PROJECT DATA SUPPLEMENT

CASE STUDY 6

MANURE STORAGE LAGOON (MANITOWOC COUNTY)

FINAL REPORT

ON

WISCONSIN'S DAIRY AND LIVESTOCK ODOR AND AIR EMISSION PROJECT

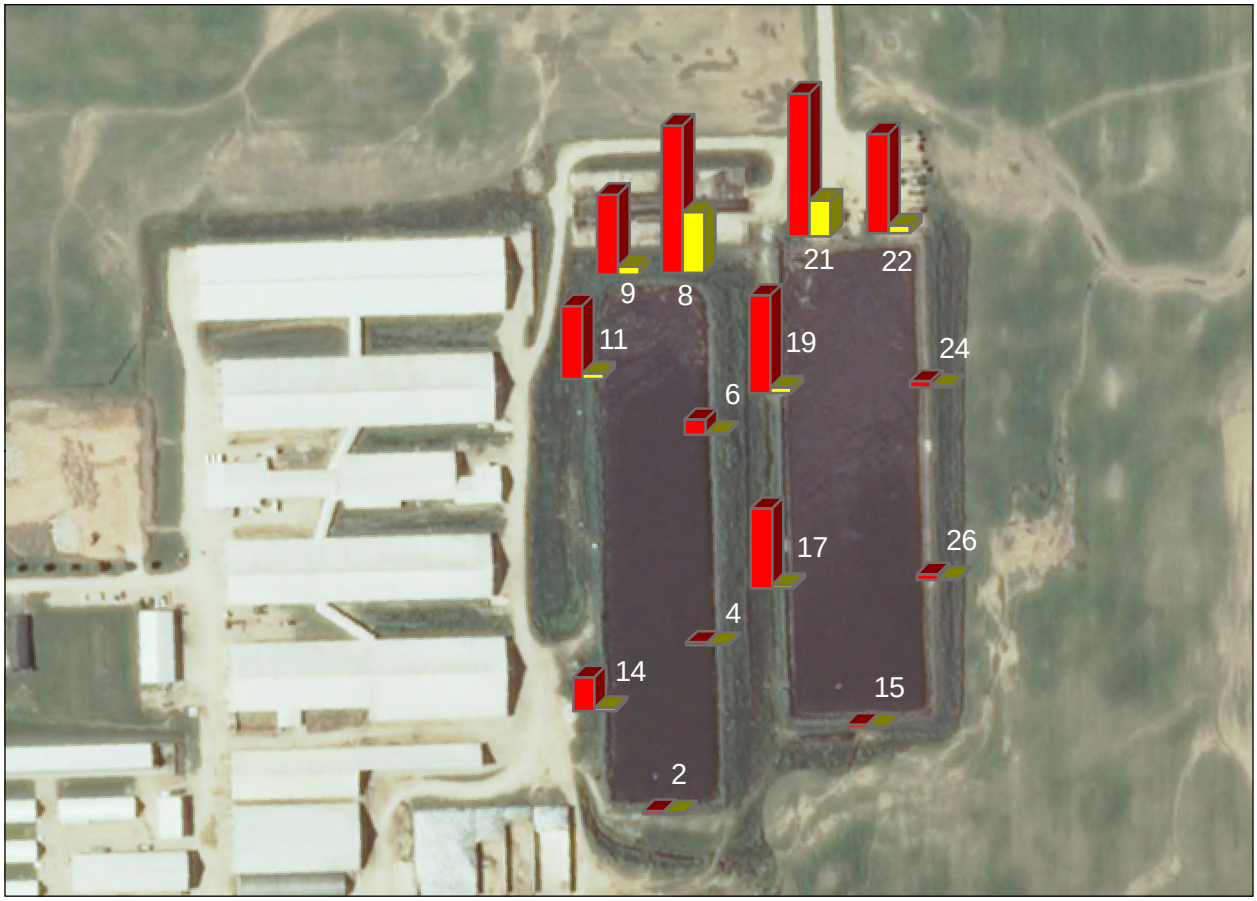
DECEMBER 2008

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WISCONSIN AGRICULTURAL STEWARDSHIP INITIATIVE

MADISON, WISCONSIN

Ambient Air Concentrations
Daytime Levels

Manitowoc County
July 2, 2007



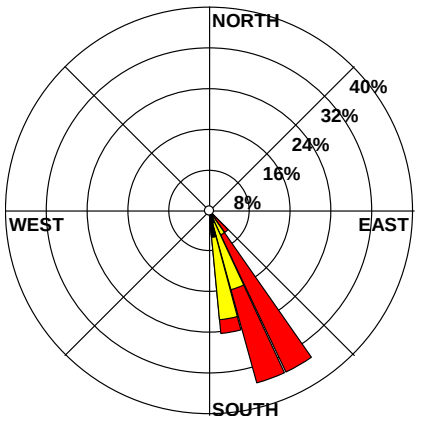
Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
2	29	ND
4	ND	ND
6	138	ND
8	1353	555
9	738	80
11	674	52
14	314	29
15	ND	ND
17	737	32
19	902	56
21	1315	331
22	918	74
24	58	ND
26	54	ND

Note: ND = Non-Detect (detection limits vary with conditions)

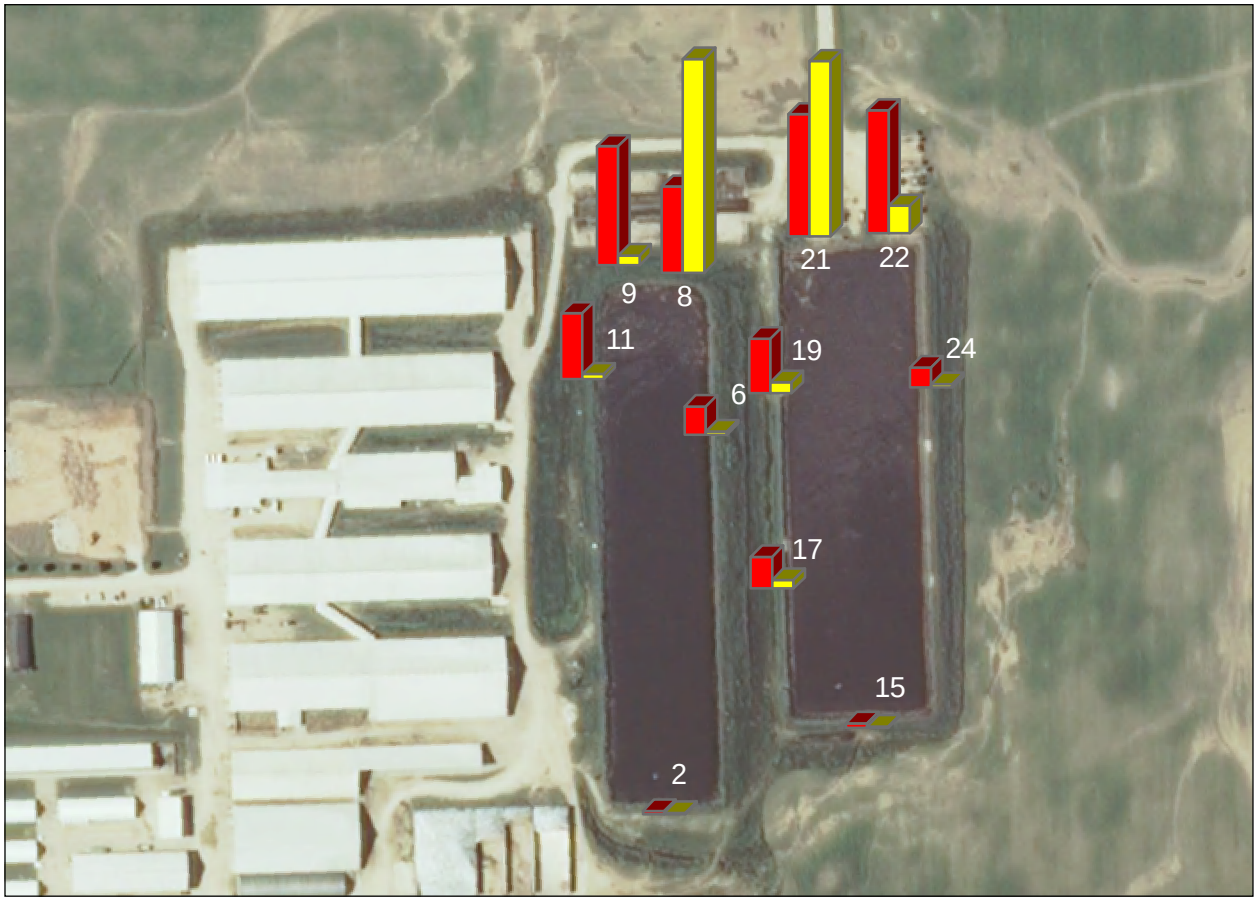
Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters



Ambient Air Concentrations
Nighttime Levels

Manitowoc County
July 2-3, 2007



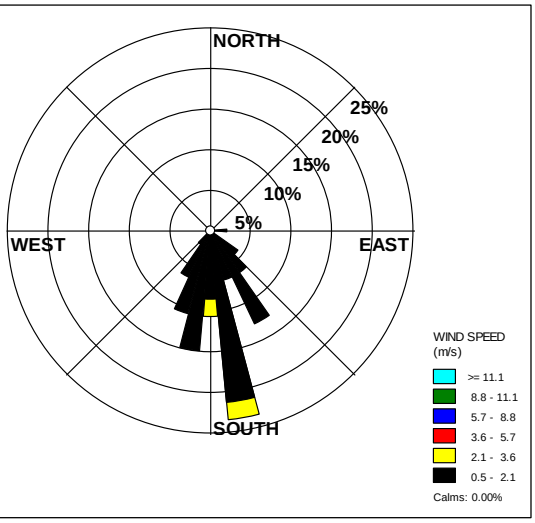
Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
2	29	ND
6	259	29
8	791	4083
9	1092	88
11	605	45
15	40	ND
17	293	81
19	504	101
21	1122	1612
22	1131	254
24	186	33

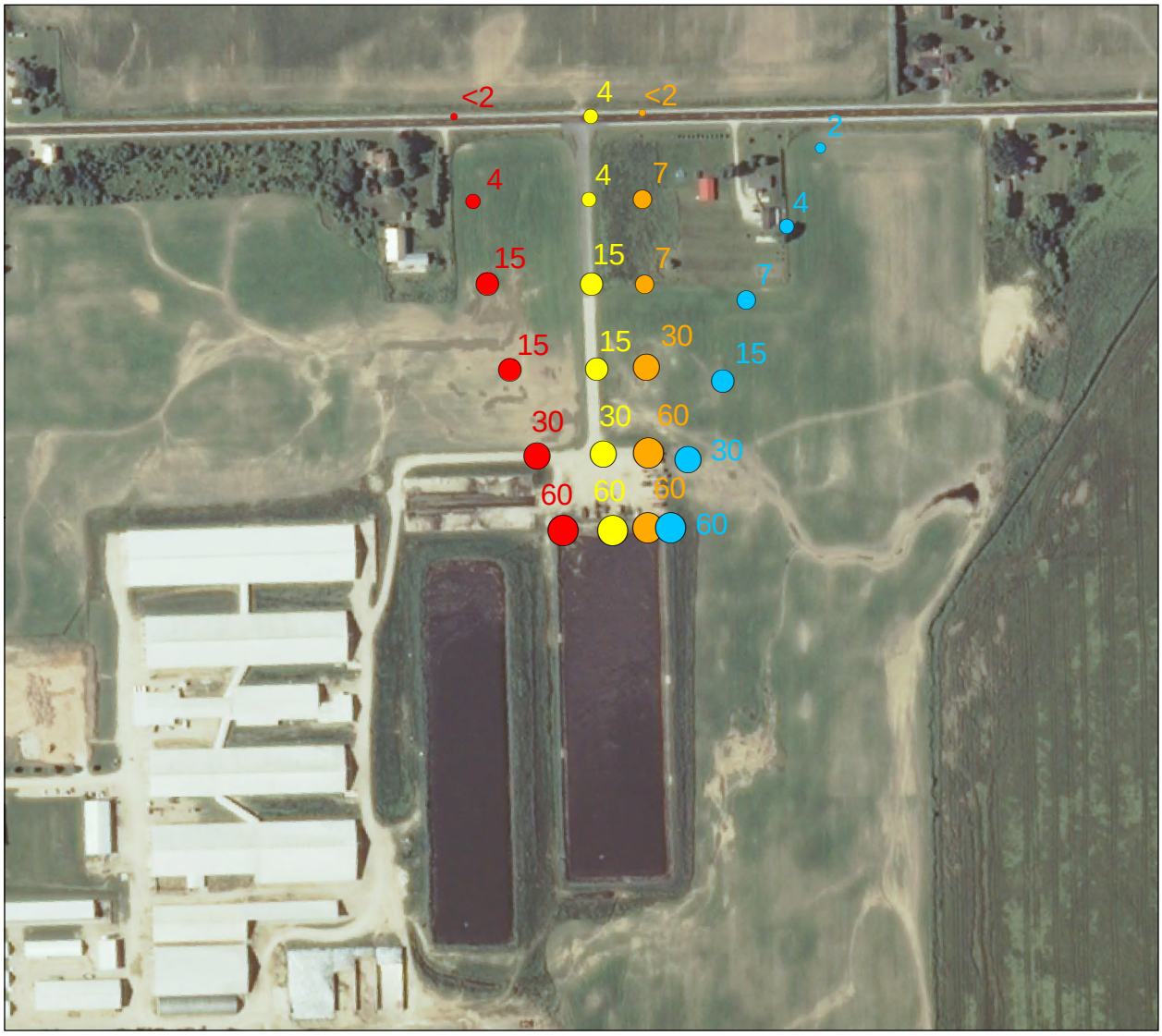
Note: ND = Non-Detect (detection limits vary with conditions)

Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters



Nasal Ranger Readings	Manitowoc County	July 2-3, 2007



60 Nasal Ranger Reading

Early AM Run

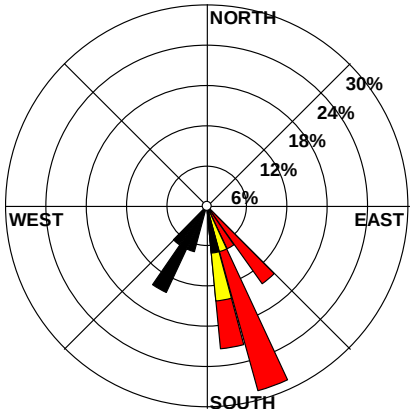
AM Run

PM Run

Late PM Run

0 160 320

Meters



Ambient Air Concentrations
Daytime Levels

Manitowoc County
October 15, 2007

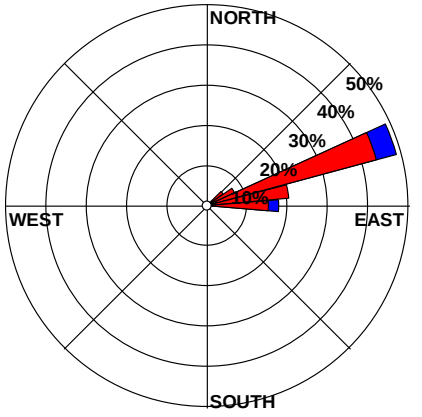
Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
2	292	18
3	154	ND
5	229	27
7	186	21
8	ND	ND
9	70	ND
10	221	67
11	359	1343
12	567	143
13	472	75
14	453	48
15	236	ND
16	755	45
18	806	76
20	126	145
23	ND	ND
25	ND	ND
27	ND	ND
33	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters



Ambient Air Concentrations
Nighttime Levels

Manitowoc County
October 15-16, 2007

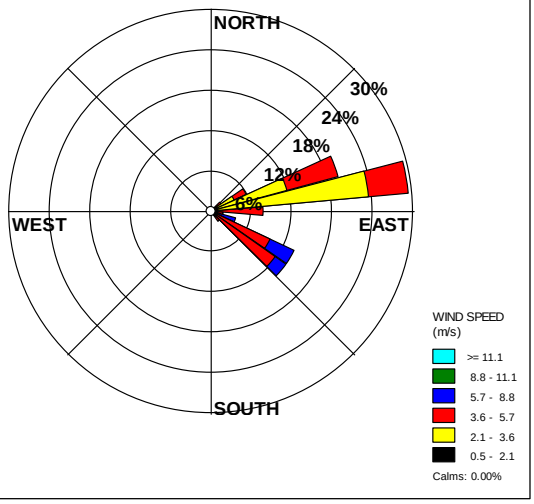
Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
3	142	ND
5	193	41
7	130	76
8	71	237
9	119	306
10	242	323
11	372	459
13	408	172
14	296	144
15	140	ND
16	596	132
18	756	238
20	183	312
27	ND	ND
33	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters



Nasal Ranger Readings	Manitowoc County	October 15-16, 2007

60 Nasal Ranger Reading

Early AM Run

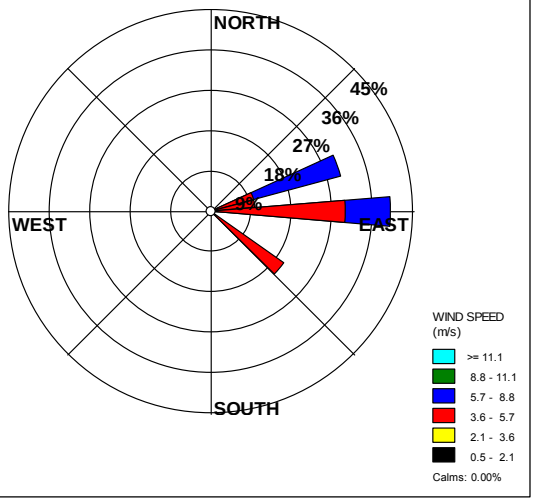
AM Run

PM Run

Late PM Run

0 130 260

Meters



Ambient Air Concentrations
Daytime Levels

Manitowoc County
May 5, 2008

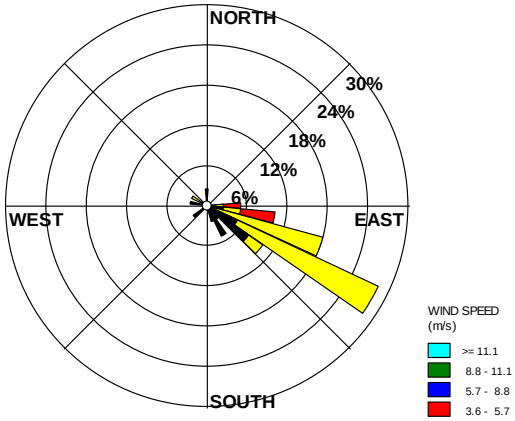
Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters

Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
2	180	ND
3	356	ND
5	430	30
7	573	61
8	821	1493
11	1280	59
12	1379	28
14	964	32
15	93	15
16	1581	77
18	1634	101
20	1751	140
21	729	921
25	29	30

Note: ND = Non-Detect (detection limits vary with conditions)



Ambient Air Concentrations
Nighttime Levels

Manitowoc County
May 5-6, 2008

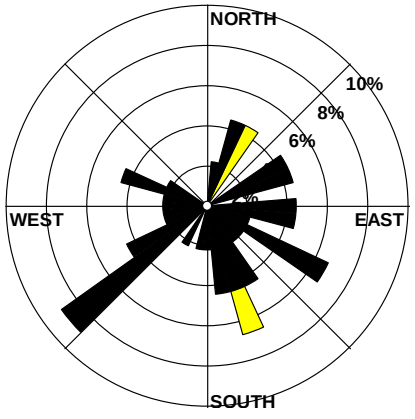
Field Sampling Measurements
(Micrograms per Cubic Meter)

Location	NH3	H2S
2	508	158
3	870	292
5	1505	796
8	489	1637
9	524	1238
11	934	574
12	888	391
14	766	235
15	ND	119
16	1116	526
18	927	849
20	735	1486
21	493	1393
22	201	357
23	404	795
25	457	368
27	327	199

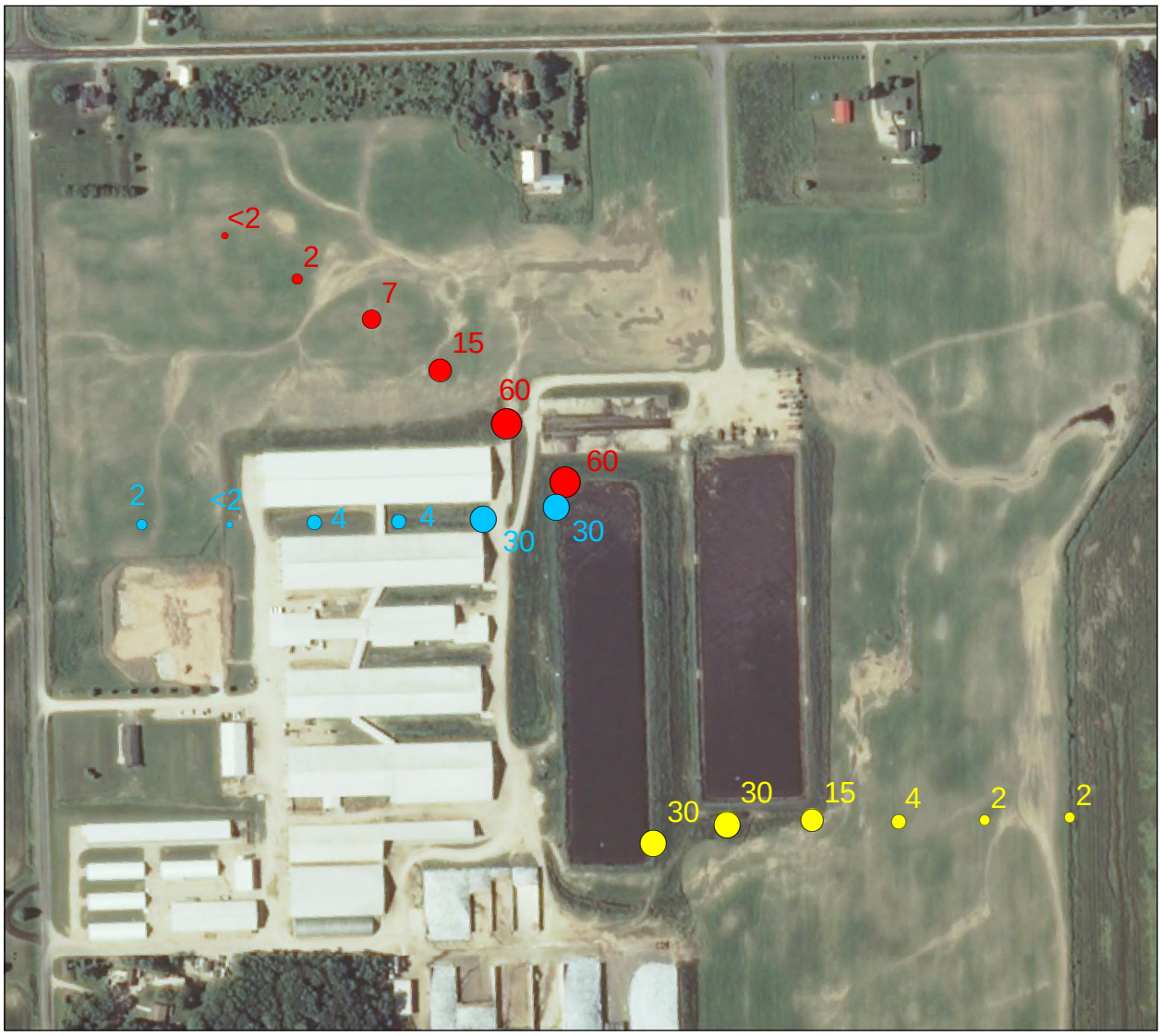
Note: ND = Non-Detect (detection limits vary with conditions)

Ammonia
Hydrogen Sulfide
10 Location Number

0 50 100
Meters



Nasal Ranger Readings	Manitowoc County	May 5-6, 2008



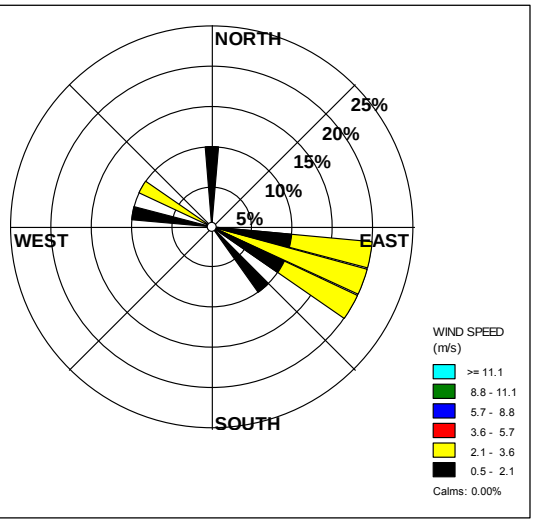
60 Nasal Ranger Reading

Early AM Run

AM Run

PM Run

Late PM Run

0 160 320

Meters