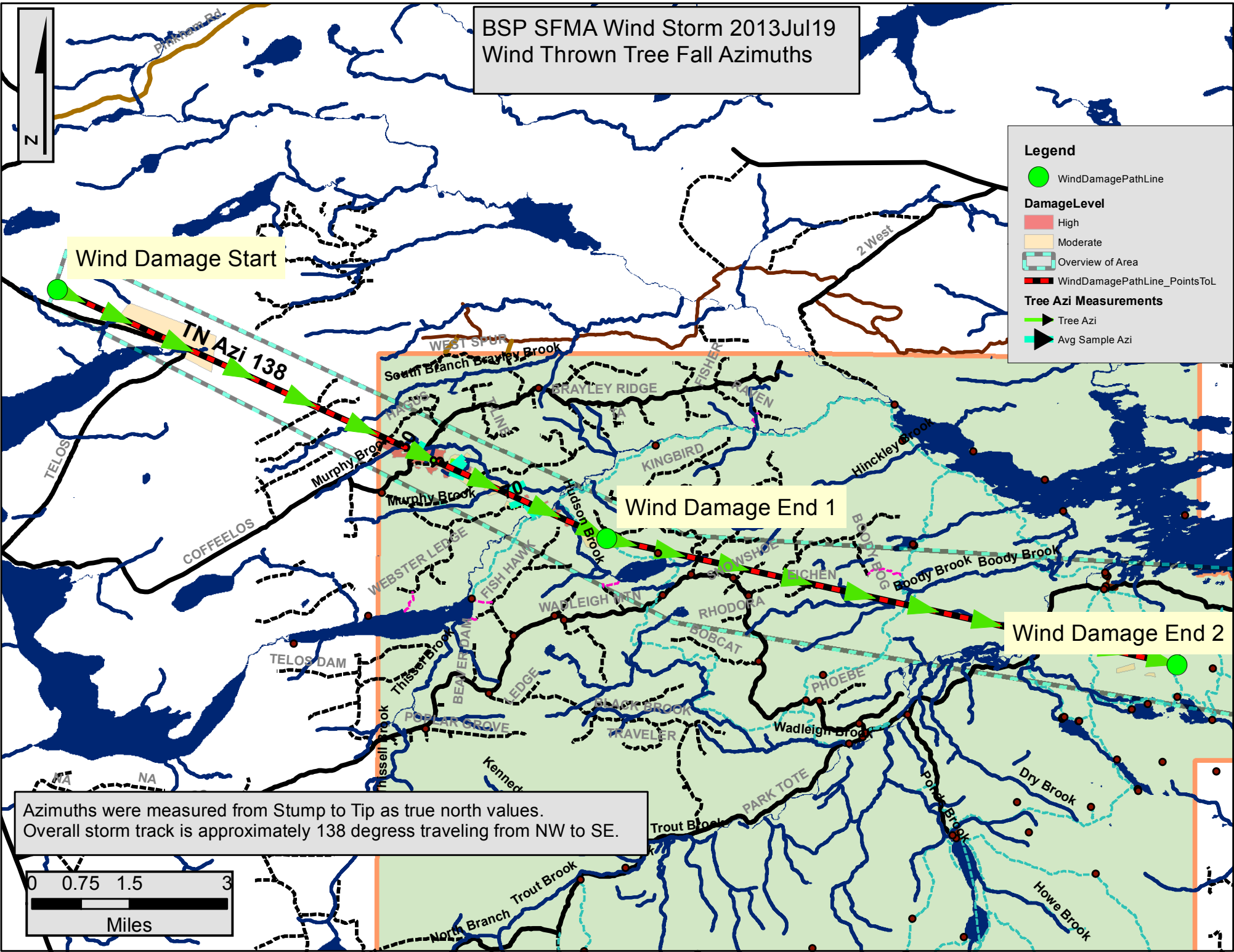


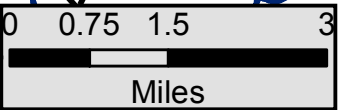
BSP SFMA Wind Storm 2013 Jul 19  
Wind Thrown Tree Fall Azimuths



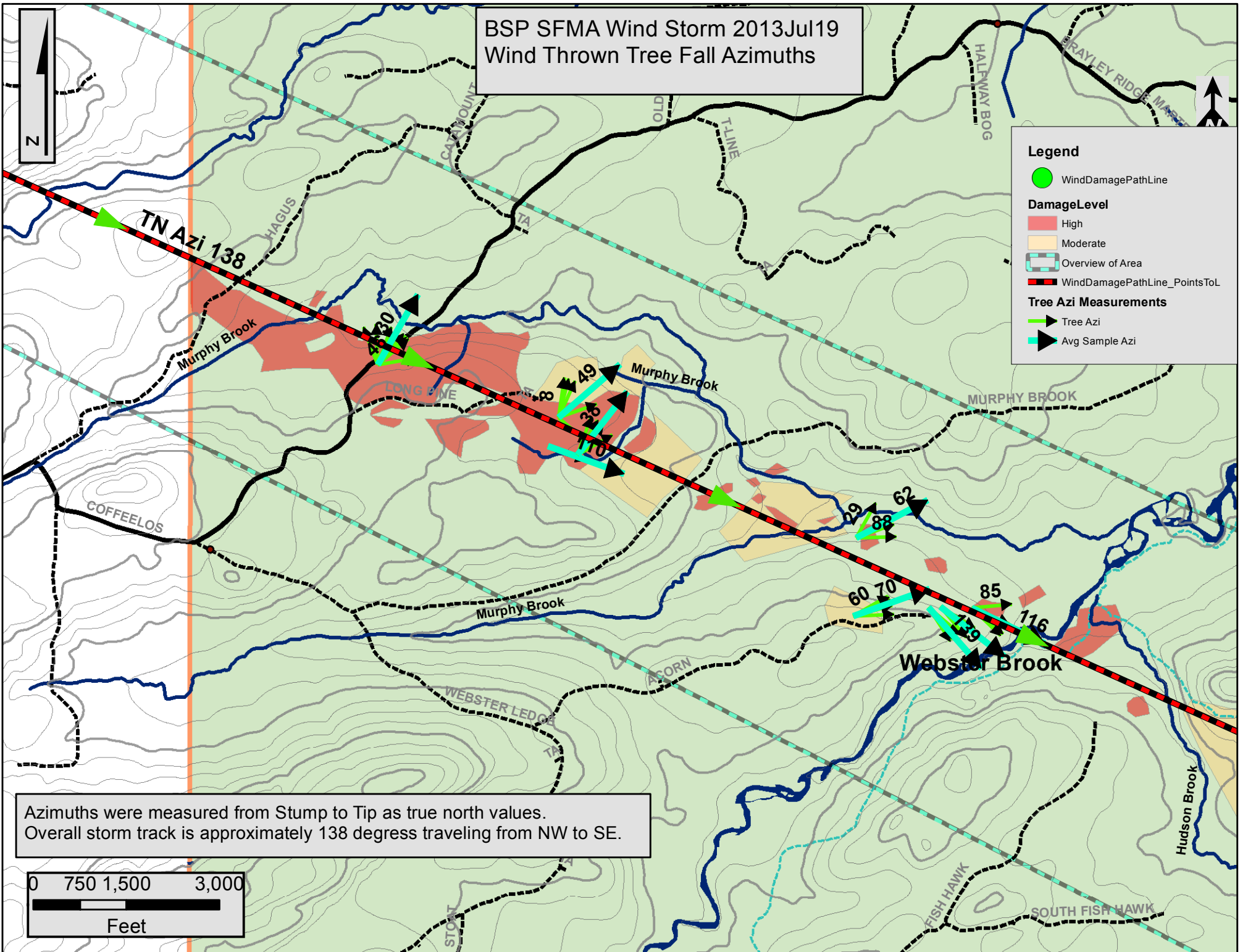
**Legend**

- WindDamagePathLine
- DamageLevel**
- High
- Moderate
- Overview of Area
- WindDamagePathLine\_PointsToL
- Tree Azi Measurements**
- ▶ Tree Azi
- ▶ Avg Sample Azi

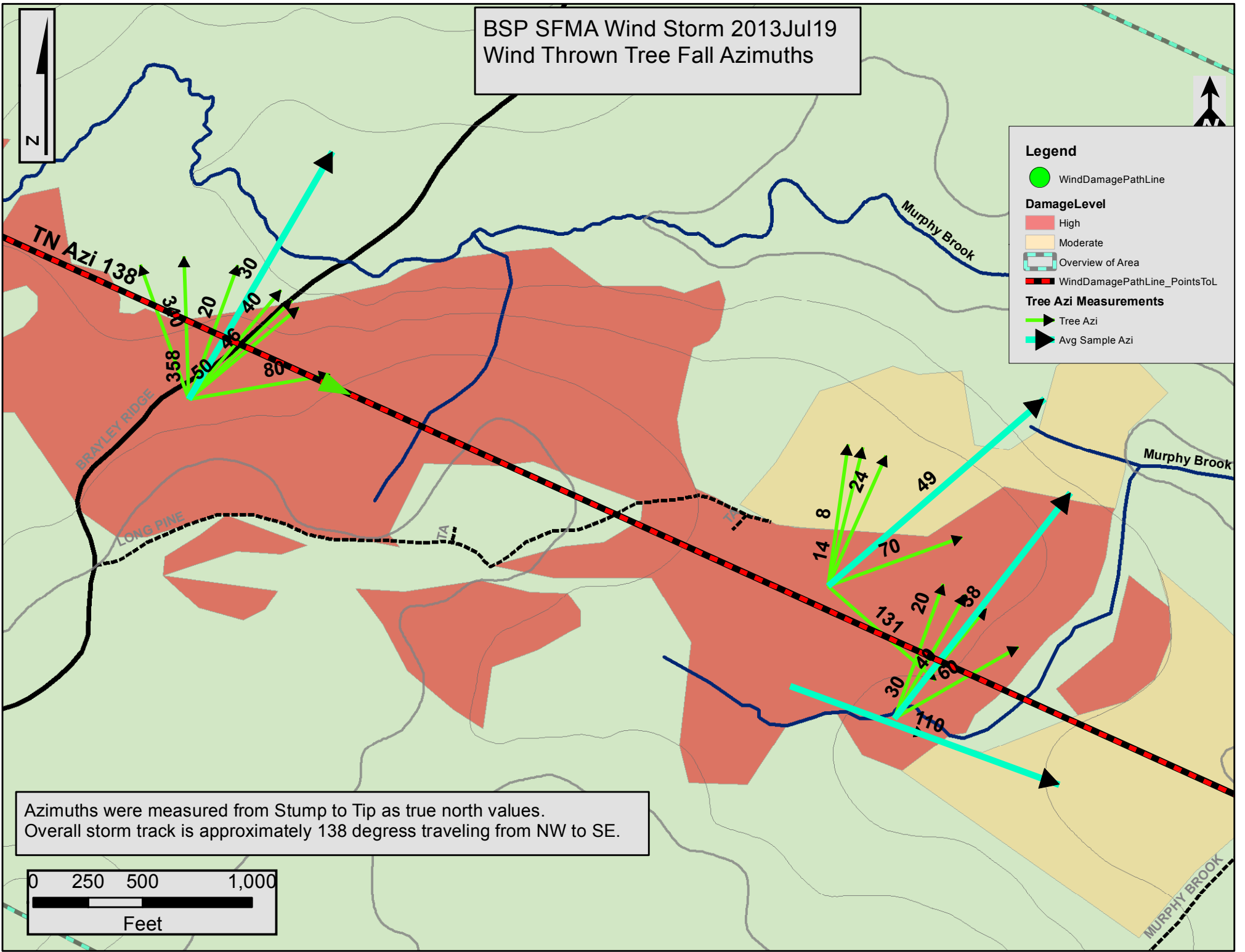
Azimuths were measured from Stump to Tip as true north values.  
Overall storm track is approximately 138 degree traveling from NW to SE.



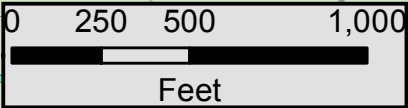
BSP SFMA Wind Storm 2013 Jul 19  
Wind Thrown Tree Fall Azimuths



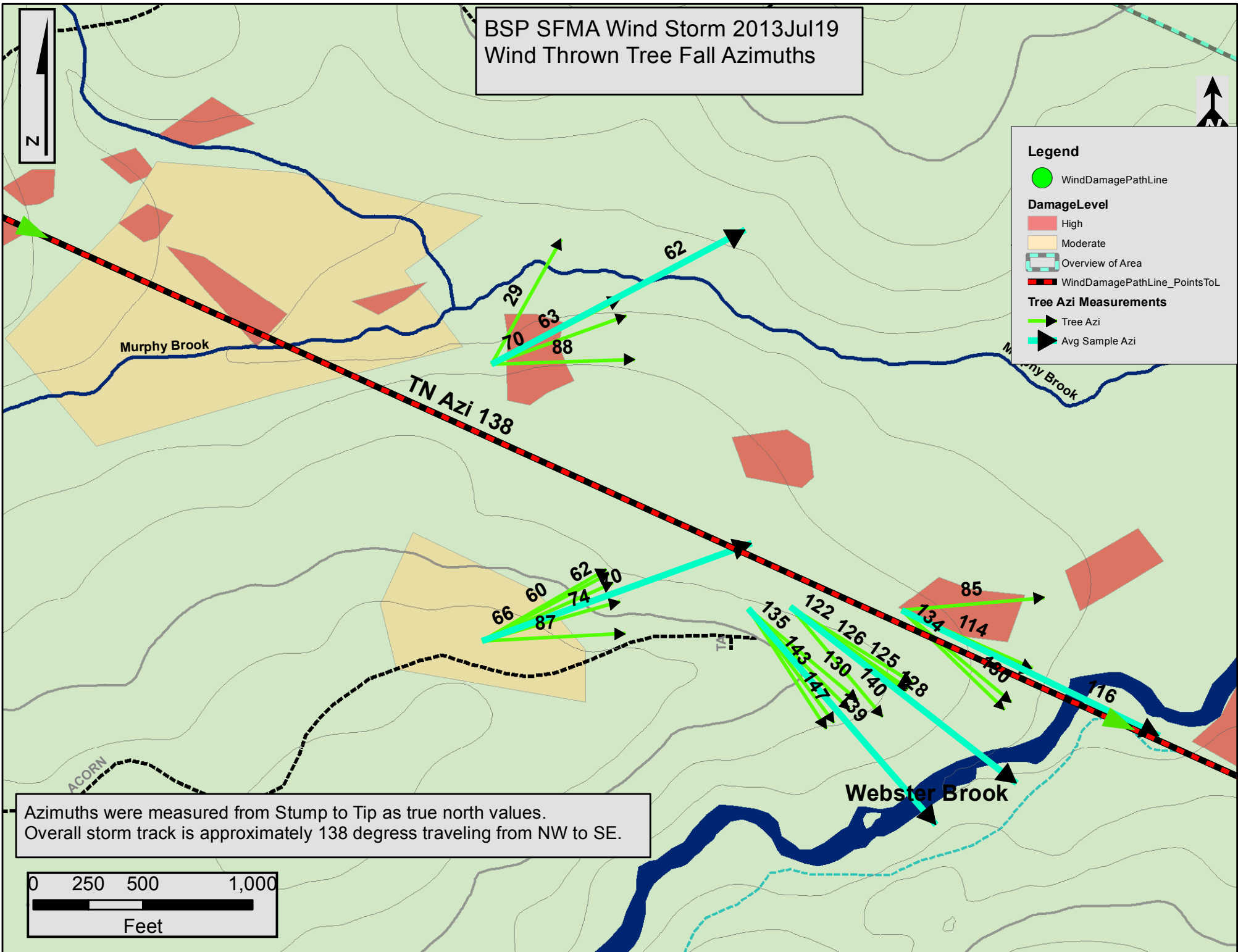
BSP SFMA Wind Storm 2013 Jul 19  
Wind Thrown Tree Fall Azimuths



Azimuths were measured from Stump to Tip as true north values.  
Overall storm track is approximately 138 degree traveling from NW to SE.



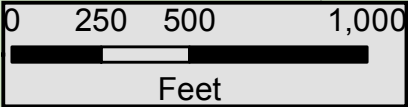
BSP SFMA Wind Storm 2013Jul19  
Wind Thrown Tree Fall Azimuths



**Legend**

- WindDamagePathLine
- DamageLevel**
  - High
  - Moderate
- Overview of Area
- WindDamagePathLine\_PointsToL
- Tree Azi Measurements**
  - ▶ Tree Azi
  - ▶ Avg Sample Azi

Azimuths were measured from Stump to Tip as true north values.  
Overall storm track is approximately 138 degrees traveling from NW to SE.





How to distinguish between tornado and microburst (straight-line) wind damage

**Tornado Damage:** Trees down in different directions



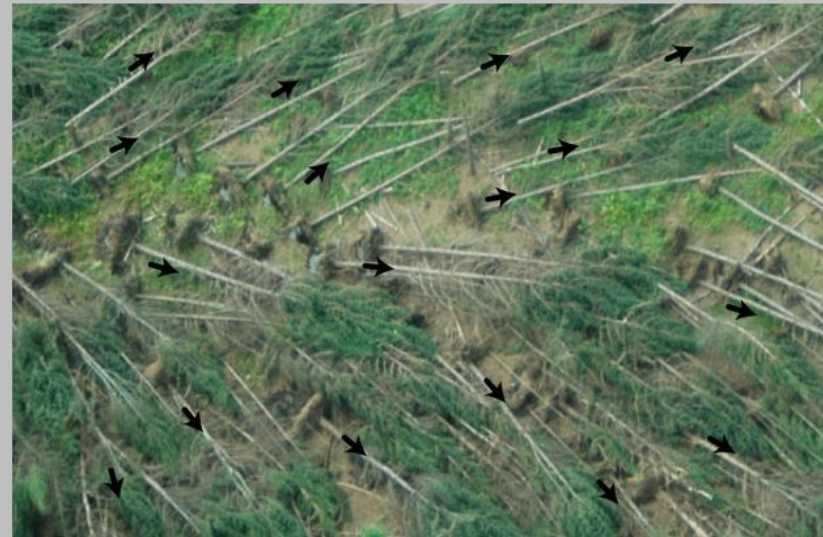
**Microburst Damage:** Trees down in a diverging pattern



**Tornado Damage:** Trees down in a cyclonic pattern



**Microburst Damage:** Trees down in a diverging pattern



www.amazon.com/GlobalSat-BU-353-Waterproof-USB-Receiver/dp/B000PKX2KA

OBJECTID	SHAPE *	PTID	PTName	POINT_X	POINT_Y	PT_X_DD	PT_Y_DD
1	Point	1	Wind Damage Start	485482.4512	5119665.431	-69.18827	46.230411
2	Point	2	Wind Damage End 1	499100.5139	5113500.654	-69.011653	46.175082
3	Point	3	Wind Damage End 2	513222.8443	5110381.017	-68.82878	46.146877

SID	y_proj	x_proj	altitude	time	Latitude	Longitude	model	Projection
WD1	5114300	496698.3	292.83	#####	46.18228	-69.0428	garmin	GP!NAD83UTM19N
WD2	5114686	496711.7	263.78	#####	46.18575	-69.0426	garmin	GP!NAD83UTM19N
WD3	5114346	497068.7	277.24	#####	46.1827	-69.038	garmin	GP!NAD83UTM19N
WD4	5114348	497127.9	272.57	#####	46.18272	-69.0372	garmin	GP!NAD83UTM19N
WD5	5114344	497282.3	268.16	#####	46.18267	-69.0352	garmin	GP!NAD83UTM19N
WD6	5115279	495246.9	299.99	#####	46.19108	-69.0616	garmin	GP!NAD83UTM19N
WD7	5115139	495194	299.75	#####	46.18982	-69.0623	garmin	GP!NAD83UTM19N
WD8	5115094	495339.3	290.81	#####	46.18942	-69.0604	garmin	GP!NAD83UTM19N
WD9	5115540	494355.1	297.17	#####	46.19342	-69.0732	garmin	GP!NAD83UTM19N

SID	y_pt	x_pt	altitude	time	Latitude	Longitude	model	Projection	AZI_B2T	TreeSpecies	DBH	Origin
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	8	RS	10	Fracture
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	131	RS	8	Fracture
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	14	RS	12	Tipup
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	70	RS	12	Tipup
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	24	RS	12	Tipup
WD6	5115279.056	495246.9217	299.99	9/4/2013 18:06	46.19108	-69.0616	garmin GPSMAP 62s S	NAD83UTM19N	49	AVG	11	
WD7	5115139.209	495193.9537	299.75	9/4/2013 18:11	46.18982	-69.06228	garmin GPSMAP 62s S	NAD83UTM19N	110	WP	24	Tipup
WD7	5115139.209	495193.9537	299.75	9/4/2013 18:11	46.18982	-69.06228	garmin GPSMAP 62s S	NAD83UTM19N	110	WP	26	Tipup
WD7	5115139.209	495193.9537	299.75	9/4/2013 18:11	46.18982	-69.06228	garmin GPSMAP 62s S	NAD83UTM19N	110	AVG	25	
WD8	5115094.43	495339.3025	290.81	9/4/2013 19:26	46.18942	-69.0604	garmin GPSMAP 62s S	NAD83UTM19N	40	RS	12	Tipup
WD8	5115094.43	495339.3025	290.81	9/4/2013 19:26	46.18942	-69.0604	garmin GPSMAP 62s S	NAD83UTM19N	60	WP	20	Tipup
WD8	5115094.43	495339.3025	290.81	9/4/2013 19:26	46.18942	-69.0604	garmin GPSMAP 62s S	NAD83UTM19N	30	RS	14	Tipup
WD8	5115094.43	495339.3025	290.81	9/4/2013 19:26	46.18942	-69.0604	garmin GPSMAP 62s S	NAD83UTM19N	20	RS	14	Tipup
WD8	5115094.43	495339.3025	290.81	9/4/2013 19:26	46.18942	-69.0604	garmin GPSMAP 62s S	NAD83UTM19N	38	AVG	15	
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	46	WP	18	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	340	WC	12	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	358	RS	14	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	50	WP	20	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	40	WP	16	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	20	WP	12	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	80	BF	6	Tipup
WD9	5115539.923	494355.1303	297.17	9/4/2013 20:41	46.19342	-69.07316	garmin GPSMAP 62s S	NAD83UTM19N	133	AVG	14	
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	74	SM	18	Tipup
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	66	RM	14	Tipup
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	87	RS	12	Fracture
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	60	SM	20	Tipup
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	62	YB	16	Tipup
WD1	5114300.441	496698.2604	292.83	9/4/2013 15:38	46.18228	-69.04278	garmin GPSMAP 62s S	NAD83UTM19N	70	AVG	16	
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	88	WP	20	Tipup
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	29	WP	18	Tipup
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	63	WP	14	Tipup
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	70	WP	16	Tipup
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	62	RS	12	Tipup
WD2	5114685.653	496711.6645	263.78	9/4/2013 15:55	46.18575	-69.04261	garmin GPSMAP 62s S	NAD83UTM19N	62	AVG	16	
WD3	5114346.141	497068.735	277.24	9/4/2013 16:34	46.1827	-69.03798	garmin GPSMAP 62s S	NAD83UTM19N	147	RS	12	Tipup
WD3	5114346.141	497068.735	277.24	9/4/2013 16:34	46.1827	-69.03798	garmin GPSMAP 62s S	NAD83UTM19N	143	RS	10	Tipup
WD3	5114346.141	497068.735	277.24	9/4/2013 16:34	46.1827	-69.03798	garmin GPSMAP 62s S	NAD83UTM19N	130	RS	8	Tipup
WD3	5114346.141	497068.735	277.24	9/4/2013 16:34	46.1827	-69.03798	garmin GPSMAP 62s S	NAD83UTM19N	135	RS	10	Tipup
WD3	5114346.141	497068.735	277.24	9/4/2013 16:34	46.1827	-69.03798	garmin GPSMAP 62s S	NAD83UTM19N	139	AVG	10	
WD4	5114348.335	497127.8537	272.57	9/4/2013 16:45	46.18272	-69.03722	garmin GPSMAP 62s S	NAD83UTM19N	126	RS	10	Tipup



WD4	5114348.335	497127.8537	272.57	9/4/2013 16:45	46.18272	-69.03722	garmin GPSMAP 62s S	NAD83UTM19N	140	RS	14	Tipup
WD4	5114348.335	497127.8537	272.57	9/4/2013 16:45	46.18272	-69.03722	garmin GPSMAP 62s S	NAD83UTM19N	122	RS	14	Tipup
WD4	5114348.335	497127.8537	272.57	9/4/2013 16:45	46.18272	-69.03722	garmin GPSMAP 62s S	NAD83UTM19N	125	RM	16	Tipup
WD4	5114348.335	497127.8537	272.57	9/4/2013 16:45	46.18272	-69.03722	garmin GPSMAP 62s S	NAD83UTM19N	128	AVG	14	
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	114	RS	12	Tipup
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	116	RS	14	Tipup
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	134	RS	8	Tipup
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	85	RS	10	Tipup
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	130	RS	14	Tipup
WD5	5114343.709	497282.2829	268.16	9/4/2013 16:53	46.18267	-69.03521	garmin GPSMAP 62s S	NAD83UTM19N	116	AVG	12	