

Geomatics and Digital Solutions

Field Planning, Data Collection,
Collaboration & Reporting





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Office Locations (17)

British Columbia

- Fort St. John

Alberta

- Calgary (main)
- Cold Lake
- Edmonton
- Grande Prairie
- Medicine Hat

Manitoba

- Virden

Saskatchewan

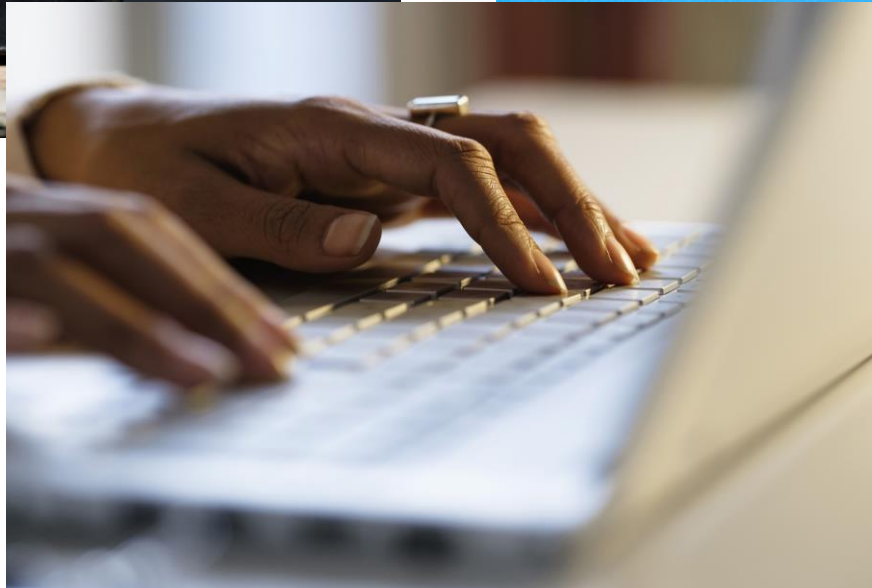
- Kindersley
- Lloydminster
- Oxbow
- Regina
- Swift Current
- Weyburn

Ontario

- Guelph
- London
- Oakville



The Request...



- “... a project from 6-months / 3-years ago.”
- “... how much data do we have.”
- “... we need to see the data this way and repull.”
- “... I would like to monitor progress for my whole portfolio.”
- “... we need to see data for litigation.”

- “... I need to see all these report/table in a single table.”
- “... we need daily updates.”
- “... we need to integrate this with mapping.”
- “... I know the folks that used to work on the project (no longer with the organization.”



Agenda

- Solutions In Action! (Part I): Vegetation Monitoring and Management for Reclamation
- Scaling a Mountain of Data
- Solutions In Action! (Part II): Construction Monitoring
- Configuring A Solution
- Solutions In Action! (Part III): Post-Construction Monitoring and Reclamation
- Closing Remarks

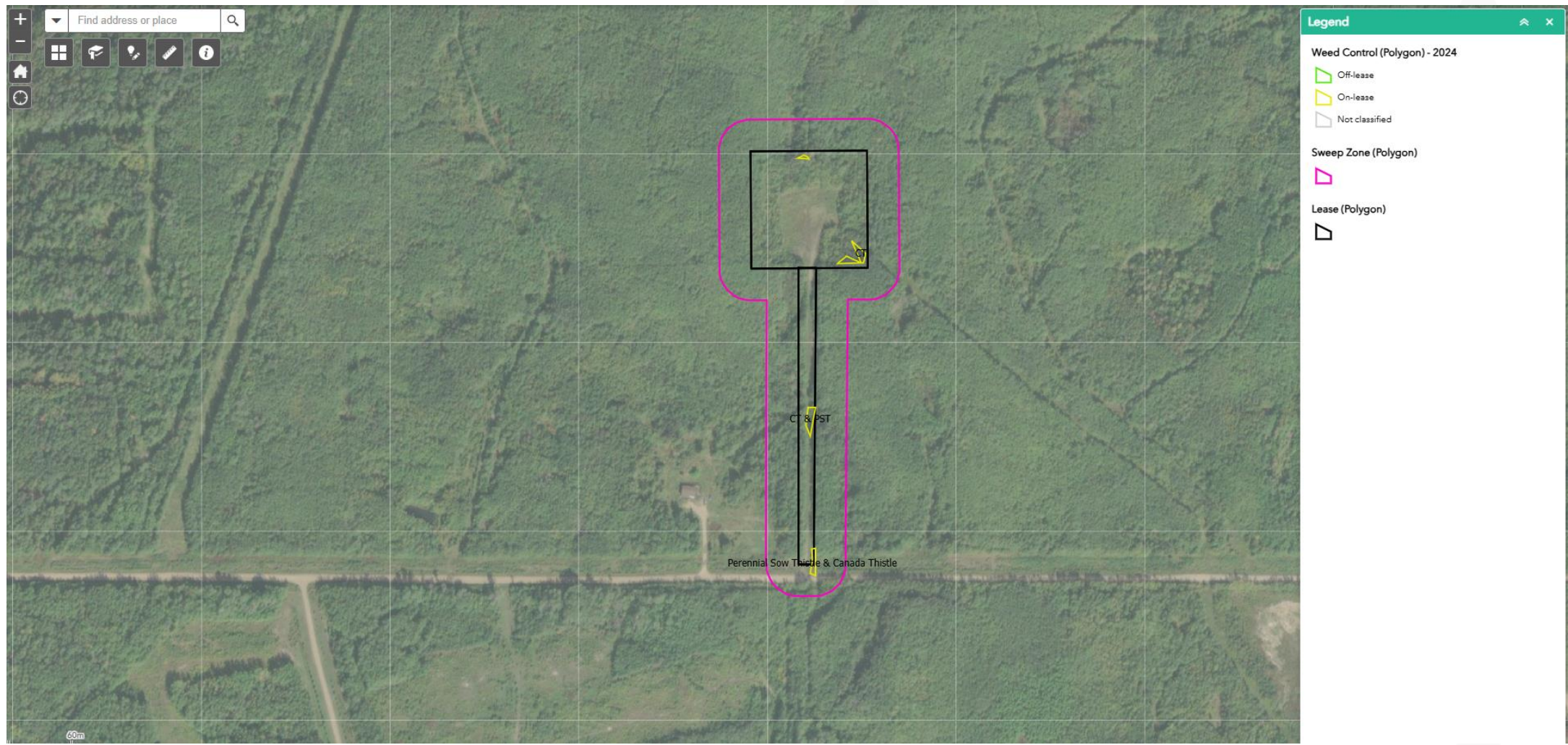




Solutions in Action!

Vegetation Monitoring and Management for Reclamation

Planning and Reporting (Vegetation Monitoring and Management for Reclamation)



Field Data Collection (Detailed Site Assessment)

Canada & Sow Thistle

Area 0.27 ha

389.4 km

Weed Species

Canada & Sow Thistle

Survey Date Time

2023-08-22, 3:00PM

Weed Density (%)

10

Treated

Yes

Weed Control Method

Herbicide

CreationDate

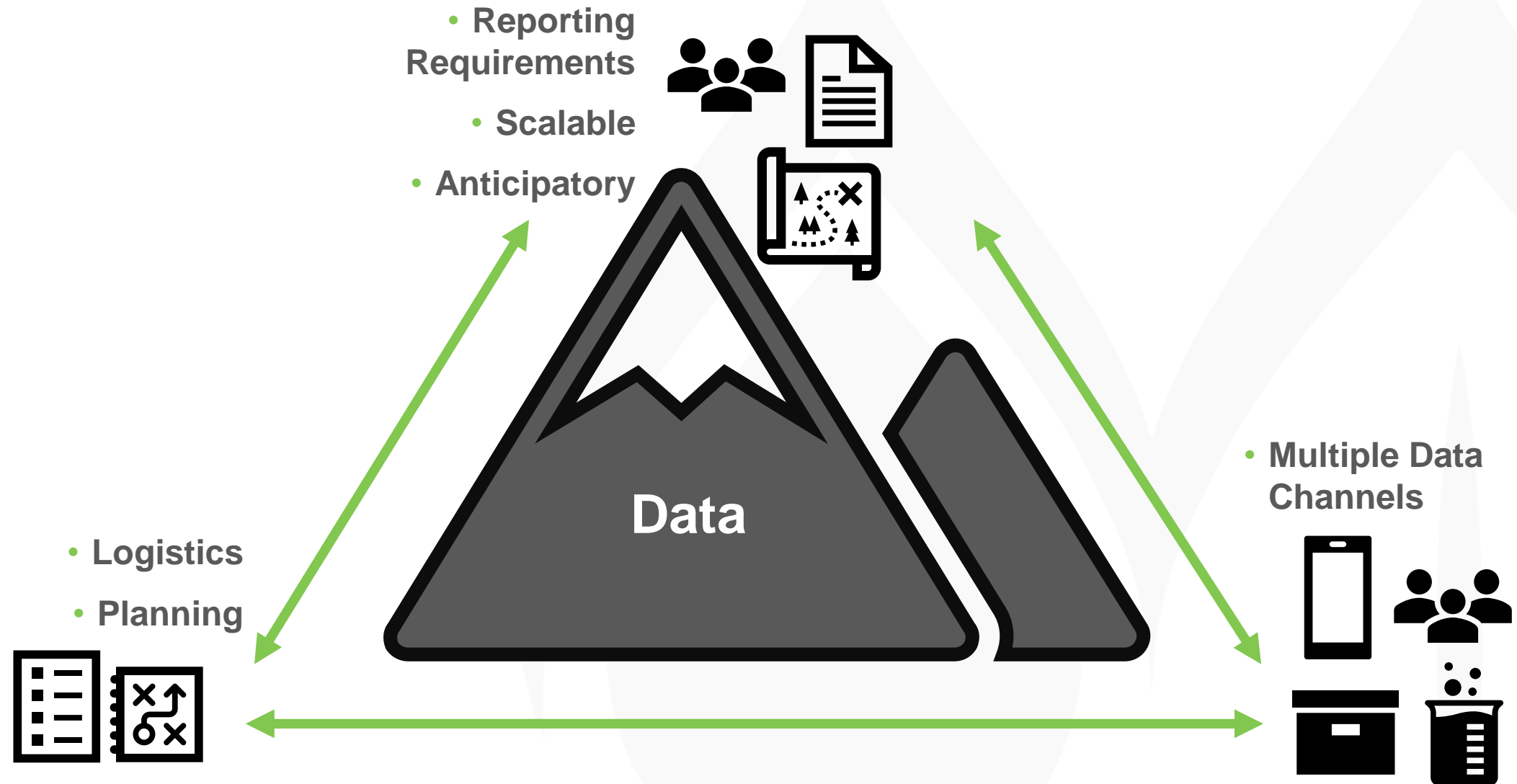
2024-06-10, 2:15 PM



A photograph of a mountain peak being climbed by a group of people. The mountain is covered in snow and has a sharp, conical shape. The climbers are wearing colorful jackets and are positioned along a path that leads up the mountain. The sky is a clear, deep blue. The image is framed by a green border with rounded corners.

Scaling a Mountain of Data

Scaling the Mountain



What are the challenges?

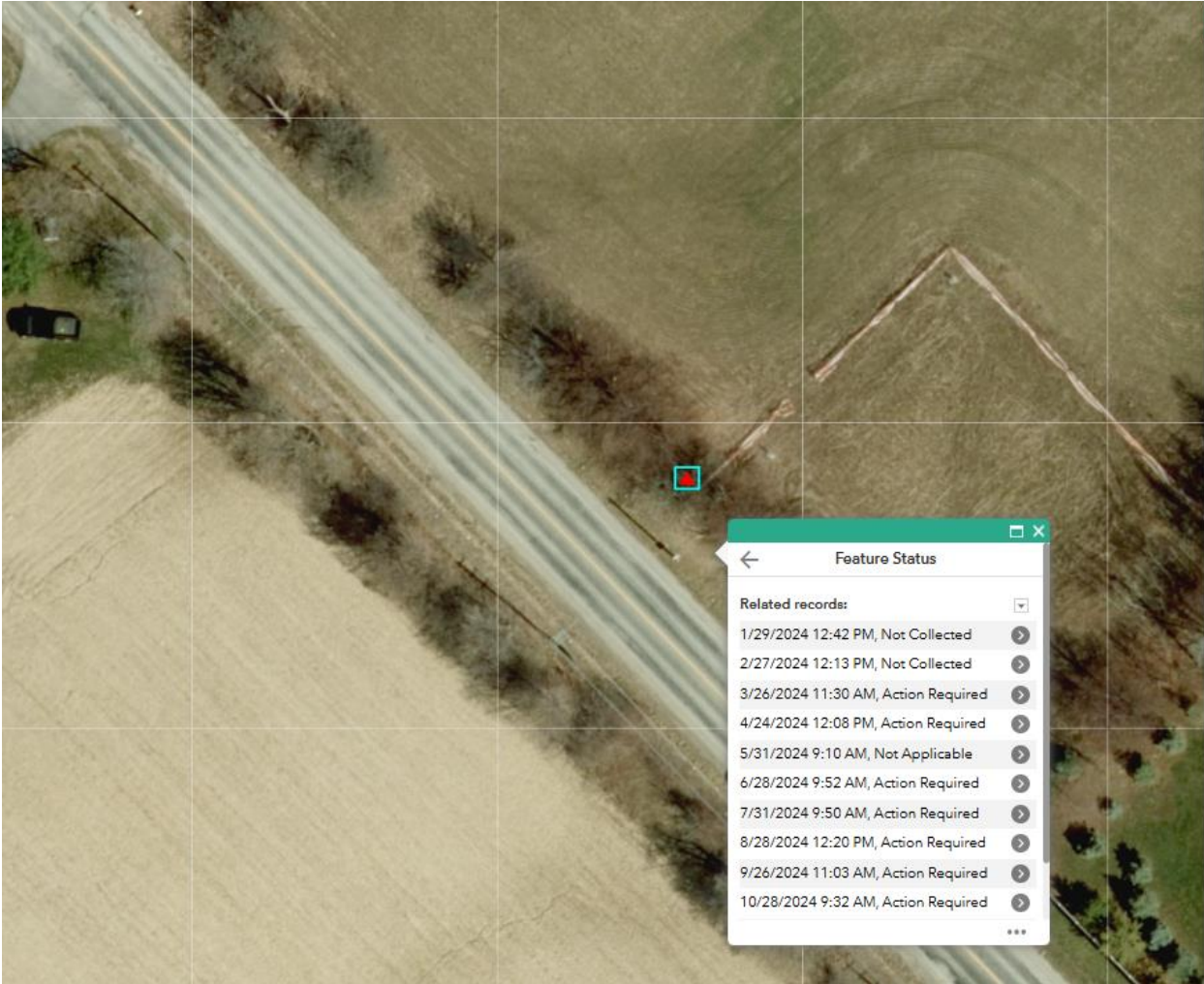
- Large portfolios, linear features, complex sites
- Multi-year, site revisits
- Geographically extensive
- Collaboration with client, contractors, regulators, third parties
- Investment to collecting lots of data – how can we maximize this investment using geomatics and digital solutions?
- Vegetation monitoring and management, site sampling, wildlife sweeps and surveys, pre- & post-construction, closure
- Resource, infrastructure projects
- **What are we trying to alleviate?**
- **Where are trying to improve efficiency?**



A photograph of a construction site. On the left, there is a gravel area with a fenced-in green mesh structure. In the center, a small pond with reeds and flowers is visible. The background shows a blue building and trees.

Solutions in Action!
Construction Monitoring

Planning and Field Data Collection (Construction Monitoring)



Legend

Inspection Area

- Not Applicable
- Not Collected
- Action Required
- Resolved
- Complete

Feature Observation (Point) - Latest Status

- Not Applicable
- Not Collected
- Action Required
- Resolved
- Complete

Feature Observation (Line) - Latest Status

- Not Applicable
- Not Collected
- Action Required
- Resolved
- Complete

Feature Observation (Polygon) - Latest Status

- Not Applicable
- Not Collected
- Action Required
- Resolved
- Complete

Maps

GPS accuracy 16.3 m · 10 m required

Feature Status
Related to MTS-29

Add

2024-05-31, 9:10 AM, Not Applicable

2024-06-28, 9:52 AM, Action Required

2024-07-31, 9:50 AM, Action Required



Field Data Collection (Construction Monitoring)



Reporting (Construction Monitoring)

Construction and ESC Daily Inspection Log

INSPECTION INFO	
Project Name:	
Site Code:	
Date	2024-08-29
Time of Arrival:	02:00 PM
Time of Departure:	02:30 PM
Inspector:	Mohamed Ali
Weather During Inspection:	Light rain
HAC Completed? :	Yes

SITE INFO	
Project Type:	Pumping station
Site Area (Sq. m.):	25,778

EROSION SEDIMENT CONTROL INFO	
Current Construction Activities:	Activities vary per site.
Working Area Soil Characteristics (Observed):	Varies, clays present
Waterbodies Close to Site	Yes
Distance from Working Area to Nearest Water Body:(m)	~200 North-East -
Rain Event?:	No
24 Hour Precipitation (mm):	n/a
Time Since Rainfall:	n/a
Is there active Construction?	Yes

Feature Type	Date	Time	Comments	Status
ESC Barrier adjacent to CA regulated lands	2024-04-24	10:20	Degrading ESC measures along the east perimeter. The northern ESC measures are in more stable condition.	Action Required
ESC Barrier adjacent to CA regulated lands	2024-05-31	16:04	Perimeter ESC measures are aging, some isolated areas of damage.	Action Required
ESC Barrier adjacent to CA regulated lands	2024-06-28	14:40	Fence is present and functional, expected to be removed in near future.	No Issues Noted
ESC Barrier adjacent to CA regulated lands	2024-07-31	15:00	Site being decommissioned. Stockpile of granulars remain. Perimeter fence degrading but will not be required when final grading works	Not Applicable
ESC Barrier adjacent to CA regulated lands	2024-08-29	14:05	Topsoil placement as part of site decommissioning.	Not Applicable



Photo 3. August 29, 2024 - Topsoil temporary staging area





Configuring A Solution

Scoping A Solution



Understanding Data Collection Objectives



Building Data Structure



Using Off-The-Shelf Applications



Making It Right Sized

Understanding Data Collection Objectives

- What are we collecting?
- How are we collecting it?
- How much are we collecting?
- How many sites are we assessing?
- How constrained does it need to be?
- How often do we need to be reporting?
- Who do we need to be reporting to? Regulatory?
- Do we need to map it?
- Do we need to post-process it?
- Moving scope? Future work?
- Do we have third parties, contractors supporting?
- What health and safety consideration do we have to keep in mind?
-



An aerial photograph of a wetland or marsh area, showing a grid of rectangular plots. A winding, light-colored path or channel runs through the center of the grid. The surrounding areas are a mix of brown and green, indicating different types of vegetation or water levels. A green banner is overlaid at the bottom of the image.



Solutions in Action!

Post-Construction Monitoring and Reclamation

Post-Construction Monitoring (Linear)

8:45 AM 38%

< Back

 **Soils Field Visit Details: 2020-10...** 
Related to PCRA-283

Pasture

Dominant Vegetation Species
Tame Pasture

Dominant Species Percentage Cover (on ROW)
50-60%






Dominant Species Percentage Cover (off ROW)
80-90%

Dominant Height (on ROW)
0-25cm

Dominant Height (off ROW)
0-25cm

Dominant Species Stress/Vigour (on ROW)
Somewhat Stressed

Dominant Species Stress/Vigour (off ROW)
Very Vigorous



Post-Construction Monitoring (Linear)



Field Date: 2024-10-21

1 of 1

100%

Field summary Date: 2024-10-21

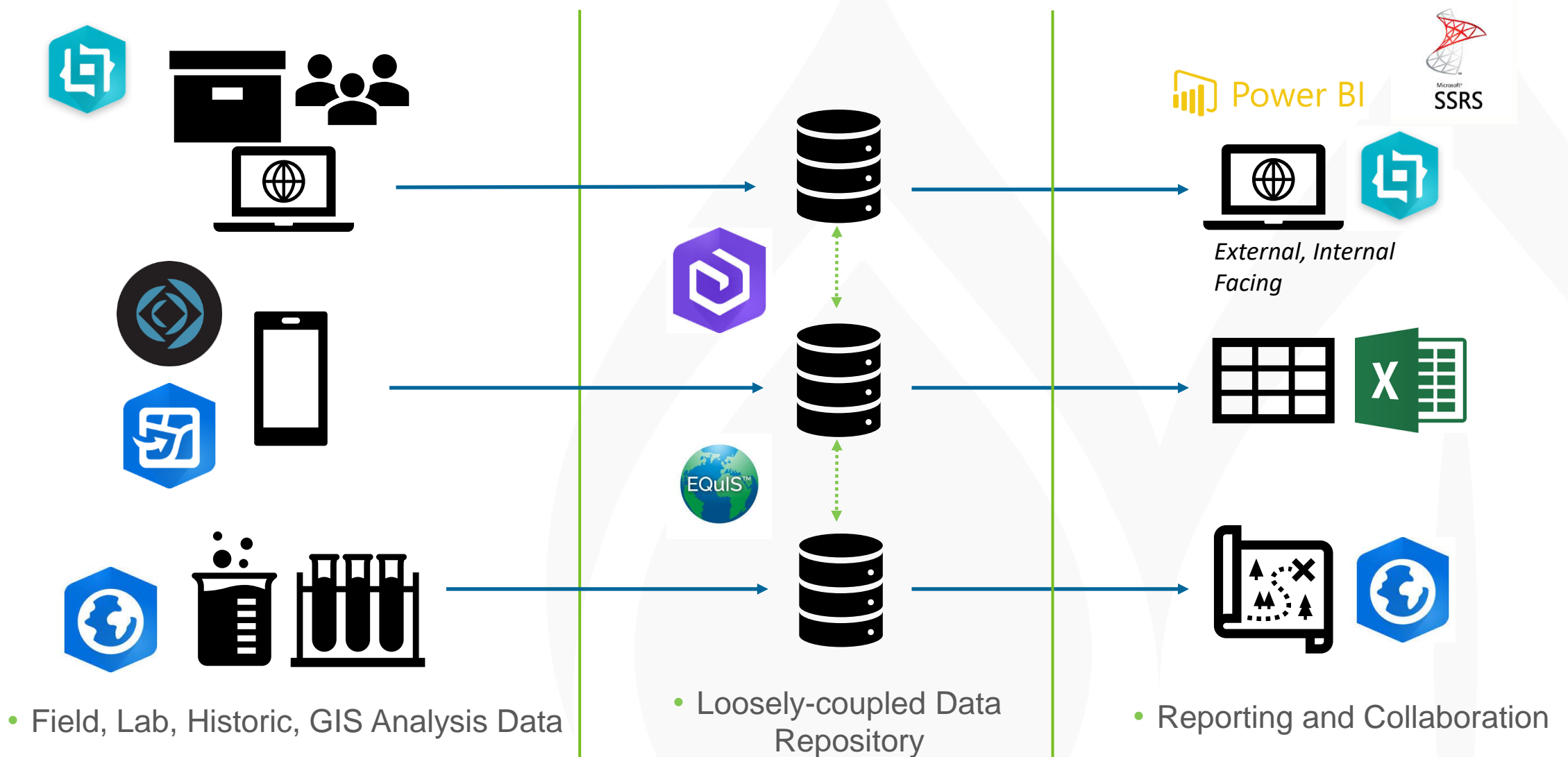
Tract Number	Legal Location	Site ID	Construction Status	Approximate KP	Crew Initial	Field Comments	Client EIComments
166.42		PCRA-231	Reclaimed 2020	78.70000000	JT/GM		
166.47		PCRA-262.1	Reclaimed 2020	76.75000000	JT/GM	Landowner concerns with rocks on right of way. We picked several large rocks.	
		PCRA 262.2	Reclaimed 2020	76.60000000	JT/GM	Compaction not noted in top 30cm but landowner says the area holds water and that could be due to subsurface compaction. PCRA 262.2 was comparable to the control (completed approximately 25 m northeast of the tract). On RoW soil soft, canola on and off RoW very vigorous, no surface ponding observed.	
		PCRA-262	Reclaimed 2020	76.35000000	JT/GM	Landowner meeting on site: Concerns with rocks, perennial sow thistle, especially on west side running N-S, "trough" along west side, low areas that hold water.	
403		PCRA-281	Reclaimed 2019	202.65000000	JT/GM	Topsoil on row greater than 30cm. Recommend assessing when crop is present if possible.	
		PCRA-280	Reclaimed 2019	202.30000000	JT/GM	Admixing on row started at 16 cm. Slight compaction with the admixed zone.	



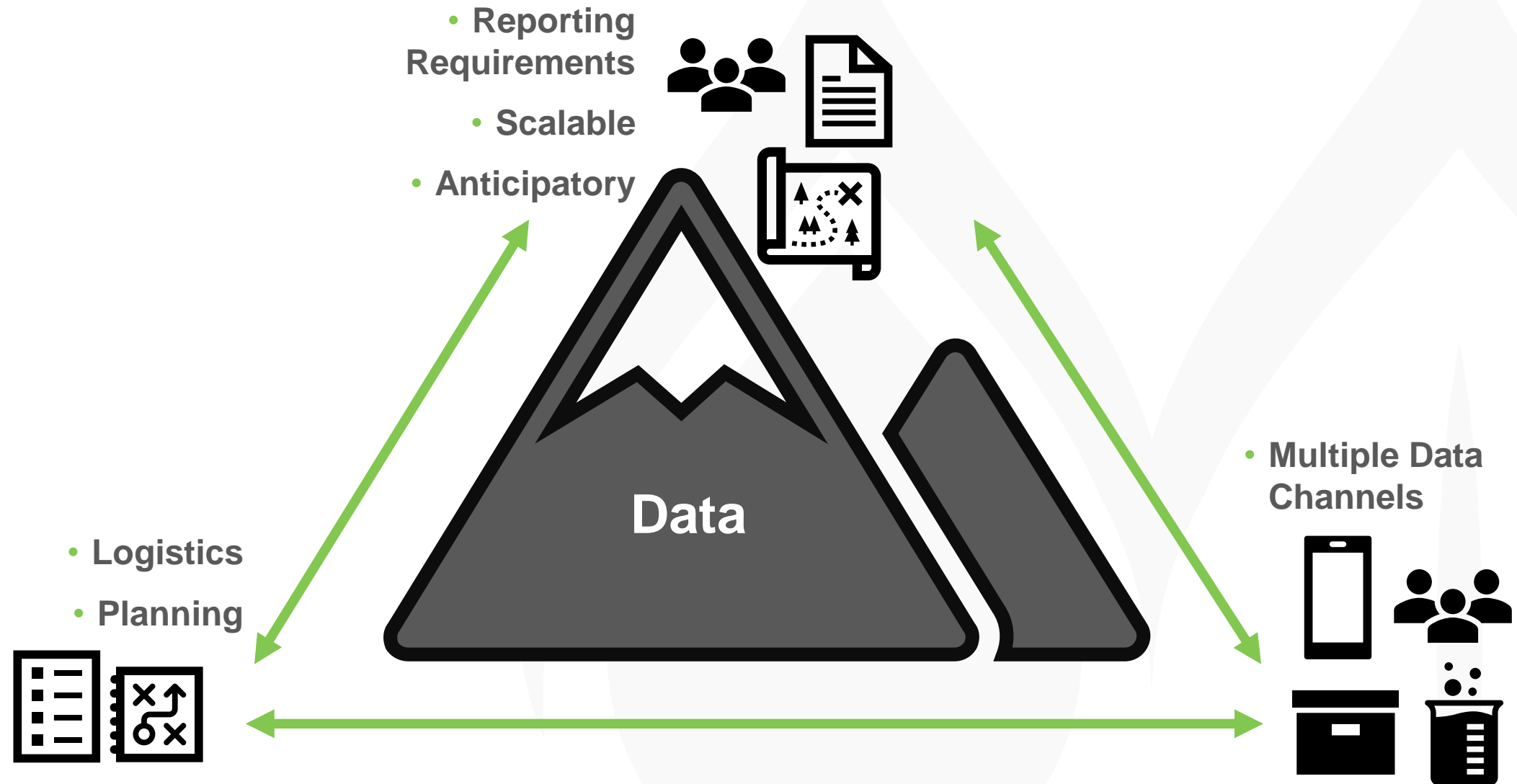
An aerial photograph of a forest landscape. In the center, there is a large, irregular clearing with dry, yellowish-brown grass. The surrounding forest is dense, with trees showing various shades of green and some autumnal yellow and orange. The lighting suggests it's daytime, with shadows cast across the forest floor.

Closing Remarks

Data Flows



Scaling the Mountain



Questions?

