Development of a Monitoring, Verification, and Accounting Plan for a Potential CCS Project at Fort Nelson, British Columbia, Canada

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The Fort Nelson CCS project is located in British Columbia, Canada. It is a proposed project to mitigate CO2 emissions produced by a Power Plant project. The project involves injecting CO2 into a deep saline formation to store it securely.

**Baseline Characterization:***
- 6 wells in study area
  - Hot/Cold 2-D and 3-D seismic
  - Hydrogeological studies
  - Well test – 24 h
  - Core and cuttings
  - In-situ stress
  - Enhanced oil recovery
  - Geophysical characterization
  - Cap rock integrity testing
  - NBC testing
  - In-situ stress
  - Geohydrological setting

**Injection:**
- Three injection wells
  - Surface well formation
  - A 200 m radius injection well
  - Three deep monitoring wells
  - Surface wells monitoring
  - Gas injection well monitoring
  - Surface water sampling
  - Solute monitoring in using monitoring wells and injection wells

**Monitoring, Verification, and Accounting (MVA) Plan:**
- Risk-based approach to define MVA strategy
  - Risk management and risk communication plans
  - Detailed schedules for deep and shallow MVA activities
  - Risk analysis
  - Identification of context
  - System model
  - Elements of concern
  - Flow modeling
  - Geologic static model
  - Well characterization
  - Baseline geomechanical characterization
  - Baseline geochemical characterization
  - Characterization of confining strata
  - Elements of concern
  - Flow modeling
  - Baseline geomechanical characterization
  - Baseline geochemical characterization
  - Characterization of confining strata

**Risk Assessment:**
- Monitoring, Verification, and Accounting (MVA) plan has been developed based on the Injection West scenario.
- New proposed drilling location (west) and the original test well location (east).
- Second-round risk assessment expanded the first-round risk assessment by addressing the relative project risks associated with two injection locations: a new proposed drilling location (west) and the original injection well location (east).

**Climate, terrain, and remoteness will present significant challenges:**
- Limited access makes fewer sampling locations and events.
- Short work season means MVA technology installation will be expensive and require longer lead times for planning and evaluated levels of coordination.
- MVA technologies will be severely impacted by the limited access.
- MVA technologies will be greatly impacted by the limited access.
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**Monitoring and Verification (MVA) Guiding Principles:**
- Site selection
  - CSA Guidelines
  - Post-injection period
  - Pre-injection period
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