Ecological Recovery Monitoring Program for Certified Reclaimed Sites in Alberta: Field Datasheets for Cultivated Land Wellsites

By

InnoTech Alberta

ERMP Project Advisory Group

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Ecological Recovery Monitoring Program Development Project

The Alberta Biodiversity Monitoring Institute contracted InnoTech Alberta in 2017 to develop the direction, framework and implementation plan for the Ecological Recovery Monitoring Program. The Project has been divided into a series of Tasks:

> Task 1: Describe the Goals and Objectives for a Long-Term Monitoring Program in Alberta
>
> Task 2: Develop a Science-Based, Practical Protocol for the Long-Term Monitoring Program
>
> Task 3: Develop an Information Distribution Plan
>
> Task 4: Develop an Implementation Plan for the Long-Term Monitoring Program

Project Team

The Project was led by InnoTech Alberta Reclamation Team staff (Small, C., and Powter, C.) with the advice and guidance from a Project Advisory Group (PAG). The PAG consisted of members from: Alberta Environment and Parks, ABMI, the University of Alberta, InnoTech Alberta, Canadian Forest Service, ATCO Electric, and several technical specialist consultants. PAG members included:

- Chris Powter – Enviro Q&A Services Inc.
- Christina Small – InnoTech Alberta
- Andrew Underwood – InnoTech Alberta
- Jim Schieck – InnoTech Alberta/Alberta Biodiversity Monitoring Institute (ABMI)
- Jim Herbers – Alberta Biodiversity Monitoring Institute (ABMI)
- Arnold Janz – Alberta Environment and Parks (AEP)
- Gordon Dinwoodie – Alberta Environment and Parks (AEP)
- John Begg - Alberta Environment and Parks (AEP)
- Anne McIntosh – University of Alberta
- Jeff Battigelli – University of Alberta
- Cindy Shaw – Canadian Forest Service
- Cindy Craig – ATCO Electric
- Ivan Whitson – I Whitson Innovations Inc.

Documents produced for each Task were developed as drafts by InnoTech Alberta and then discussed with the PAG in a workshop format to develop a consensus position on the key Program components. The final draft document of each Task informed development of the next Task document.

Report
This is one of three field datasheet reports, prepared under Task 2. The other datasheet reports support protocols for forested land and grassland sites.

This report may be cited as:
ERMP Project Advisory Group, 2017. Ecological Recovery Monitoring Program for Certified Reclaimed Sites in Alberta: Field Datasheets for Cultivated Land Wellsites. 8 pp.

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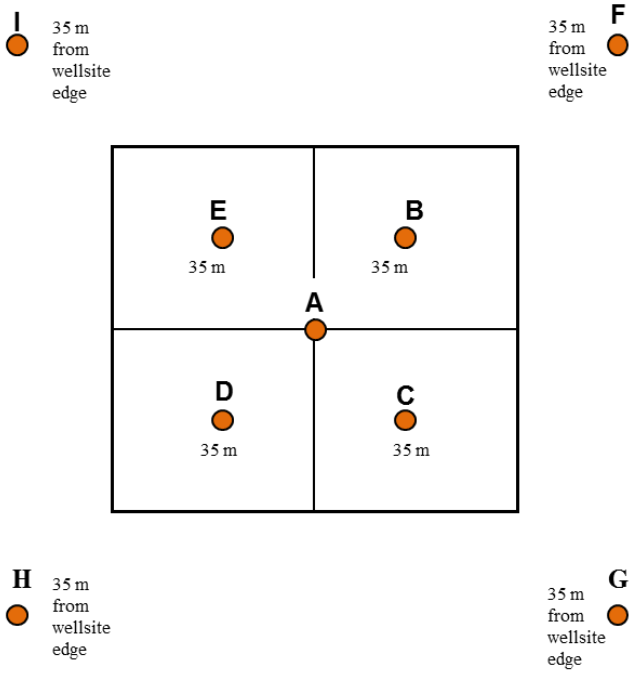
1. Site Coordinate Establishment – GPS Coordinates

Site:_____
Date: _____
Data collected by_____
Description of weather (e.g., overcast, sunny, raining):

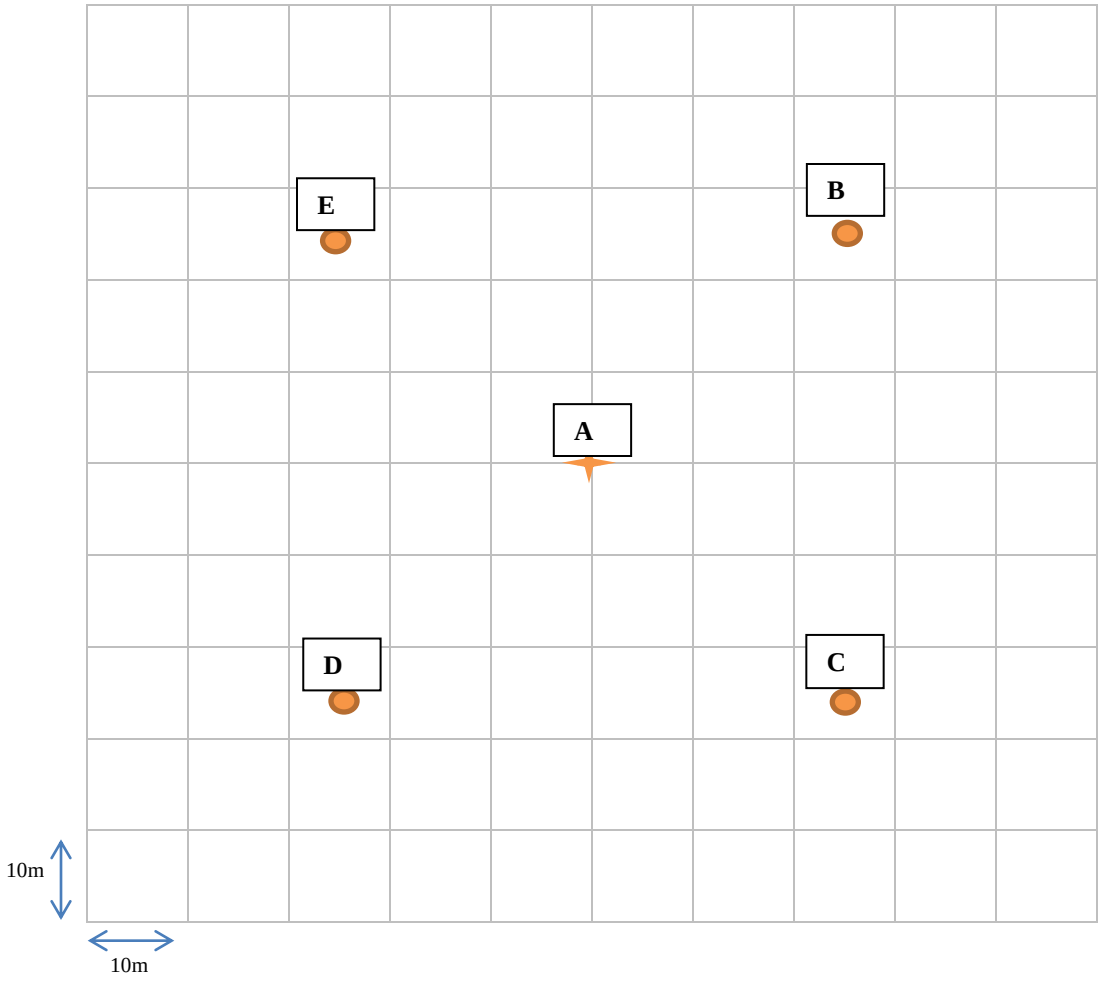
Location	UTM coordinates[1]		Bearing [2] (0-359º)	Comments
	Easting[2]	Northing[2]		
Wellsite Centre - A			n/a	
Well BORE			n/a	
B - Centre of B 10x10 m plot				
C - Centre of C 10x10 m plot				
D - Centre of D 10x10 m plot				
E- Centre of E 10x10 m plot				
F - Centre of F 10x10 m plot			n/a	
G- Centre of G 10x10 m plot			n/a	
H - Centre of H 10x10 m plot			n/a	
I - Centre of I 10x10 m plot			n/a	

1 –Record coordinates when measuring out the site on the ground. Mark a waypoint and record the UTMS for each of the 9 plot centres listed.
2. – Record the bearing on your compass standing at wellsite centre of each of the four corners of the wellsite and record those bearings. Those will be the bearings for the 4 transects running from the wellsite centre to the wellsite corners.



2A. Site Level Human Disturbance (Within the 1 Ha): Wellsite

Site:_____
Date:_____ **Data collected by:**_____
Place arrow point north on sheet to indicate direction of North



Human Disturbance Codes (in addition to the well pad disturbance which encompasses the entire wellsite):
None **(NONE) –** No human caused disturbance
Linear-pipeline **(PIPE)**
Linear-powerline **(POWER)**
Linear-seismic **(SEIS) –** Any type of cutline or seismic line
Railway **(RAIL)**
Road-paved **(ROADP)** – Any type of road with paved surface
Road-unpaved **(ROADG) –** Any type of road with an unpaved but improved surface (i.e. gravel)
Trail **(TRAIL)** – Any type of truck or ATV trail with an unimproved surface
Cultivated crop/field **(CULT) –** Any type of cultivated field that is used to grow agriculture crops
Pasture **(PAST)** – Any type of pasture (tame or native), grazing reserve, etc.
Residential **(RES)** – Any type of human dwelling, farm building, or farm yard in a rural or acreage setting
Bare ground – undetermined cause **(BARE)** – Human caused bare ground for which the cause cannot be determined
Other **(OTHER) –** Specify other disturbance type

2B. Site Level Human Disturbance (Within the 1 Ha): Reference

Site:_____

Date:_____ **Data collected by:**_____

* Each quadrant represents one of the reference sites – recognizing they are not contiguous in the field

Human Disturbance Codes:

Well pad **(WELL)** – Any type of area cleared for oil/gas/CBM pump jacks or well heads
None **(NONE) –** No human caused disturbance
Harvest **(HARV)** – Any type of forest harvesting (clear-cut, partial cut, understory retention, etc.) <30 years old
Linear-pipeline **(PIPE)**
Linear-powerline **(POWER)**
Linear-seismic **(SEIS) –** Any type of cutline or seismic line
Railway **(RAIL)**
Road-paved **(ROADP)** – Any type of road with paved surface
Road-unpaved **(ROADG) –** Any type of road with an unpaved but improved surface (i.e. gravel)
Trail **(TRAIL)** – Any type of truck or ATV trail with an unimproved surface
Cultivated crop/field **(CULT) –** Any type of cultivated field that is used to grow agriculture crops
Pasture **(PAST)** – Any type of pasture (tame or native), grazing reserve, etc.
Residential **(RES)** – Any type of human dwelling, farm building, or farm yard in a rural or acreage setting
Urban **(URB) –** Any type of human dwelling, associated building, or yard/driveway/road in an urban setting
Industrial **(IND) –** Any type of building, roadway, yard, etc. associated with industrial development
Bare ground- undetermined cause **(BARE)** – Human caused bare ground for which the cause cannot be determined
Other **(OTHER) –** Specify other disturbance type

3. Site Photos

Site:_____
Date:_____
Data collected by:_____

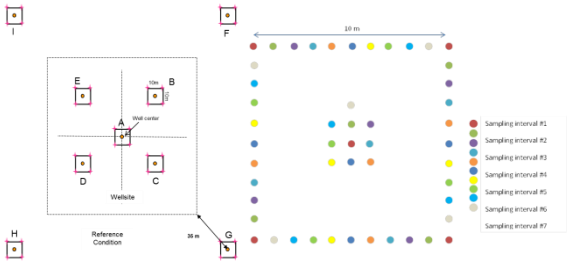
Which reference quadrant was selected as most the representative reference area?_____

	Oriented in Direction of 10x10 m plot centre			
Site Photographs [1]	**B**	**C**	**D**	**E**
Wellsite Quadrant Photographs (Record Photo #)				
Wellsite Representative Photograph (Record Photo #)				
	From middle of each reference quadrant, facing in a single direction:			
	F	**G**	**H**	**I**
Reference Area Quadrant Photographs (Record Photo #)				
Reference Area Representative Photograph (Record Photo #)				
Comments				

1 – Standing at the wellsite centre - one photo is taken in the direction of each sub-ordinal transect (i.e., towards wellsite corners) (total of 4 photographs), one representative site photo is taken from anywhere in the 1 ha wellsite area. For the reference area quadrant photos, photos are taken from the near corner of the 10x10 m plot of each of the four reference quadrants, and one representative site photo is taken from anywhere in the 1 ha reference area. All photos are taken at eye level using a lens with a 35 mm focal length. Check the quality and focus of each photo and re-take if necessary.

Ecological Recovery Monitoring of Reclaimed Wellsites

4. Soil Sample Collection



Site:_____
Date:_____ **Data collected by:**_____
Sheet ___1__**of**__3___

	Profile Depth (cm)		
Sample ID	Start	Finish	Comments
W-A-1-0			
W-A-1-15			
W-A-1-30			
W-A-1-60			
W-A-2-0			
W-A-2-15			
W-A-3-0			
W-A-3-15			
W-A-4-0			
W-A-4-15			
W-A-5-0			
W-A-5-15			
W-B-1-0			
W-B-1-15			
W-B-1-30			
W-B-1-60			
W-B-2-0			
W-B-2-15			
W-B-3-0			
W-B-3-15			
W-B-4-0			
W-B-4-15			
W-B-5-0			
W-B-5-15			
W-C-1-0			
W-C-1-15			
W-C-1-30			
W-C-1-60			
W-C-2-0			
W-C-2-15			
W-C-3-0			
W-C-3-15			
W-C-4-0			
W-C-4-15			
W-C-5-0			
W-C-5-15			
W-D-1-0			
W-D-1-15			
W-D-1-30			
W-D-1-60			
W-D-2-0			
W-D-2-15			

4. Soil Sample Collection – cont'd

Site:_____
Date:_____ **Data collected by:**_____
Sheet __2___ **of** __3___

	Profile Depth (cm)		
Sample ID	Start	Finish	Comments
W-D-3-0			
W-D-3-15			
W-D-4-0			
W-D-4-15			
W-D-5-0			
W-D-5-15			
W-E-1-0			
W-E-1-15			
W-E-1-30			
W-E-1-60			
W-E-2-0			
W-E-2-15			
W-E-3-0			
W-E-3-15			
W-E-4-0			
W-E-4-15			
W-E-5-0			
W-E-5-15			
R-F-1-0			
R-F-1-15			
R-F-1-30			
R-F-1-60			
R-F-2-0			
R-F-2-15			
R-F-3-0			
R-F-3-15			
R-F-4-0			
R-F-4-15			
R-F-5-0			
R-F-5-15			
R-G-1-0			
R-G-1-15			
R-G-1-30			
R-G-1-60			
R-G-2-0			
R-G-2-15			

4. Soil Sample Collection – cont'd

Site:_____
Date:_____ **Data collected by:**_____
Sheet __3___ **of**__3___

	Profile Depth (cm)		
Sample ID	Start	Finish	Comments
R-G-3-0			
R-G-3-15			
R-G-4-0			
R-G-4-15			
R-G-5-0			
R-G-5-15			
R-H-1-0			
R-H-1-15			
R-H-1-30			
R-H-1-60			
R-H-2-0			
R-H-2-15			
R-H-3-0			
R-H-3-15			
R-H-4-0			
R-H-4-15			
R-H-5-0			
R-H-5-15			
R-I-1-0			
R-I-1-15			
R-I-1-30			
R-I-1-60			
R-I-2-0			
R-I-2-15			
R-I-3-0			
R-I-3-15			
R-I-4-0			
R-I-4-15			
R-I-5-0			
R-I-5-15			