FIU D03 SITE CHARACTERIZATION: SUMMARY

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1 DESCRIPTION

1.1 Purpose

The data summarized here is used to inform the site design activities for NEON project Teams, EHS (permitting), FCC, ENG and FSU. This document summarizes the FIU site characterization data collected, analyzed, and described in the FIU D03 Site Characterization: Supporting Data (AD[01]).

1.2 Scope

This document summarizes the FIU site characterization data for three D03 tower locations: Ordway_Swisher (Core). Disney Wilderness Preserve (Relocatable 1) and Jones Ecological Center (Relocatable 2).

2 RELATED DOCUMENTS AND ACRONYMS

2.1 Applicable Documents

AD[01]	NEON.DOC.011035 - FIU D03 Site Characterization Supporting Data.docx
AD[02]	NEON.DOC.011018 - WID between FIU and FCC
AD[03]	NEON.DOC.011008 --FIU Tower Science Requirements
AD[04]	NEON.DOC.011029 - FIU Precipitation Collector Site Design Requirements

2.2 Reference Documents

RD[01]	NEON.DOC.000008	NEON Acronym List
RD[02]	NEON.DOC.000243	NEON Glossary of Terms
RD[03]		
RD[04]		

2.3 Acronyms

m.a.s.l.	Meters above sea level
m.a.g.l.	Meters above ground level

2.4 Verb Convention

"Shall" is used whenever a specification expresses a provision that is binding. The verbs "should" and "may" express non-mandatory provisions. "Will" is used to express a declaration of purpose on the part of the design activity.

3 ORDWAY-SWISHER BIOLOGICAL STATION

3.1 Desired ecosystem

Table 1. Ordway-Swisher.
The core site and representative of the ecosystem type and management practice for Domain 04.

Ecosystem Type	Management activity
Longleaf-pine forest	Controlled burns

The Ordway site is designed to study an intact longleaf pine ecosystem, which is one of the historically dominant forest types in this region. The forest is maintained by fire and has a relatively open structure and mean canopy height of ~23 m.

The original tower site was lat 29.68998591°, long -81.99353439°, after FIU site characterization, we determined the exact tower location to be at 29.68927°, -81.99343° to minimize the needs for tree cutting during tower construction (micro-sited). New location is near the original tower location and closer to access road. The ecosystem in interest is the same type.

Table 2. Ecosystem and site attributes for the Ordway-Swisher site.

Ecosystem attributes	Measure and units
Mean canopy height	23 m
Surface roughness[a]	1.7 m
Zero place displacement height[a]	19.5 m
Structural elements	Open pine forest canopy, uniform
Altitude[b]	25-55 [m] a.s.l.
Slope	0%
Aspect	0
Time zone	Atlantic
Magnetic declination	5° 28' W
Frost-free period	365 days

Note, [a] From field survey.
[b] From field survey and best estimate. Forest is very open.

3.2 Site Design and Tower Attributes

We use the tower as the index. Tower location is the center point. All other information is based on the center-point of the tower, except the vector for the soil array. the projected area of the tower is square, *i.e.*, 2 m x 2 m. **Instrument hut orientation vector** is along the long side of the instrument hut (short-side of instrument hut is perpendicular to the **Instrument hut orientation vector)**. The numbering of the measurement levels is that the lowest is level one, and each subsequent increase in height is numbered sequentially, in this case, level 5 being the upper most level at this tower site.

Table 3. Tower oriented design attributes for the Ordway-Swisher site.
0° is true north with declination accounted for. Color of Instrument hut exterior shall be tan to best match the surrounding environment.

Attribute	lat	long	degree	meters	notes

Airshed			345° to 105° and 195° to 285°		Clockwise from first angle
Tower location	29.68927	-81.99343	--	--	new site
Instrument hut	29.689088°,	-81.993416°			
Instrument hut (perpendicular) orientation vector	--	--	135° to 315°		Shorter side parallel to 45° to 225°
Instrument hut distance z	--	--	--	20	
Anemometer/Temperature boom orientation	--	--	135°	--	From tower point to this direction
DFIR location	29.69760	-81.98699			
Height of the measurement levels					
Level 1				<0.30	m.a.g.l.
Level 2				1.0	m.a.g.l.
Level 3				9.0	m.a.g.l.
Level 4				14.0	m.a.g.l.
Level 5				25.0	m.a.g.l.
Level 6				33.0	m.a.g.l.
Tower Height				33.0	m.a.g.l.

See AD 03 for technical requirement to determine the boom height for the bottom most measurement level.

Keep in mind that all **radiation sensors** above canopy need to be mounted on the south side of the tower to avoid shadow from tower structure and mounting parts.

Boardwalks.

- There is always a boardwalk from the instrument hut to the tower
- If there is a boardwalk on the south side of the tower, it is never underneath the radiation booms, and it is more than 4 m from the side of the tower

Specific Boardwalks at Ordway Swisher utilize the orientation outlined in Table 3, and **option 6 in Figure 4**.

- Boardwalk from access road to instrument hut
- Boardwalk from the instrument hut to the tower to intersect on north face of the tower
- Boardwalk to soil array
- Boardwalks must be protected from controlled burns
- No boardwalk from the soil array boardwalk to the individual soil plots
- No boardwalk needed at DFIR site

DFIR (Double Fenced International Reference) for bulk precipitation collection will be located at a water catchment on the north-east direction of tower about 1100 m away at Lat. 29.69760, Long. -81.98699. **Wet deposition collector** will collocated on the tower top. See AD 04 for further information and requirements for bulk precipitation collection and wet deposition collection.

3.3 Soil Attributes

Soil type is Candler fine sand, 0 to 5 percent slopes. The soils are Hyperthermic, uncoated Lamellic Quartzipsamments. During construction a soil profile shall be dug at each core site and samples throughout the profile will be extracted. The soil array vector is ***from*** the soil plot closest to the tower ***toward*** the farthest soil plot.

Table 4. Summary of soil array and soil pit information at Ordway.
0° represents true north and accounts for declination.

Soil plot dimensions	5 m x 5 m
Soil array pattern	B
Distance between soil plots: x	25 m
Distance from tower to closest soil plot: y	24 m
Latitude and longitude of 1st soil plot OR direction from tower	29.68941°, -81.99323°
Direction of soil array	70°
Latitude and longitude of FIU soil pit 1	29.688215°, -81.993424° (primary location)
Latitude and longitude of FIU soil pit 2	29.690977°, -81.996960° (alternate 1)
Latitude and longitude of FIU soil pit 3	29.685852°, -81.990500° (alternate 2)
Dominant soil type	Candler fine sand, 0 to 5 percent slopes
Expected soil depth	>2 m
Depth to water table	>2 m

Expected depth of soil horizons	**Expected measurement depths***
0-0.10 m (fine sand)	0.05 m
0.10-1.55 m (fine sand)	0.83 m
1.55-2 m (fine sand)	1.78 m
	2.00 m

*Actual soil measurement depths will be determined based on measured soil horizon depths at the NEON FIU soil pit and may differ substantially from those shown here.

3.4 Ecosystem Productivity Plots.

The tower at Ordway-Swisher Advanced site has been positioned to optimize the collection of the air/wind signals both temporally and spatially over the desired ecosystem (longleaf pine forest). Wind vectors from the tower dictate the airshed is from 15° to 105° (clockwise from 15°, this is major airshed area) and from 195° to 345° (clockwise from 195°, relatively less important airshed area) in Figure 1, and 80% signals for flux measurements are within a distance of 500 m from tower. We recommend that the FSU Ecosystem Productivity plots should be placed within the airshed boundaries of the 15 degrees line and the 105 degree line (clockwise from 15°, major airshed area).

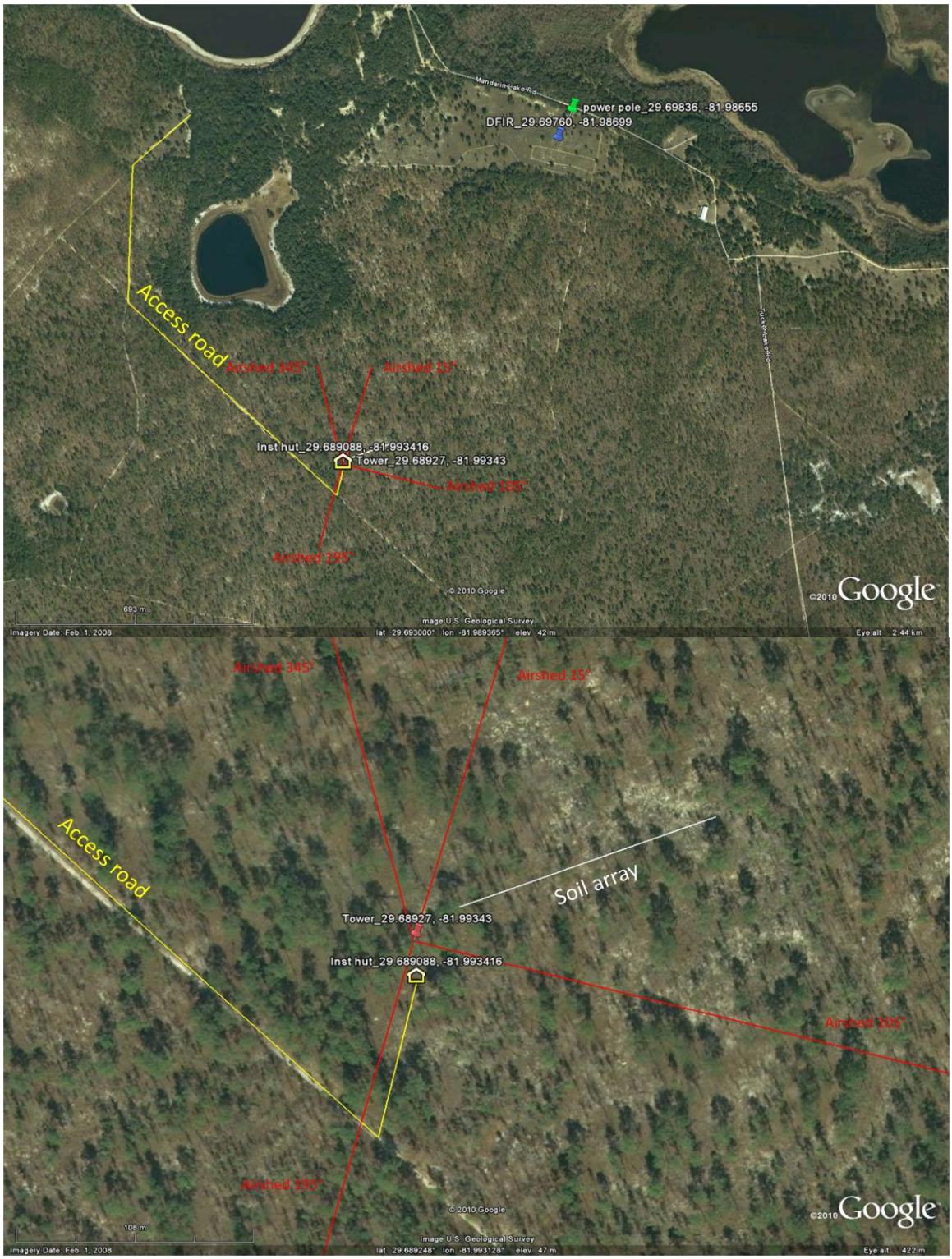


Figure 1. Site layout at Ordway.
i) new tower location is presented, ii) red lines indicate the airshed boundaries. Vectors 15° and 105° (starting clockwise from 15°) and vectors 195° and 345° (starting clockwise from 195°) bound the

airshed, within which it would have quality wind data without causing flow distortions, respectively. iii) Yellow line is the suggested access road to instrument hut. iv) White line indicates soil array. v) Blue pin indicates the location for DFIR. vi) Green pin indicates closest power pole from DFIR, which is ~90 m at this site.

4 DISNEY PRESERVE

4.1 Desired ecosystem

The Disney site is designed to represent a regenerating longleaf pine forest following abandonment of agriculture. Original tower location was 28.122766, -81.434897, which was in the middle of the grassland. After footprint analysis and site visit, we decide to microsite tower location to lat 28.12504°, long -81.43620° to optimize the measurements from the grassland. The new site is closer to access and power.

Table 5. The Disney site.

Ecosystem Type	Management activity
Restored wet prairie with regenerating longleaf pine	Controlled burns

The Broom sedge prairie has a height of between 1 m to 1.5 m. The is currently a low density of longleaf pine seedlings in the prairie, but they are typically <30 cm tall. Some pine forests are on the east, northeast and southeast edges of the prairie. Tree height is ~25 m, but > 400 m away.

Table 6. Ecosystem and site attributes for the Disney site.

Ecosystem attributes	Measure and units
Mean canopy height	1.5 m
Surface roughness[a]	0.1 m
Zero place displacement height[a]	1.0 m
Structural elements	Short, uniform, homogeneous
Altitude[b]	50 [m] a.s.l.
Slope	0%
Aspect	±0
Time zone	Atlantic
Magnetic declination	5° 34' W
Frost-free period	365 days

Note, [a] From footprint analysis below.
[b] Best estimate

4.2 Site Design and Tower Attributes

We use tower as the index. Tower location is the center point. All other information is based on the center-point of the tower, except the vector for the soil array the projected area of the tower is square, *i.e.*, 2 m x 2 m. **Instrument hut orientation vector** is along the long side of the instrument hut (short-side of instrument hut is perpendicular to the **Instrument hut orientation vector)**. The numbering of the measurement levels is that the lowest is level one, and each subsequent increase in height is numbered sequentially, in this case, level 4 being the upper most level at this tower site.

Table 7. Tower oriented design attributes for the Disney site.
0° is true north with declination accounted for. Color of Instrument hut exterior shall be tan to best match the surrounding environment.

Attribute	lat	long	degree	meters	notes

Airshed			15° to 165°		Clockwise from 15°
Tower location	28.12504	-81.43620	--	--	new site
Instrument hut	28.12514	-81.43645			
Instrument hut (perpendicular) orientation vector	--	--	90° to 270°		Shorter side parallel to 180° to 360°
Instrument hut distance z	--	--	--	25	
Anemometer/Temperature boom orientation	--	--	90°	--	From tower point to this direction
Height of the measurement levels					
Level 1				0.3	m.a.g.l.
Level 2				1.5	m.a.g.l.
Level 3				4.0	m.a.g.l.
Level 4				6.0	m.a.g.l.
Tower Height				6.0	m.a.g.l.

See AD 03 for technical requirement to determine the boom height for the bottom most measurement level.

Keep in mind that all **radiation sensors** above canopy need to be mounted on the south side of the tower to avoid shadow from tower structure and mounting parts.

Boardwalks.

- There is always a boardwalk from the instrument hut to the tower
- If there is a boardwalk on the south side of the tower, it is never underneath the radiation booms, and it is more than 4 m from the side of the tower

Specific Boardwalks at Disney Wilderness preserve utilize the orientation outlined in Table 7, and **option 2 in Figure 7**.

- Boardwalk from access road to instrument hut (from the west)
- Boardwalk from the instrument hut to the tower to intersect on north face of the tower
- Boardwalk to the soil array.
- Boardwalks must be protected from controlled burns
- No boardwalk from the soil array boardwalk to the individual soil plots

Secondary **precipitation collector** for bulk precipitation collection will be located the top of tower at this site. No **Wet deposition collector** will deployed at this site. See AD 04 for further information and requirements for bulk precipitation collection and wet deposition collection

4.3 Soil Attributes

The dominant soil type is Smyrna fine sand. These soils are Sandy, siliceous, hyperthermic Aeric Alaquods. The soil array vector is ***from*** soil plot closest to the tower ***toward*** the farthest soil plot from the tower.

Table 8. Summary of soil array and soil pit information at Disney.

0° represents true north and accounts for declination.

Soil plot dimensions	5 m x 5 m
Soil array pattern	B
Distance between soil plots: x	40 m
Distance from tower to closest soil plot: y	33 m
Latitude and longitude of 1st soil plot OR direction from tower	28.12506°, -81.43587°
Direction of soil array	84°
Latitude and longitude of FIU soil pit 1	28.124532°, -81.436806° (primary)
Latitude and longitude of FIU soil pit 2	28.127846°, -81.434066° (alternative 1)
Latitude and longitude of FIU soil pit 3	28.122737°, -81.437852° (alternative 2)
Dominant soil type	Smyrna fine sand
Expected soil depth	>2 m
Depth to water table	0.15-0.46 m

Expected depth of soil horizons	**Expected measurement depths**
0-0.25 m (fine sand)	0.13 m
0.25-0.53 m (fine sand)	0.39 m
0.53-0.71 m (fine sand)	0.62 m
0.71-0.81 m (fine sandy loam)	0.76 m
0.81-1.57 m (sandy clay loam)	1.19 m
1.57-2 m (sandy clay loam)	1.79 m

*Actual soil measurement depths will be determined based on measured soil horizon depths at the NEON FIU soil pit and may differ substantially from those shown here.

4.4 Ecosystem Productivity Plots.

The tower at Disney Wildness Preserve Relocatable site has been positioned to optimize the collection of the air/wind signals both temporally and spatially over the desired ecosystem (Broom sedge prairie). Wind vectors from the tower dictate the major airshed is from 15° to 165° (clockwise from 15°, this is major airshed area). But wind comes from all directions at this site. Secondary airshed include 285° to 15° (clockwise from 15°) and from 225° to 255° (clockwise from 225°), and 80% signals for flux measurements are within a distance of 380 m from tower. We recommend that the FSU Ecosystem Productivity plots should be placed within the airshed boundaries of the 15 degrees line and the 165 degree line(clockwise from 15°, major airshed area).

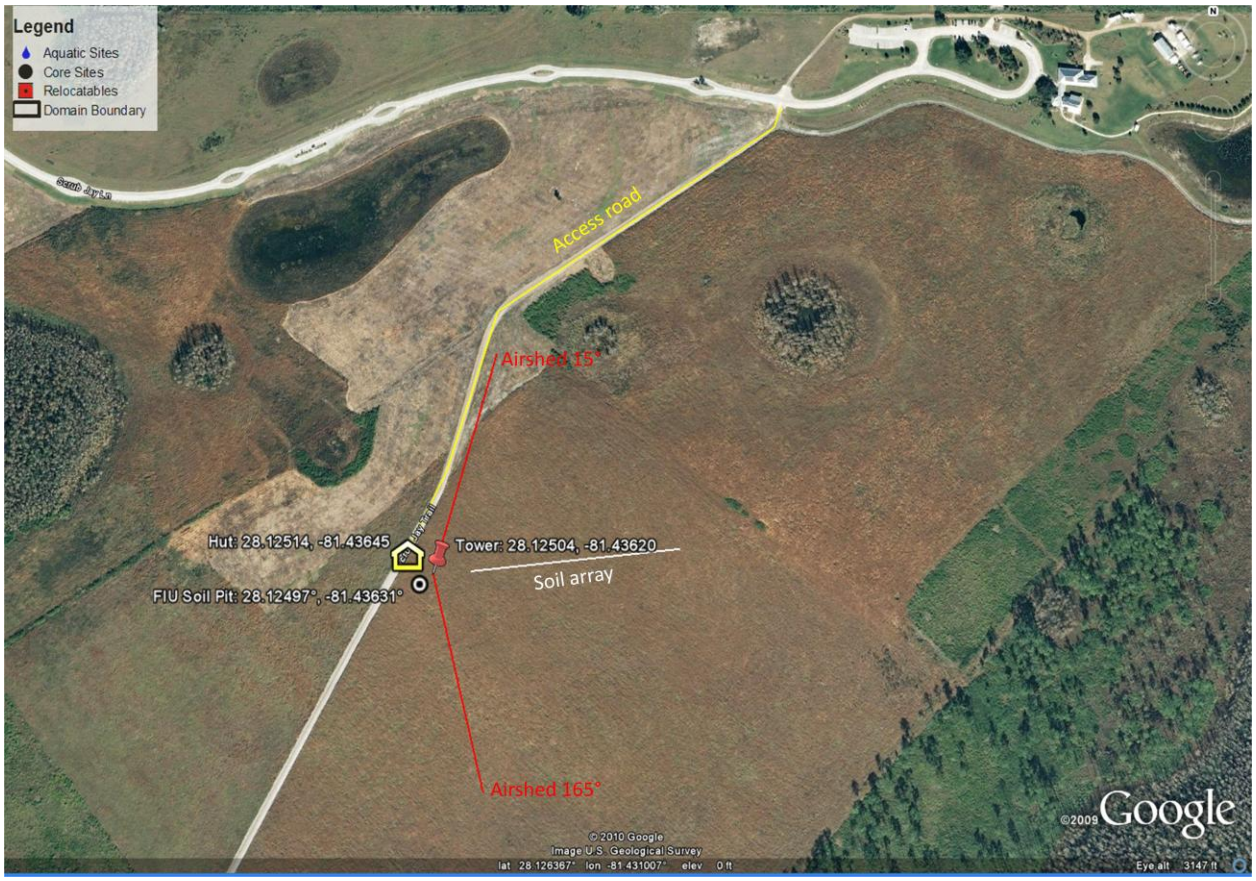


Figure 2. Site layout at Disney.
i) new tower location is presented, ii) red lines indicate the airshed boundaries. Vectors 15° and 165° (starting clockwise from 15°) bound the airshed, within which it would have quality wind data without causing flow distortions, respectively. iii) Yellow line is the suggested access road to instrument hut. iv) White line indicates soil array. Note that soil pit location in this map is not current. See table 8 and FCC hitlist for the current soil pit locations.

5 JONES ECOLOGICAL RESEARCH CENTER SITE

5.1 Desired ecosystem

Table 9. Jones site.
The core site and representative of the ecosystem type and management practice for Domain 04.

Ecosystem Type	Management activity
Mixed longleaf pine/hardwood forest	Controlled burns, Longleaf restoration and hardwood removal

The forest is a mixed longleaf pine/hardwood forest. Longleaf pine was historically one of the dominant ecosystems types in this region. Canopy height averages 22 m at the tower site. The hardwoods will be removed from the site by felling 2-3 years after the NEON tower is installed in order to restore the longleaf pine ecosystem. Emerging hardwood seedlings will be controlled chemically, mechanically, and with controlled burns.

The original tower location was 31.19528405, -84.46850618. A new location (31.19484°, -84.46861°) is proposed that is very near the original location and is still under the same land owner. The new, microsted location optimizes the distance from the tower to the surrounding trees and is far enough from any existing hardwood trees that their removal is unlikely to damage the tower. The ecosystem of interest is the same type.

Table 10. Ecosystem and site attributes for the Jones site.

Ecosystem attributes	Measure and units
Mean canopy height[a]	27 m
Surface roughness[a]	1.2 m
Zero place displacement height[a]	22 m
Structural elements	Semi-open forest, relatively homogeneous
Altitude[b]	15-91 [m] a.s.l.
Slope	0%
Aspect	±0
Time zone	Atlantic
Magnetic declination	4° 1' W
Frost-free period	365 days

Note, [a] From footprint analysis below.
[b] http://www.jonesctr.org/research/research_publications/Unrestricted/BattleAmerMidlandNatur150P15.pdf

5.2 Site Design and Tower Attributes

We use the tower as the index. Tower location is the center point. All other information is based on the center-point of the tower, except the vector for the soil array. the projected area of the tower is square, *i.e.*, 2 m x 2 m. **Instrument hut orientation vector** is along the long side of the instrument hut (short-side of instrument hut is perpendicular to the **Instrument hut orientation vector)**. The numbering of the measurement levels is that the lowest is level one, and each subsequent increase in height is numbered sequentially, in this case, level 6 being the upper most level at this tower site.

Table 11. Tower oriented design attributes for the Jones site.
0° is true north with declination accounted for. Color of Instrument hut exterior shall be tan to best match the surrounding environment.

Attribute	lat	long	degree	meters	notes
Airshed			345° to 105°		Clockwise from 345°
Tower location	31.19484°,	-84.46861	--	--	new site
Instrument hut	31.19467	-84.46880			
Instrument hut (perpendicular) orientation vector	--	--	45° to 225°		Shorter side parallel to 135° to 315°
Instrument hut distance z	--	--	--	25	
Anemometer/Temperature boom orientation	--	--	45°	--	From tower point to this direction
Height of the measurement levels					
Level 1				0.2	m.a.g.l.
Level 2				7.0	m.a.g.l.
Level 3				16.0	m.a.g.l.
Level 4				23.0	m.a.g.l.
Level 5				29.0	m.a.g.l.
Level 6				42.0	m.a.g.l.
Tower Height				42.0	m.a.g.l.

See AD 03 for technical requirement to determine the boom height for the bottom most measurement level.

Keep in mind that all **radiation sensors** above canopy need to be mounted on the south side of the tower to avoid shadow from tower structure and mounting parts.

Boardwalks.

- There is always a boardwalk from the instrument hut to the tower
- If there is a boardwalk on the south side of the tower, it is never underneath the radiation booms, and it is more than 4 m from the side of the tower

Specific Boardwalks at Jones Ecological Center utilize the orientation outlined in Table 11, and **option 2 in Figure 7**.

- Boardwalk from access road to instrument hut
- Boardwalk from the instrument hut to the tower to intersect on north face of the tower
- Boardwalk to the soil array.
- Boardwalks must be protected from controlled burns
- No boardwalk from the soil array boardwalk to the individual soil plots

Secondary **precipitation collector** for bulk precipitation collection will be located the top of tower at this site. **Wet deposition collector** is proposed at the tower top. An Alternative site would be at 31.192894, -84.469788. But this point hasn't been confirmed with local contact. If this wet deposition site doesn't work out, yet another alternative site will be at 31.215102°, -84.456930° next to Dr T. Meyers' Small DFIR, which is about 2100 m away for tower, but has power next to it. But this also need further discuss

with site contact. See AD 04 for further information and requirements for bulk precipitation collection and wet deposition collection.

5.3 Soil Attributes

Soil type is Troup sand, 5 to 8 percent slopes. The soils are loamy, kaolinitic, thermic Grossarenic Kandiudults. During construction a soil profile shall be dug at each core site and samples throughout the profile will be extracted. The soil array vector is ***from*** the soil plot closest to the tower ***toward*** the farthest soil plot.

Table 12. Summary of soil array and soil pit information at Jones.
0° represents true north and accounts for declination.

Soil plot dimensions	5 m x 5 m
Soil array pattern	B
Distance between soil plots: x	35 m
Distance from tower to closest soil plot: y	19 m
Latitude and longitude of 1st soil plot OR direction from tower	31.19501°, -84.46858°
Direction of soil array	40°
Latitude and longitude of FIU soil pit 1	31.193613°,-84.461210° (primary)
Latitude and longitude of FIU soil pit 2	31.195915°, -84.468792° (Alternative 1)
Latitude and longitude of FIU soil pit 3	31.196019°, -84.466520° (Alternative 2)
Dominant soil type	Troup sand, 5 to 8 percent slopes
Expected soil depth	>2 m
Depth to water table	>2 m

Expected depth of soil horizons	Expected measurement depths
0-1.35 m (sand)	0.68 m
1.35-2 m (sandy clay loam)	1.68 m
	2.00 m

*Actual soil measurement depths will be determined based on measured soil horizon depths at the NEON FIU soil pit and may differ substantially from those shown here.

5.4 Ecosystem Productivity Plots.

The tower at Jones Ecological Research Center Relocatable site has been positioned to optimize the collection of the air/wind signals both temporally and spatially over the desired ecosystem (Broom sedge prairie). Wind vectors from the tower dictate the major airshed is from 345° to 105° (clockwise from 345°, this is major airshed area). But wind comes from all directions at this site. 80% signals for flux measurements are within a distance of 700 m from tower. We recommend that the FSU Ecosystem Productivity plots should be placed within the airshed boundaries of the 345 degrees line and the 105 degree line(clockwise from 345°, major airshed area).

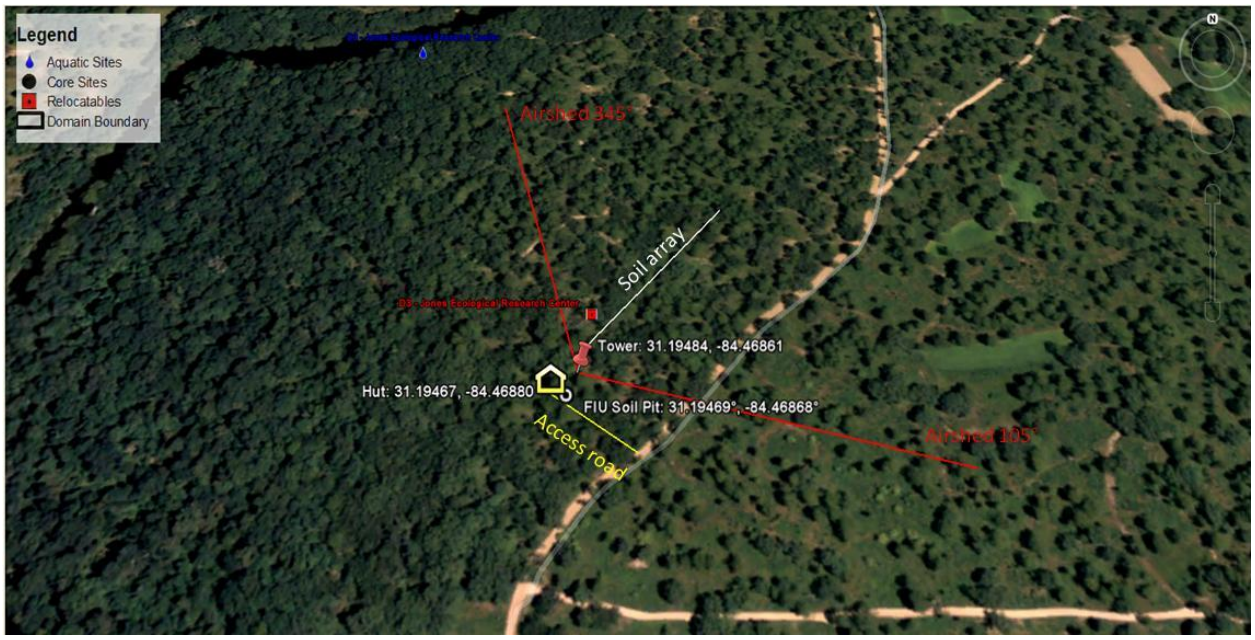
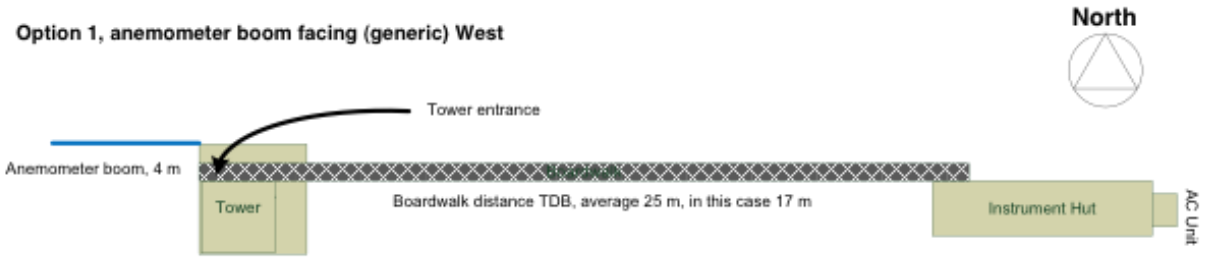


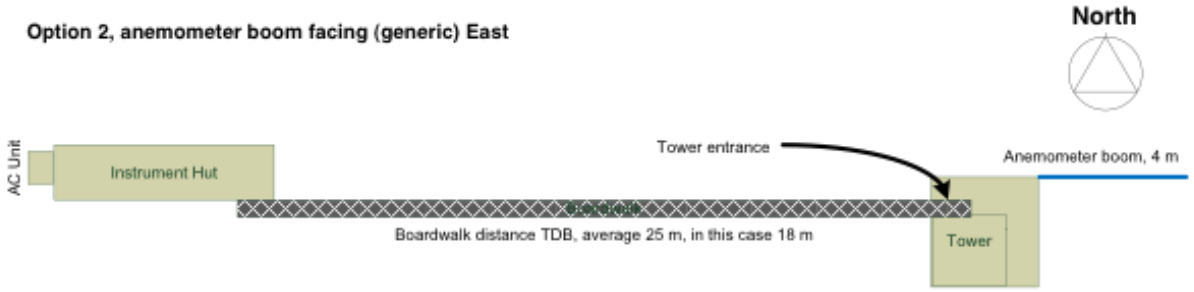
Figure 3. Site layout at Jones.
i) new tower location is presented, ii) red lines indicate the airshed boundaries. Vectors 345° and 105° (starting clockwise from 345°) bound the airshed, within which it would have quality wind data without causing flow distortions, respectively. iii) Yellow line is the suggested access road to instrument hut. iv)

White line indicates soil array. Note that soil pit location in this map is not current. See table 12 and FCC hitlist for the current soil pit locations.

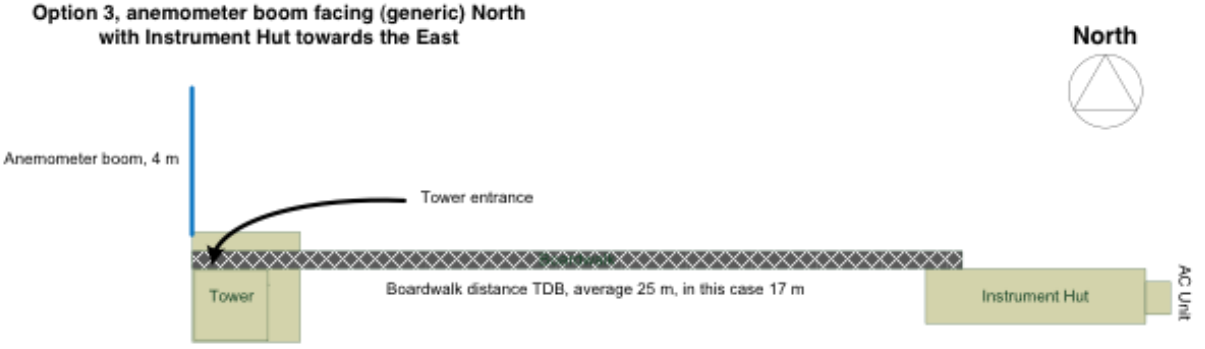
Option 1, anemometer boom facing (generic) West



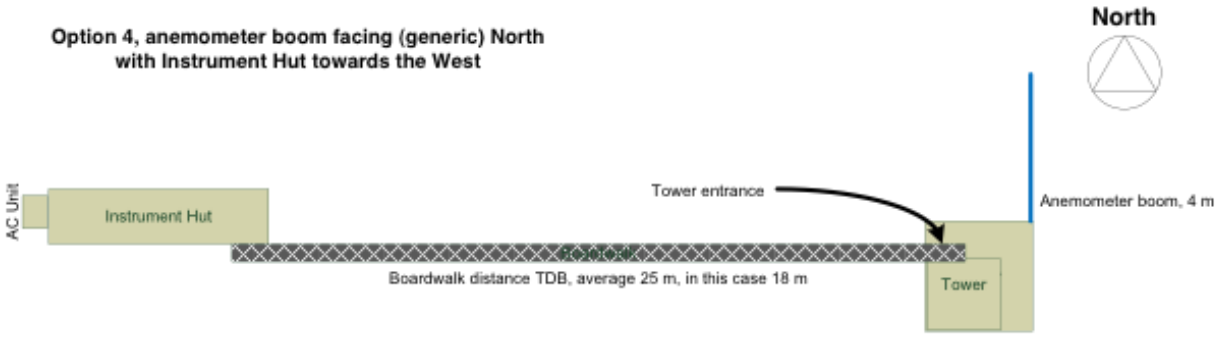
Option 2, anemometer boom facing (generic) East



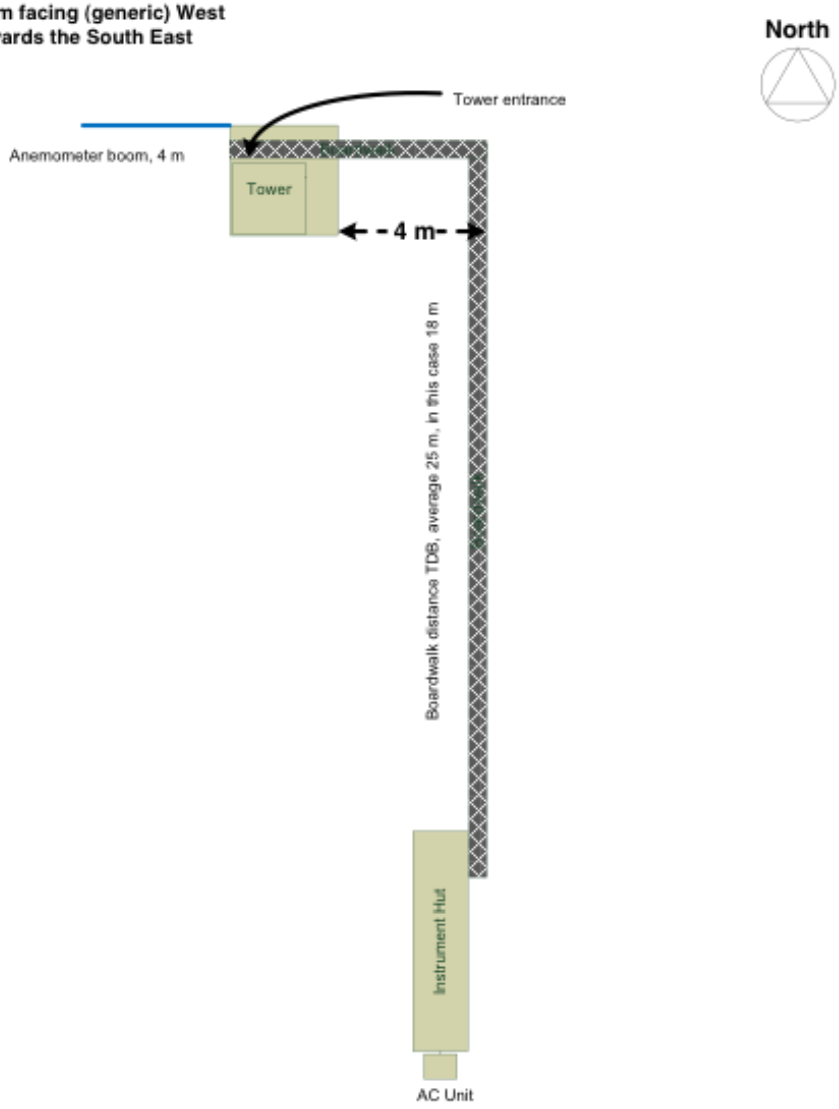
Option 3, anemometer boom facing (generic) North with Instrument Hut towards the East

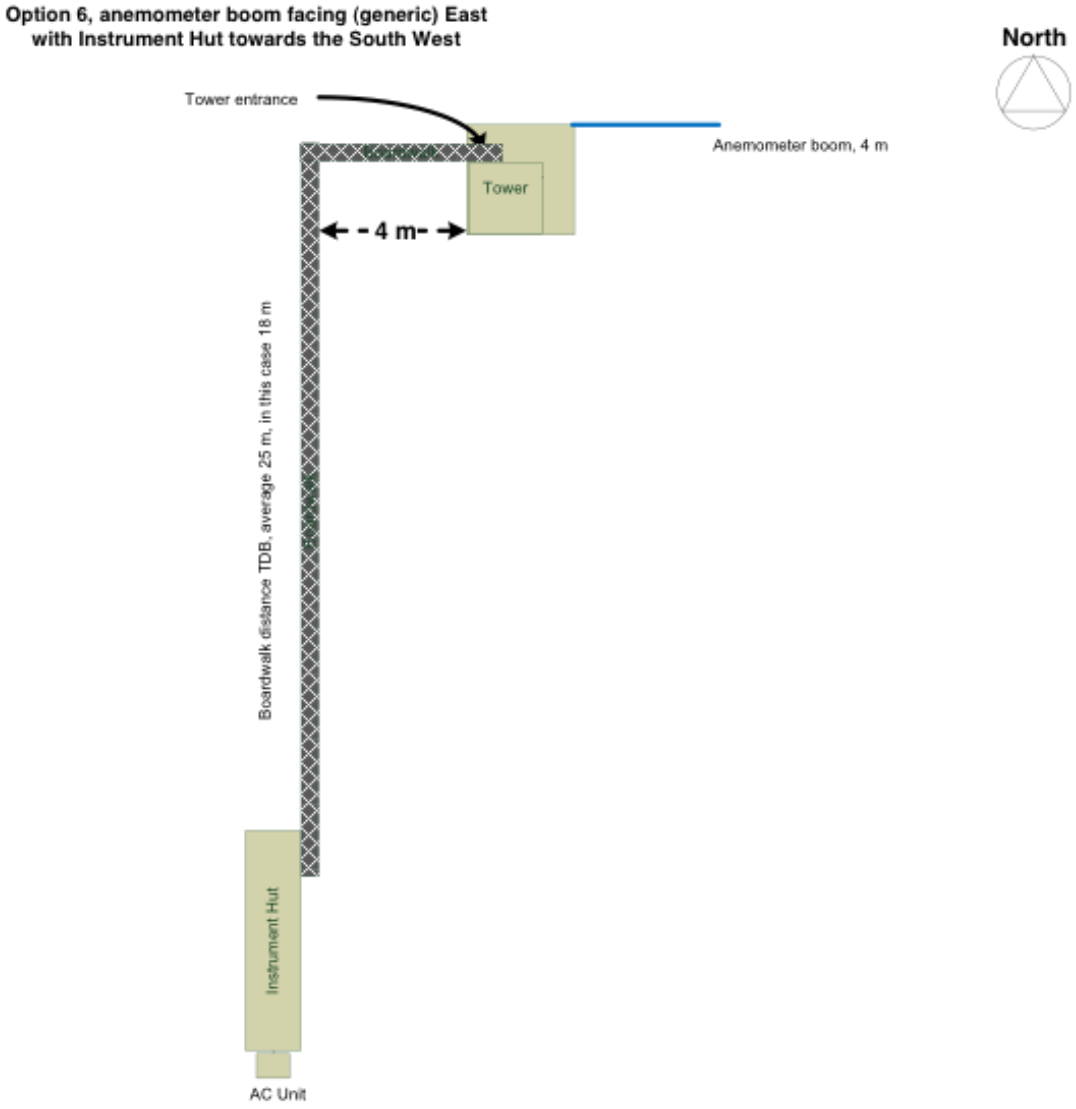


Option 4, anemometer boom facing (generic) North with Instrument Hut towards the West

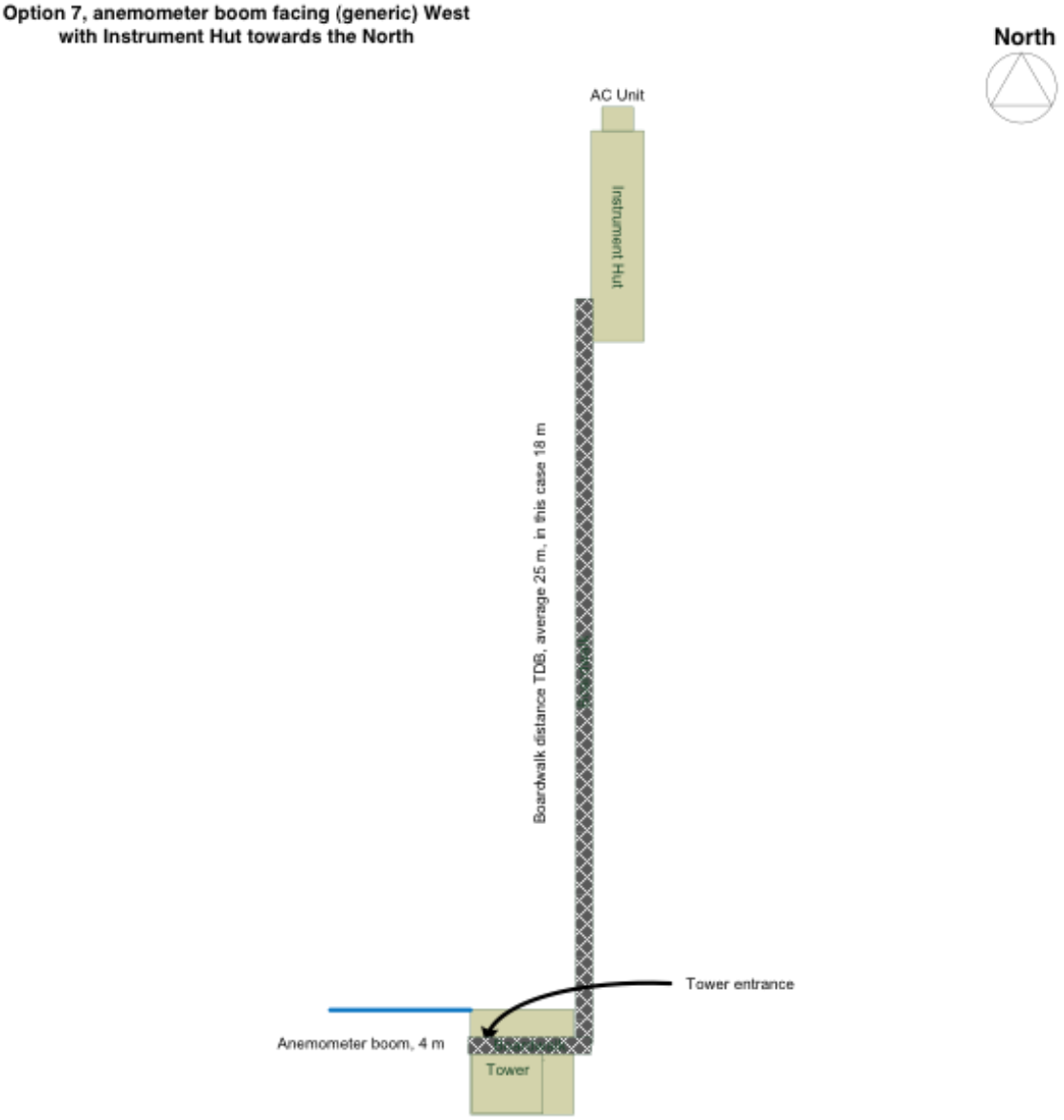


Option 5, anemometer boom facing (generic) West with Instrument Hut towards the South East




Option 6, anemometer boom facing (generic) East
with Instrument Hut towards the South West
North
Tower entrance
Anemometer boom, 4 m
Tower
4 m
Boardwalk distance TDB, average 25 m, in this case 18 m
Instrument Hut
AC Unit

Option 7, anemometer boom facing (generic) West with Instrument Hut towards the North



Option 8, anemometer boom facing (generic) South with Instrument Hut towards the North

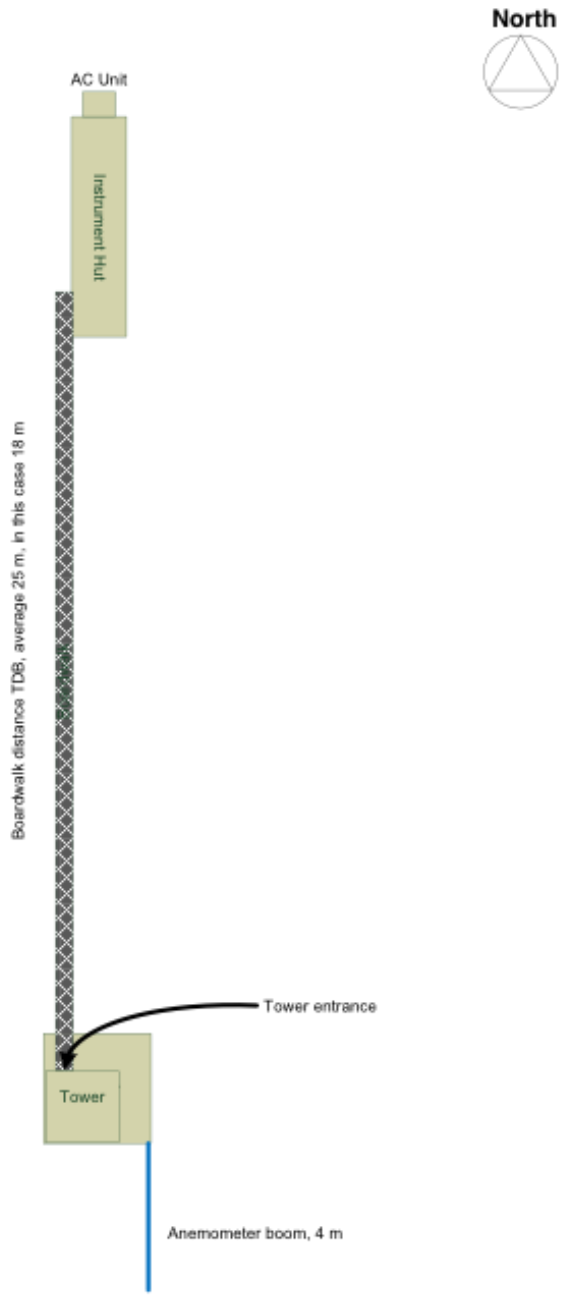
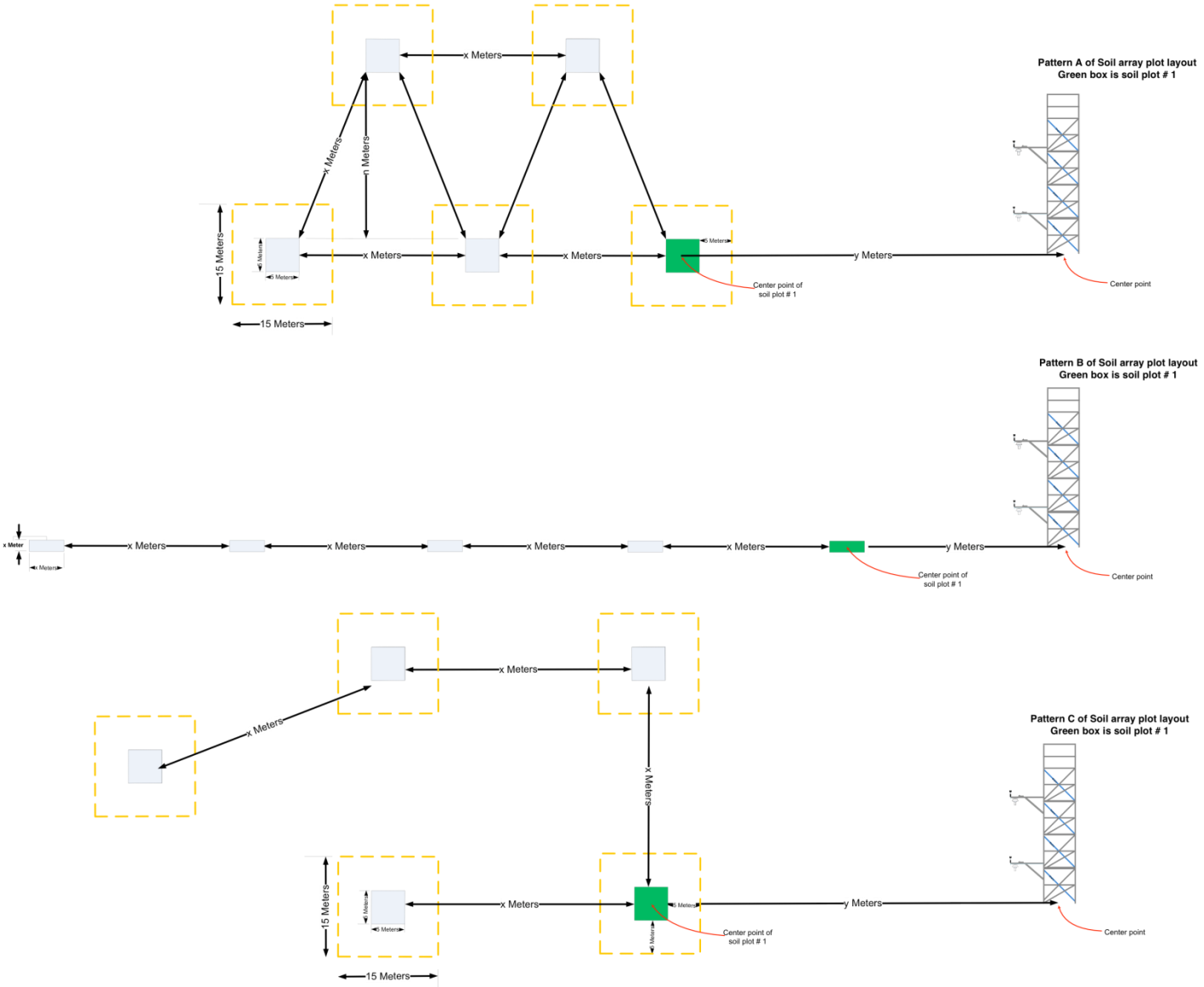


Figure 4. Generic patterns for the boardwalk configuration

These generic configurations are from the instrument hut to the tower based on 8 generic scenarios. The five options are based on anemometer boom orientation and the leeward side of the tower where the instrument hut is located. The tower entrance is always on the North side of the tower. Exact tower and instrument hut location and orientation will be specified at each location and presented in the site characterization document.


Pattern A of Soil array plot layout
Green box is soil plot # 1
x Meters
x Meters
n Meters
15 Meters
x Meters
x Meters
y Meters
15 Meters
Center point of soil plot # 1
Center point
Pattern B of Soil array plot layout
Green box is soil plot # 1
x Meter
x Meters
x Meters
x Meters
x Meters
y Meters
Center point of soil plot # 1
Center point
Pattern C of Soil array plot layout
Green box is soil plot # 1
x Meters
x Meters
x Meters
15 Meters
x Meters
y Meters
15 Meters
Center point of soil plot # 1
Center point

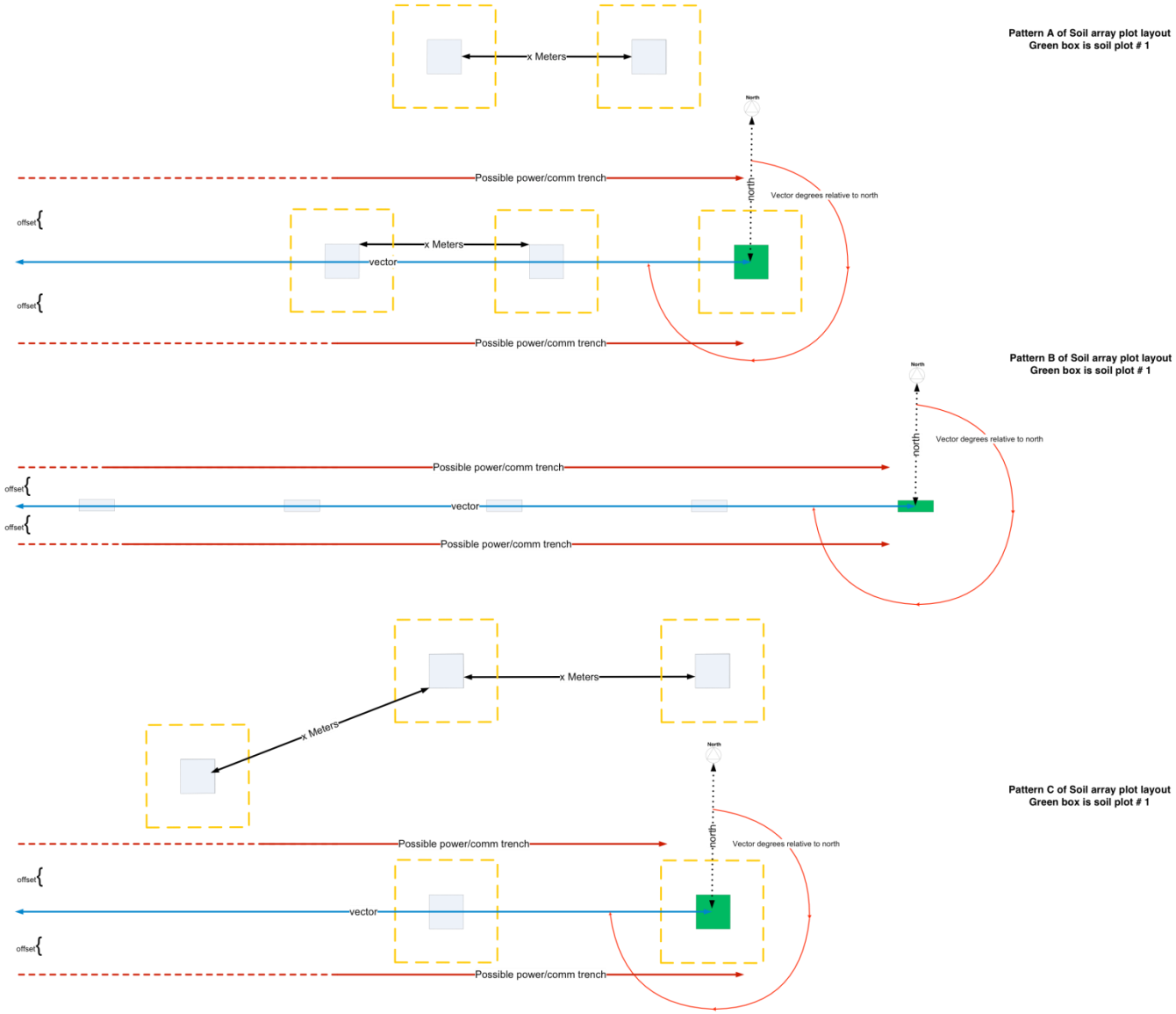

Pattern A of Soil array plot layout
Green box is soil plot # 1
x Meters
North
Possible power/comm trench
north
Vector degrees relative to north
offset
x Meters
vector
offset
Possible power/comm trench
Pattern B of Soil array plot layout
Green box is soil plot # 1
North
north
Vector degrees relative to north
Possible power/comm trench
offset
vector
offset
Possible power/comm trench
x Meters
x Meters
Pattern C of Soil array plot layout
Green box is soil plot # 1
North
Possible power/comm trench
north
Vector degrees relative to north
offset
vector
offset
Possible power/comm trench

Figure 5. Conceptual diagram of Soil Array Patterns

Outlines the orientation for the soil array and instrument hut from the center point of the tower. The x, y, z distances are i) the distance between soil plots, ii) distance between the tower centerpoint and the closest edge of soil plot, and iii) the distance between the tower centerpoint and the closest edge of the instrument hut, respectively. The yellow outline around each soil plot is the 5 m perimeter keep out zone.

6 APPENDIX A. FCC SUMMARY TABLES

Table A1. FCC Summary Table for FIU site components at D03 Ordway Swisher Core

Site Component				**units**
Tower location	29.68927°	-81.99343°		Lat, Long in deg
Tower location	29° 41' 21.372"	-81° 59' 36.348"		Lat, Long in deg min sec
Tower height	33.0			meters
Tower guying	yes	Tropical storms		yes/none, notes
Instrument Hut location	29.689088°,	-81.993416°		Lat, Long in deg
Instrument Hut location	29° 41' 20.7168"	-81° 59' 36.297"		Lat, Long in deg min sec
IH orientation[a]	135° to 315°			vector
boom orientation[b]	135°			degrees
Boardwalk from tower center point to IH center point (z)		20	option 6	vector, distance (m), option #
how the Bwalk intersects the tower access	Boardwalk intersects the north-side of the tower from the west.			description
how the Boardwalk intersects the tower access	Boardwalk to skirt around the west side of tower with 4 m (min) distance away from the tower base			description
how the Boardwalk intersects the tower access	No Boardwalk within 8 m perpendicular to south face of tower (plan view)			description
Air shed vector(s)[c]	345° to 105°	195° to 285°		vector
Boardwalk from AP to IH	yes, from dirt road to IH	NNE from road to IH (see Figure 1)		yes/none, notes
Boardwalk from tower to soil array	yes			yes/none, notes
Boardwalk needed to DFIR	none			yes/none
Power and Communication line	10 m from edge of plot to the centerline of power/comms line	Whichever side is easiest[e], line above ground		offset, notes
DFIR location	29.69760°	-81.98699°	No BW	Lat, Long, notes
DFIR location	29° 41' 51.36"	-81° 59' 13.164"		Lat, Long in deg min sec
DFIR power supply	Residential 30 amp service within 50 m			description
Soil plot 1st location	29.68941°	-81.99323°		Lat, Long (center point)
Soil plot 1st location	29° 41' 21.8754"	-81° 59' 35.6274"		Lat, Long in deg min sec

Soil plot distance between plots (x)	25 m	24		x,y, (m)
Soil array pattern and vector[d]	B	70°		A, B, or C, vector
Soil plot dimensions	5 m x 5 m			L x W (meters)
Soil profile pit primary	29.688215°	-81.993424°	>2 m	Lat, Long, and expected depth
Soil profile pit primary	29° 41' 17.5734"	-81° 59' 36.3264"		Lat, Long in deg min sec
Soil profile pit alternative 1	29.690977°	-81.996960°	>2 m	Lat, Long, and expected depth
Soil profile pit alternative 1	29° 41' 27.5172"	-81° 59' 49.056"		Lat, Long in deg min sec
Soil profile pit alternative 2	29.685852°	-81.990500°	>2 m	Lat, Long, and expected depth
Soil profile pit alternative 2	29° 41' 9.0672"	-81° 59' 25.7994"		Lat, Long in deg min sec
Fencing needs	none	none	none	IH, Soil Arrays, Guy anchors
Presence of large grazing animals	none			description
Site management*	Controlled burns			description
Any additional site specific information	Longleaf-pine and Turkey Oak forest			description
Magnetic declination	5° 28' W			At time of site visit

Table A2. FCC Summary Table for FIU site components at D03 Disney Wilderness Relocatable 1

Site Component				**units**
Tower location	28.12504°	-81.43620°		Lat, Long
Tower location	28° 7' 30.1434"	-81° 26' 10.3194"		Lat, Long in deg min sec
Tower height	6.0			meters
Tower guying	none			yes/none, notes
Instrument Hut location	28.12514°	-81.43645°		Lat, Long
Instrument Hut location	28° 7' 30.5034"	-81° 26' 11.2194"		Lat, Long in deg min sec
IH orientation[a]	90° to 270°			vector
boom orientation[b]	90°			degrees
Boardwalk from tower center point to IH center point (z)		25	Option 2	vector, distance (m), option #
how the Bwalk intersects the tower access	Boardwalk intersects the north-side of the tower from the west.			description
how the Bwalk intersects the tower access	Straight section of Boardwalk from IH to tower			description
Air shed vector(s)[c]	15° to 165°	Clockwise from 15°		vector, notes
Boardwalk from AP to IH	yes	access east from the road (Figure 2)		yes/none, notes
Boardwalk from tower to soil array	yes			yes/none, notes
Boardwalk needed to DFIR	no DFIR			yes/none
DFIR location	none			Lat, Long
Power and Communication line	10 m from edge of plot to the center line of power/comms line	Which ever is easiest[e], trench below ground		offset, notes
DFIR power supply	na.			description
Soil plot 1st location	28.12506°	-81.43587°		Lat, Long (center point)
Soil plot 1st location	28° 7' 30.216"	-81° 26' 9.1314"		Lat, Long in deg min sec
Soil plot distance between plots (x)	40 m	33		x, y, (m)
Soil array pattern and vector[d]	B	84°		A, B, or C, vector
Soil plot dimensions	5 m x 5 m			L x W (meters)
Soil profile pit primary	28.124532°	-81.436806°	2 m	Lat, Long, and expected depth
Soil profile pit primary	28° 7' 28.3146"	-81° 26' 12.5016"		Lat, Long in deg min sec
Soil profile pit alternative 1	28.127846°	-81.434066°	2 m	Lat, Long, and expected depth

Soil profile pit alternative 1	28° 7' 40.2456"	-81° 26' 2.6376"		Lat, Long in deg min sec
Soil profile pit alternative 2	28.122737°	-81.437852°	2 m	Lat, Long, and expected depth
Soil profile pit alternative 2	28° 7' 21.8532"	-81° 26' 16.2672"		Lat, Long in deg min sec
Fencing needs	none	none	none	IH, Soil Arrays, Guy anchors
Presence of large grazing animals	none			description
Site management*	Controlled burns			description
Any additional site specific information	Restored wet prairie with regenerating longleaf pine			description
Magnetic declination	5° 34' W			At time of site visit

Table A3. FCC Summary Table for FIU site components at D03 Jones Ecological Research Center Relocatable 2

Site Component				**units**
Tower location	31.19484°	-84.46861°		Lat, Long
Tower location	31° 11' 41.4234"	-84° 28' 6.9954"		Lat, Long in deg min sec
Tower height	42.0			meters
Tower guying	yes	prefer not removing any branches		yes/none, notes
Instrument Hut location	31.19467°	-84.46880°		Lat, Long
Instrument Hut location	31° 11' 40.8114"	-84° 28' 7.68"		Lat, Long in deg min sec
IH orientation[a]	45° to 225°			vector
boom orientation[b]	45°			degrees
Boardwalk from tower center point to IH center point		25	Option 2	vector, distance (m), option #
how the Bwalk intersects the tower access	Boardwalk intersects the north-side of the tower from the west.			description
how the Bwalk intersects the tower access	Straight section of Boardwalk from IH to tower			description
Air shed vector(s)[c]	345° to 105°	Clockwise from 345°		vector, notes
Boardwalk from AP to IH	yes	access NW from the road to IH (Fig. 3)		yes/none, notes
Boardwalk from tower to soil array	yes			yes/none, notes
Boardwalk needed to DFIR	no DFIR			yes/none
Power and Communication line	10 m from edge of plot to the centerline of power/comms line	whichever side is easiest [e], line above ground		offset, notes
DFIR location	none			Lat, Long
DFIR power supply	na.			description
Soil plot 1st location	31.19501°	-84.46858°		Lat, Long (center point)
Soil plot 1st location	31° 11' 42.0354"	-84° 28' 6.888"		Lat, Long in deg min sec
Soil plot distance between plots (x)	35 m	19		x, y, (m)
Soil array pattern and vector[d]	B	40°		A, B, or C, vector
Soil plot dimensions	5 m x 5 m			L x W (meters)
Soil profile pit primary	31.193613°	-84.461210°	2 m	Lat, Long, and expected depth
Soil profile pit primary	31° 11' 37.0062"	-84° 27' 40.3554"		Lat, Long in deg min sec
Soil profile pit alternative 1	31.195915°	-84.468792°	2 m	Lat, Long, and expected depth

Soil profile pit alternative 1	31° 11' 45.2934"	-84° 28' 7.6506"		Lat, Long in deg min sec
Soil profile pit alternative 2	31.196019°	-84.466520°	2 m	Lat, Long, and expected depth
Soil profile pit alternative 2	31° 11' 45.6678"	-84° 27' 59.472"		Lat, Long in deg min sec
Fencing needs	none	none	none	IH, Soil Arrays, Guy anchors
Presence of large grazing animals	none			description
Site management*	Controlled burns			description
Any additional site specific information	Longleaf restoration and hardwood removal			description
Magnetic declination	4° 1' W			At time of site visit

Notes;

[a]parallel to the long side of the IH

[b]From tower point to this direction

[c]Clockwise from first angle, recommend reviewing FIU site characterization summary

[d]From 1st plot toward other plots if pattern B, from 1st plot toward nearest neighbor (see diagram of the patterns)

[e]see FIGURE 5. Options for Soil Array, second figure.

Tower Height is for FIU requirements; actual tower height will increase toward the next section height

IH = instrument hut

AP = auxillary portal

*burn information that may affect boardwalk, IH, or tower infrastructure, or other management activities