

Assessing Drilling Waste Disposal Areas



Discussion Summary

- 1. Assessing Drilling Waste Disposal Areas – Compliance Options**
- 2. Feedback and Guideline Review**



Assessing Drilling Waste Disposal Areas – Compliance Options



- ◆ **Phase 1 and/or Phase 2 environmental site assessments required at all sites**
 - ◆ Sites must meet Alberta Environment's remediation requirements
 - ◆ **Phase I ESA must include drilling waste disposal areas**
 - ◆ Mix-bury-cover, landspreading, land treatment and alternative methods
 - ◆ On-site or remote
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- ◆ **Soil quality must be consistent with “Equivalent Land Capability” and “no adverse effect”**
 - ◆ **Reclamation Certificate can be obtained with sufficient Phase I information**
 - ◆ **Phase II ESA required if Phase I ESA finds insufficient information or identifies specific concerns**
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◆ Three options for drilling waste site compliance

1. Detailed and accurate disposal records, including *Guide 50 Drilling Waste Notification Form (1996 or equivalent)*
 2. Records review demonstrating low likelihood of site problems
 3. Phase II ESA – assessment, sampling, and analytical confirmation of soil:waste mix
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◆ ***Guide 50 Equivalent Salinity Requirements***

- ◆ *Optional alternative to AENV Salt Contamination Assessment and Remediation Guidelines*

◆ **AENV and CCME soil quality guidelines for metals and hydrocarbons**

- ◆ *CCME Canadian Environmental Quality Guidelines*
 - ◆ *Alberta Soil and Water Quality Guidelines for Hydrocarbons at Upstream O&G Facilities*
 - ◆ *Soil Quality Guidelines for Barite*
 - ◆ *Alberta Tier I Criteria*
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- ◆ Records available and comply with 1996 G-50
 - ◆ G-50 Notification form or equivalent must be submitted
 - ◆ Mud additives are recorded and known
 - ◆ Barite, zinc carbonate and chrome thinners require additional review
 - ◆ Chloride limit for mix-bury-cover is 800mg/kg
 - ◆ Not suitable for advanced systems such as K_2SO_4 , Pot. Formate, Pot. Silicate, Sodium Silicate... unless specific EUB approval was issued
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- ◆ **Used if G-50 records incomplete or unavailable**
 - ◆ **Review of drilling records to confirm the following:**
 - ◆ Freshwater gel/chem, salt load consistent with post-disposal salinity targets
 - ◆ Records indicate no issues with salt formations, hydrocarbon contamination, DST fluids.
 - ◆ No metals issues
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- ◆ **Fill-in calculation tables are provided for salinity, barite, zinc carbonate, and chrome thinners**
 - ◆ If calculated value exceeds target, a Phase II ESA is required.
 - ◆ **Salinity and hydrocarbons from the formation are assessed by specific questions**
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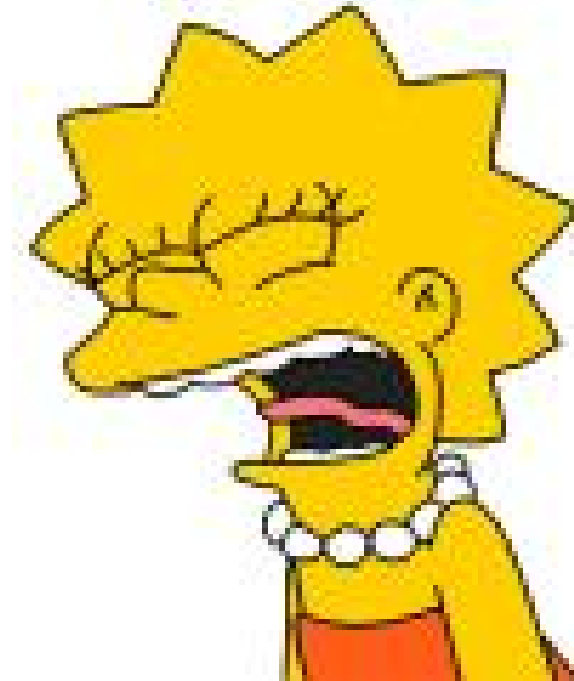
- ◆ **This compliance option is used when:**
 - ◆ No information or insufficient information is available to allow completion of either a Option 1 or Option 2 checklist,
 - ◆ The disposal fails to meet Guide 50 disposal requirements or those requirements as outlined in the Option 1 or Option 2 checklists

In either case a Phase 2 ESA
environmental site assessment (ESA)
must be completed

◆ Sampling requirements for disposal area

- ◆ Number of samples based on well depth
 - ◆ Samples from different locations may not be combined
 - ◆ Sample must be representative of waste or soil-waste mix (e.g. not mixed with cap or base material)
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What have we heard!?



Drill Stem Test Returns

◆ Definition

- ◆ Brines and hydrocarbons released to surface from the formation during a drill stem test

◆ **Guide 50 does not allow disposal of DST returns with drilling waste**

- ◆ Typically disposed of off-site or in drilling flare pit

◆ **Before Guide 50, disposal with drilling waste was common**

Drill Stem Test Returns

- ◆ **Chemistry and volume data is frequently available, disposal location often unknown**
 - ◆ Developing calculations to allow assessment of DST returns (pre-G50) in drilling waste
 - ◆ **Phase II ESA for post-G50 DST returns should focus on drilling flare pit**
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- ◆ **Lime and gypsum have limited solubility**
 - ◆ **Current salt calculation addresses this by capping the number of bags included in the calculation**
 - ◆ **CAPP is funding an assessment of lime and gyp muds that will help refine how these materials are addressed**
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- ◆ **Some assessors are finding that barium concentrations found during Phase II ESAs are consistently lower than predicted by the barite calculation**
 - ◆ **CAPP is funding a study of barite-soil blends to evaluate whether revisions to the calculation are needed.**
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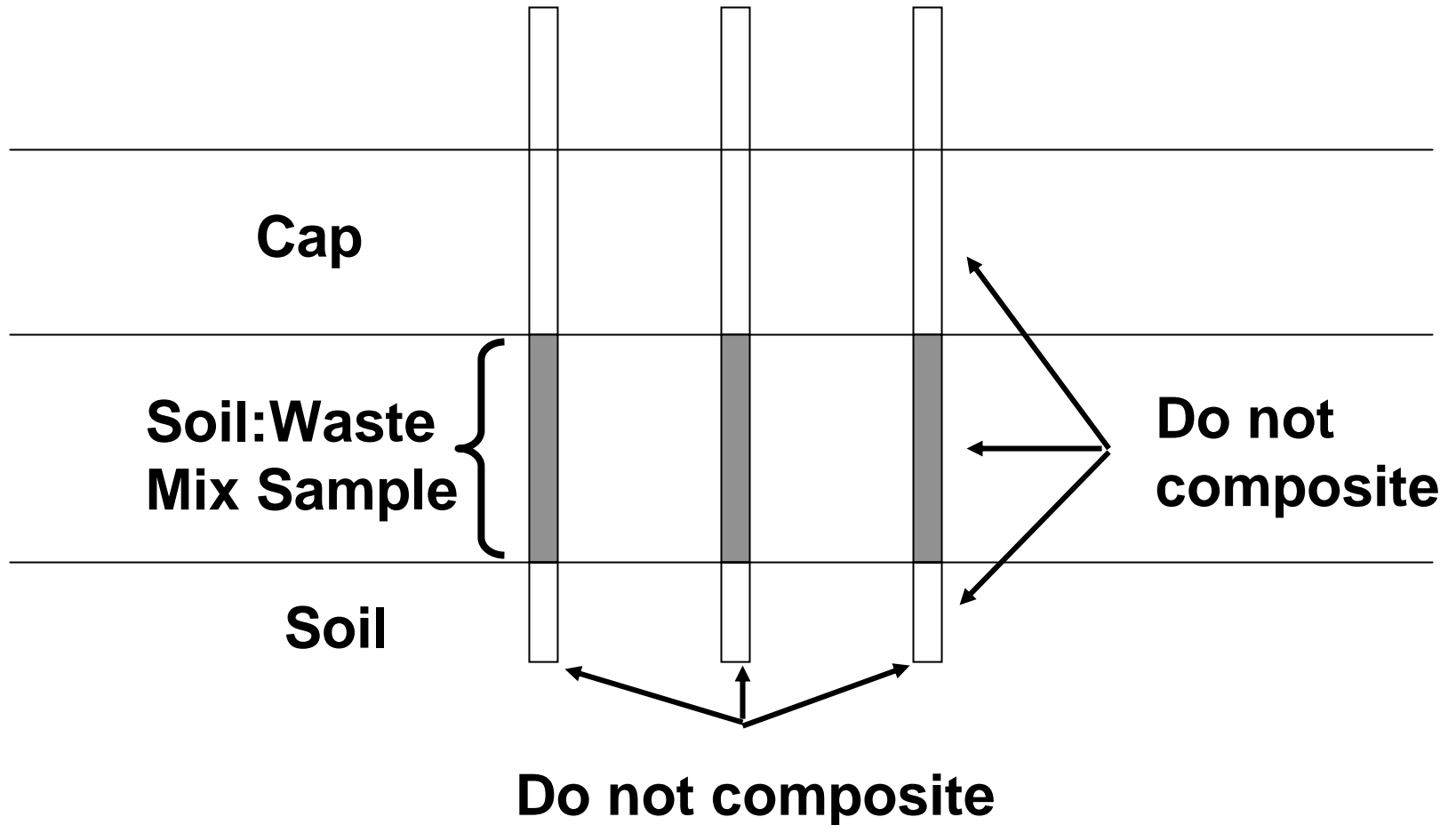
Mix Ratio Assumptions

- ◆ **Calculations assume a mix ratio of 3:1 for post-1996 and 1:1 for pre-1996**
 - ◆ **If actual mix ratio is available, will provide a more accurate estimate**
 - ◆ **Evaluating ways to incorporate actual mix ratio into the calculations**
 - ◆ **Need to strike a balance between need for simplicity and ability to use all available information**
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Drill Cuttings

- ◆ **Drill cuttings are often disposed on-site during LWD programs**
 - ◆ **If more than 50 m³ of cuttings disposed on-site without G50 Notification Form, need a Phase II ESA**
 - ◆ **Volume of cuttings disposed on-site is calculated by subtracting volume of cuttings (not total waste) disposed off-site from total volume of cuttings**
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Phase II ESA Sampling



Drilling Fluid Additives

- ◆ Drilling fluid additives must be identified
 - ◆ Many changes to products and trade names over time
 - ◆ PSAC historic additive list available at:
<http://www.psac.ca/>
 - ◆ Requests to identify unknown additives can be made at same website
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Summary

- ◆ ***Assessing Drilling Waste Disposal Areas* provides a defined process for conducting Phase I and II ESAs**
 - ◆ **Since its release in February 2005, users have identified some aspects that need more definition and clarification**
 - ◆ **Work is proceeding on revisions to address these areas**
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Thank You

