

A Workflow for Characterizing Legacy Wells as Potential Leakage Pathways for Integration to NRAP-Open-IAM

Jarrett Wise^{1,2}, Greg Lackey¹, Meng Meng³, Mohamed Mehana³, & Robert Dilmore¹

¹U.S. Department of Energy, National Energy Technology Laboratory, Pittsburgh, PA; ²NETL Support Contractor, Pittsburgh, PA; ³Los Alamos National Laboratory, Los Alamos, NM



Background

- Many sites that are ideal for CO₂ storage coincide with legacy wells (e.g., permeable reservoir with sealed caprock)
- Class VI regulations mandate that underground sources of drinking water (USDWs) are protected from CO₂ leakage
- EPA requires area of review (AoR) evaluations under Underground Injection Control (UIC) program
 - Identify all abandoned/legacy wellbores
 - Perform integrity assessment on casing, cement, and abandonment materials
 - Complete potential corrective action

Legacy Well Risk Assessment Approaches

- Data/records may be sparse and come from different sources
 - Historical, regulatory, or private
- Many wells have no historic records
- Approaches include:
 1. Data aggregation
 - Regional well integrity monitoring data
 2. High-level risk scoring
 3. Well construction and abandonment evaluation
 4. Ranked well construction and abandonment evaluation

NRAP Capabilities for Legacy Well Risk Assessment

Multiple options for assessing the integrity of legacy wells

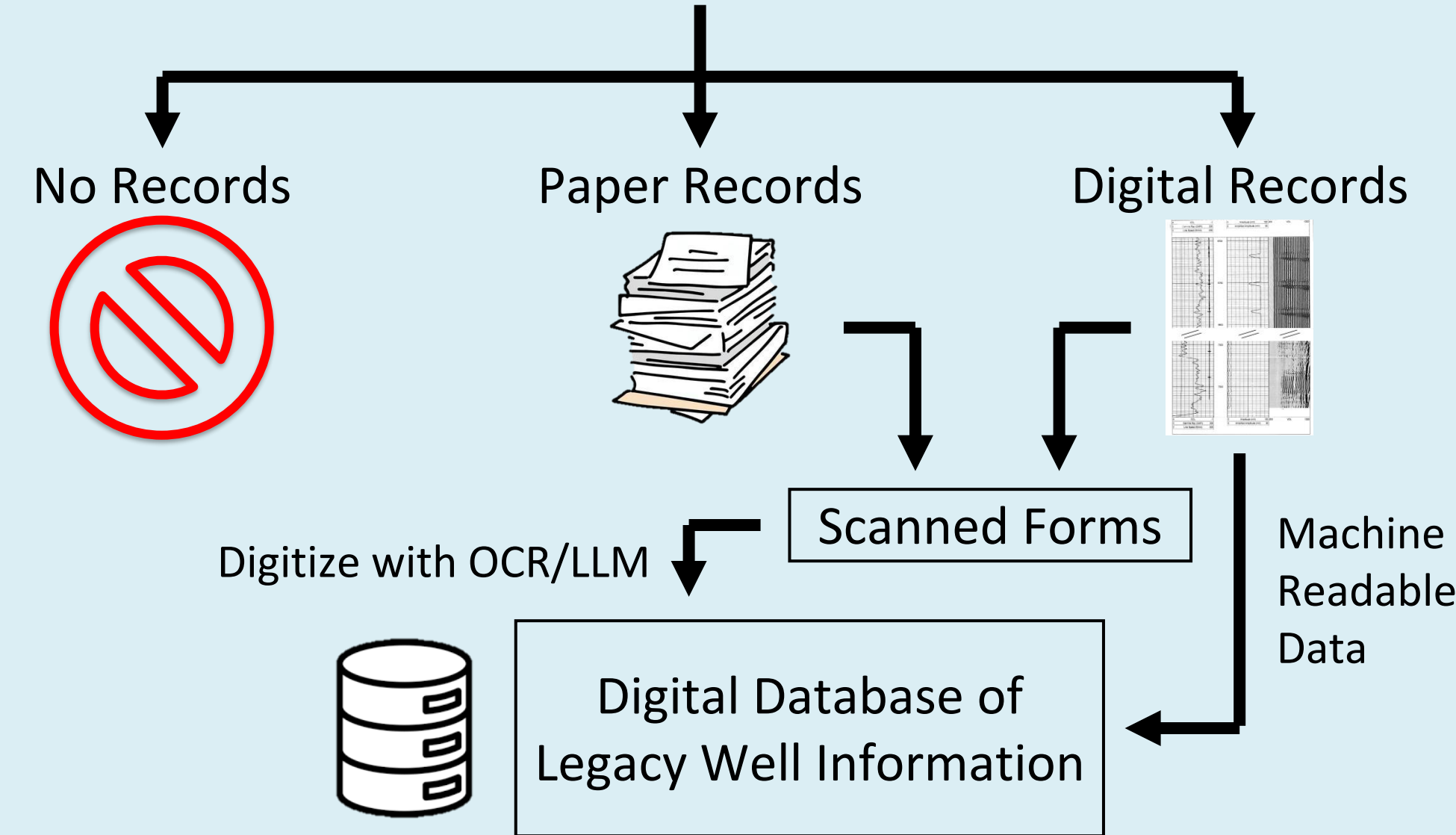
1. OpenWellbore
 - Leakage through uncased and uncemented hole
 - No thief zone(s)
2. MultisegmentedWellbore
 - Leakage along cemented wellbore
 - Multiple thief zones
 - Effective permeability
3. CementedWellbore
 - Leakage along cemented wellbore
 - Single thief zone
 - Effective permeability

Disclaimer

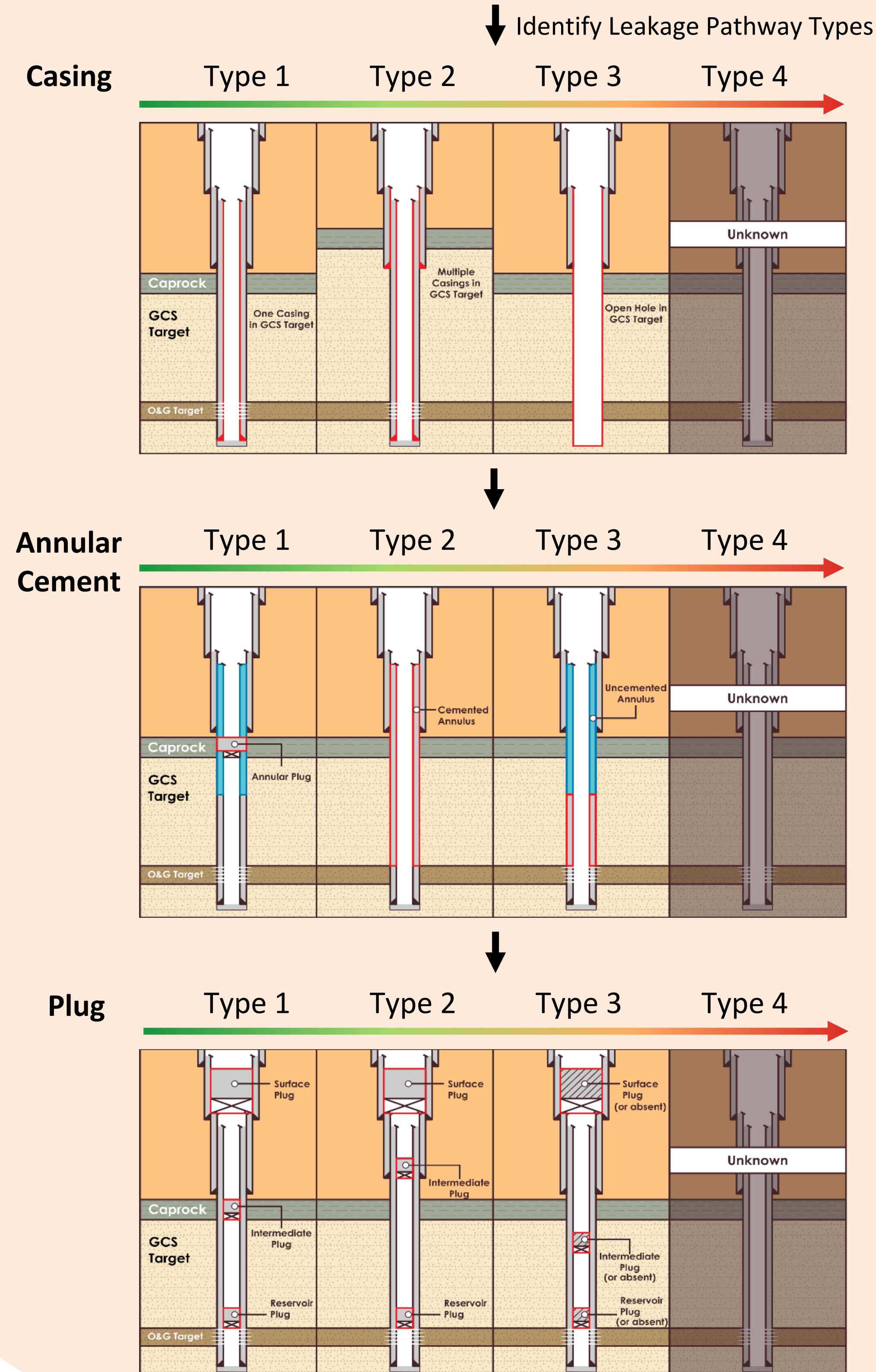
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Workflow for Known Legacy Wells

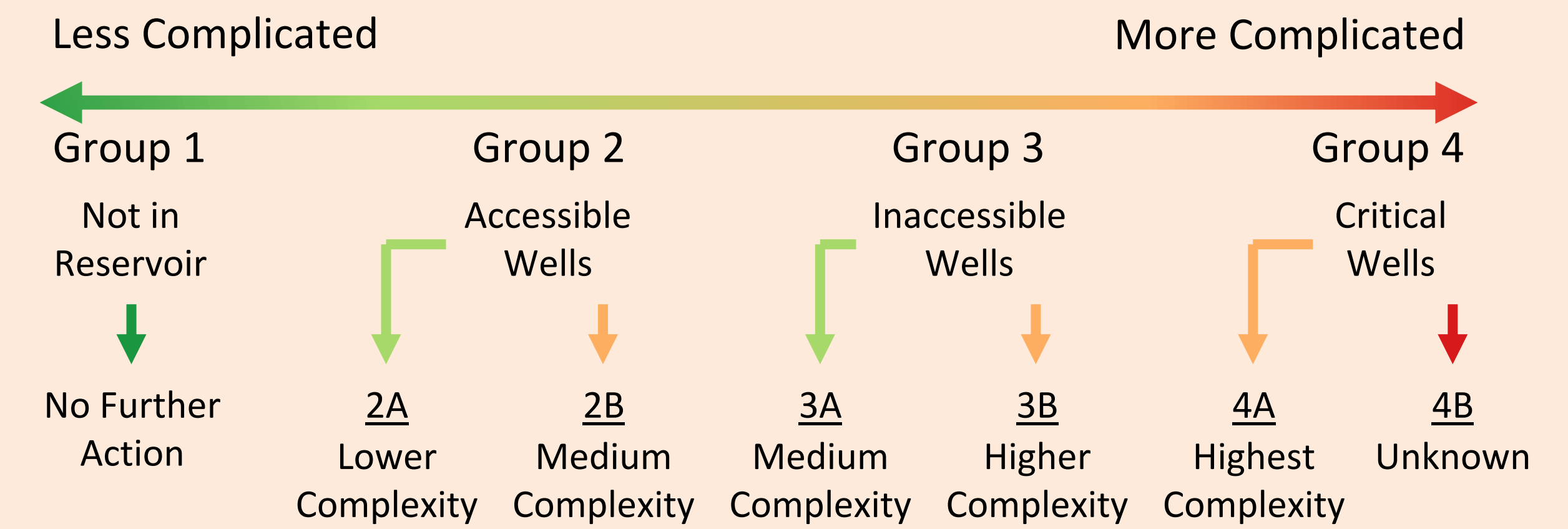
Step 1. Gather All Available Information



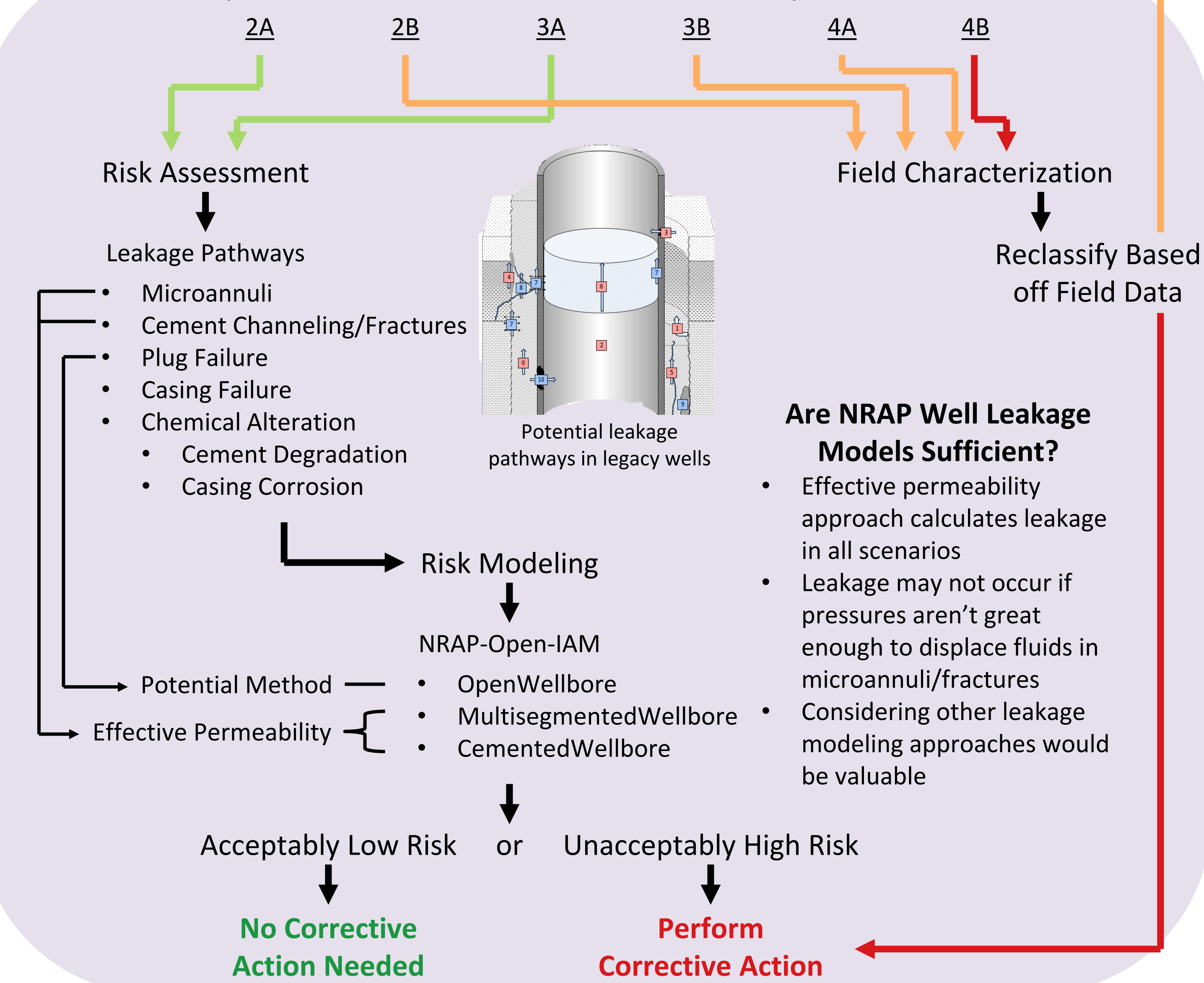
Step 2A. Evaluate Construction of Legacy Wells



Step 2B. Grouping of Well Types



Step 3. Perform Risk Assessment and Analysis



NRAP-Open-IAM Components

