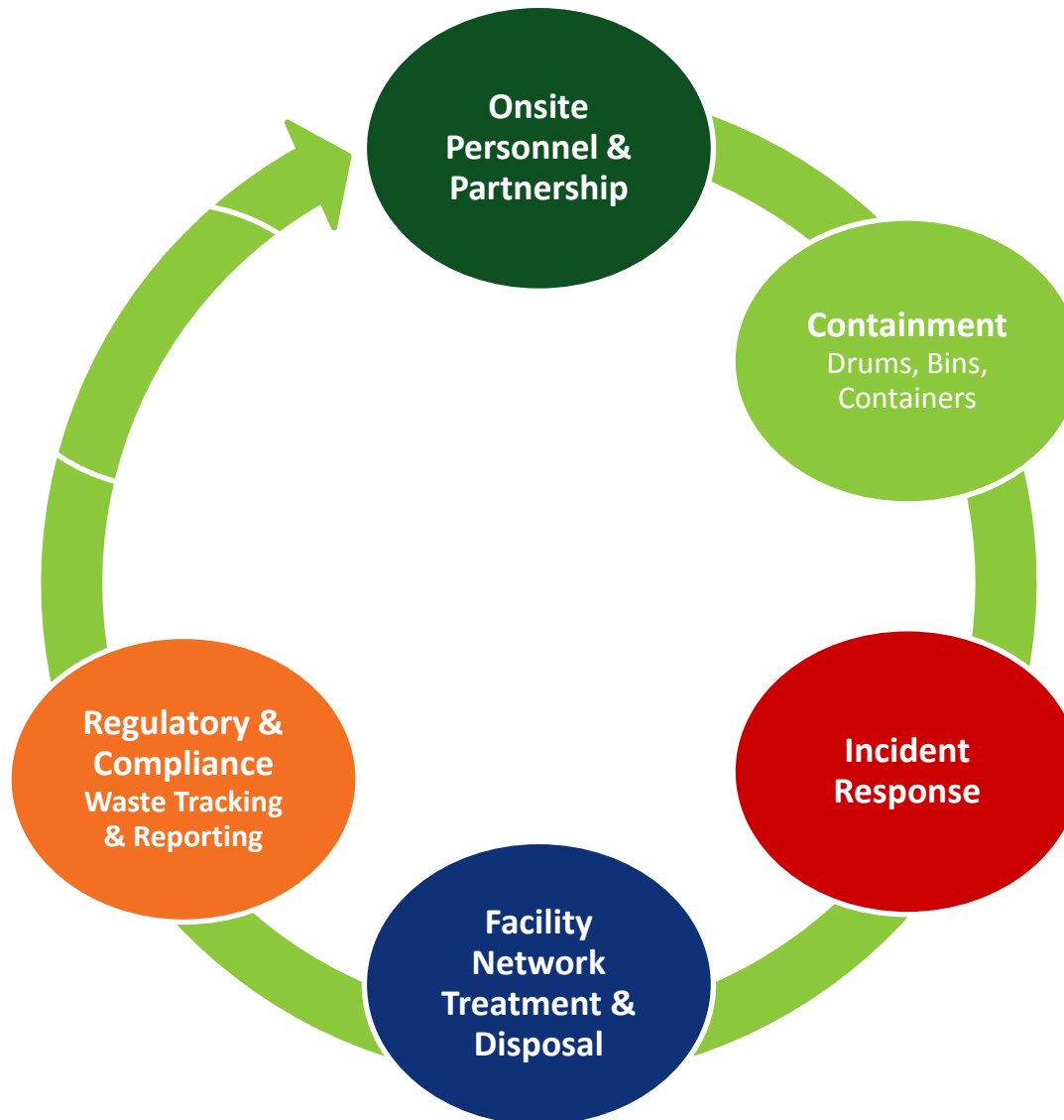
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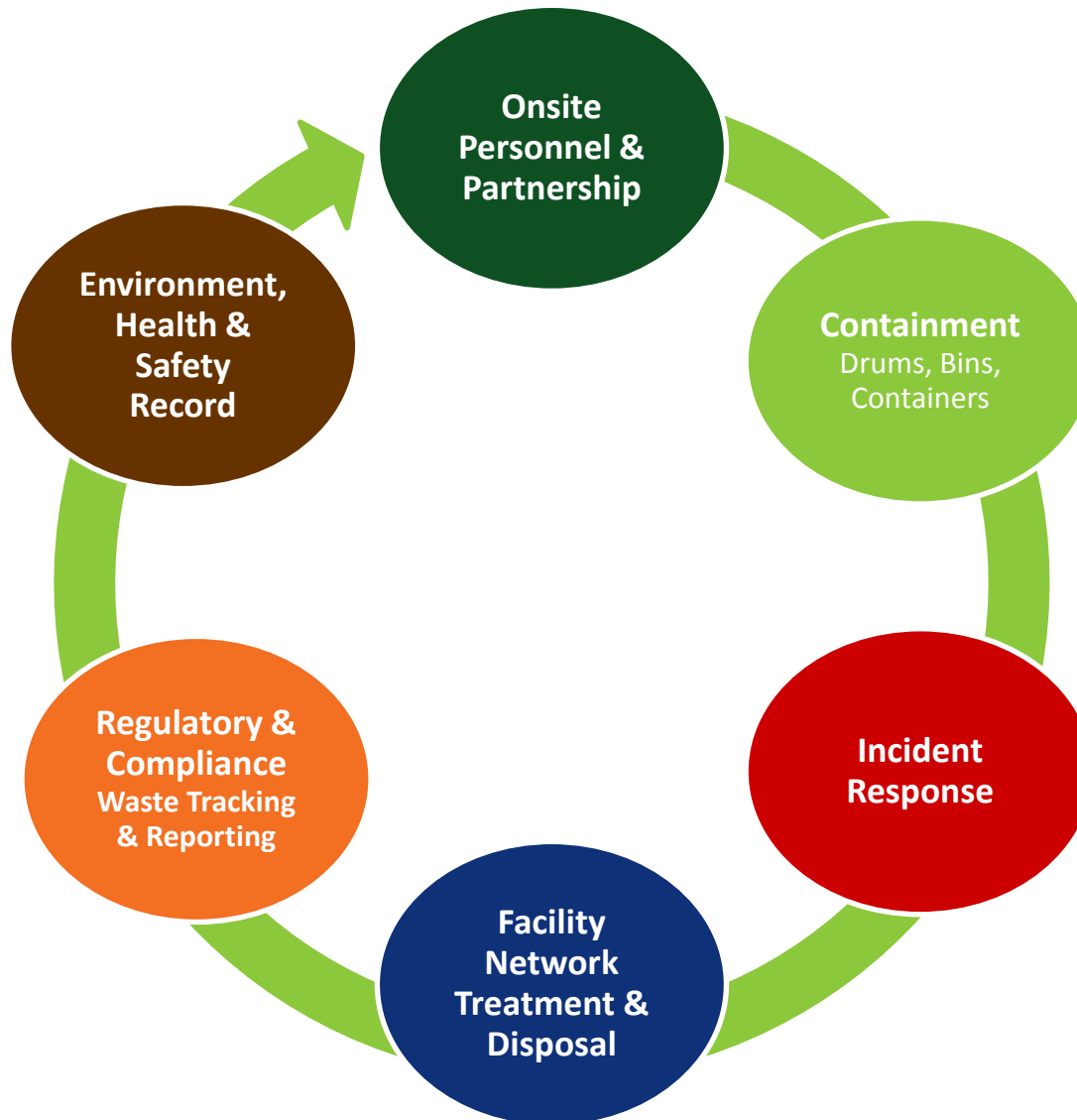
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ONSITE RESOURCE MANAGEMENT MODEL



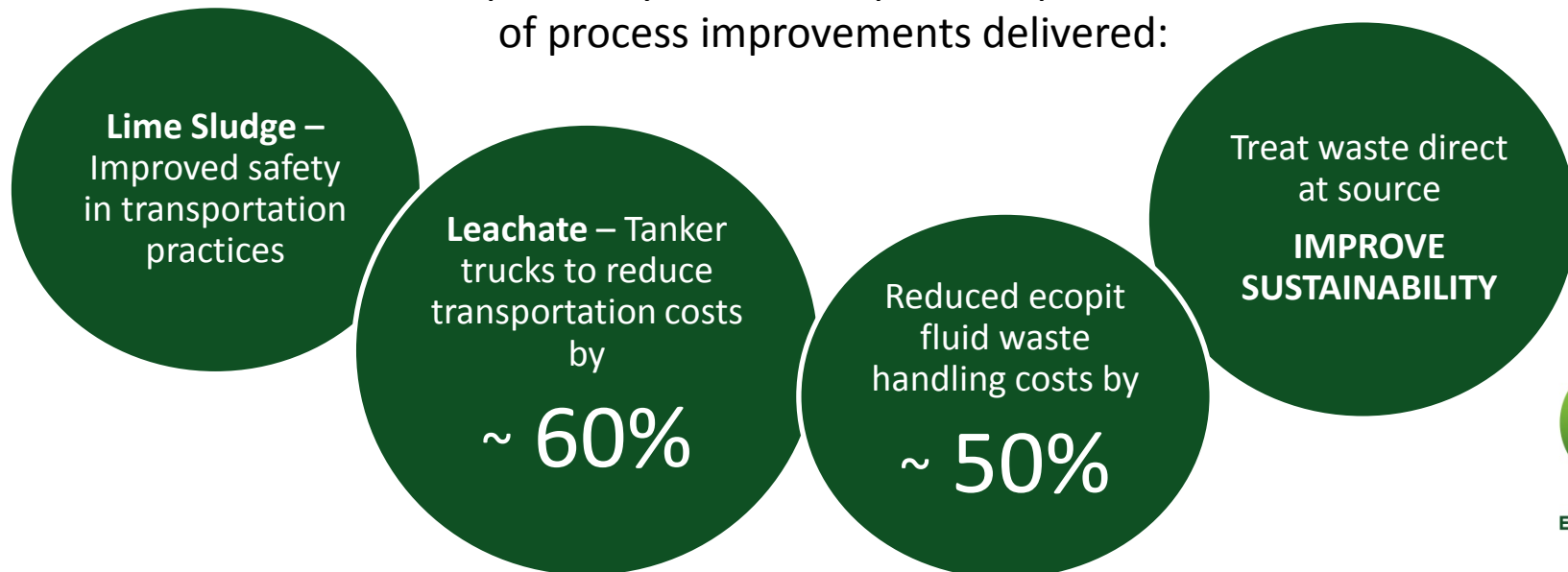
Customer Challenge:

- Current waste management practices were divided across several contractors
- Required management across several oil sands facilities – Insitu & mining

Customer Goal:

- Pursuit of operational excellence and improved sustainability – Ensure best practices across the board

Tervita Onsite Resource Management Model: In-depth analysis, roadmap and implementation of process improvements delivered:



THANKS FOR YOUR ATTENTION



Thank-you

We wish you well in your sustainability efforts

Come Visit Us: Booth# 28



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