MNDNR
FIXED WING TANKER
INBRIEF

3/1/17

Of Interest

- New DNR Pilot – Steve Day
- New Fixed Wing – Dan Olds
- New FireCenter Aviation Dispatcher – Anna Hines
- Two ATGS (t)
- Lee Schaar is back
- Hibbing Ramp still bad
- Frequency card changes
- Area direct helicopter dispatch option
- Arctic oscillation is in a positive trend
- Its not 2019 anymore

To deal with:

On-board injection is a no-go on fires not under state protection.

Can still ground load.

FMB
Fire Management Board

FIRE MANAGEMENT BOARD

FMB Memorandum 19-003

August 6, 2019

TO: Fire Management Board Members

FROM: Meagan Conry for Grant Beebe, Chair, FMB Executive Board

SUBJECT: FS-DOI On-Board Injection and Blending of Chemicals

The US Department of Interior (DOI) Bureau of Land Management, DOI Bureau of Indian Affairs, and US Department of Agriculture Forest Service held a meeting in May 2019 in Missoula, MT to discuss water enhancer evaluation and on-board injection and blending of these chemicals. The objective of this meeting was to determine methods to evaluate on-board water enhancer injection systems in helicopters and SEATs.

At this time, the federal land management agencies are not prepared to approve the use of fire chemicals mixed with on-board fire chemical injection systems on federal lands or on federally-contracted aircraft. This position will be in effect for the remainder of the 2019 fire season at a minimum. The concerns regarding on-board injection systems include but are not limited to:

- Potential environmental contamination from the aircraft when dipping or scooping from waterways. Although water enhancers are generally less toxic than other fire chemicals, intentionally introducing them into waterways could be a violation of federal policy and laws.
- No quality control/quality assurance protocols exist to assure proper mix ratios and/or blending is attained on-board.
- On-Board Blending Systems: Testing performed by the Forest Service National Technology and Development Program (NTDP) in Missoula MT indicates that currently available on-board injection systems are not capable of achieving a consistent mix throughout the tank for certain products. In some cases there is insufficient shear to thoroughly blend products, resulting in a lower than expected viscosity and in some cases products were not uniformly mixed and were very difficult to remove from the tank and internal hardware.
- Standardized mixing is impractical due to sensitivity of water enhancers to water quality, temperature and shear. These variables make it difficult to calculate how much concentrate will be required to produce an acceptable product in an on-board mixing environment. Even within the specified Qualified Products List (QPL) mix ratios, a usable product may not be possible because the final mix is too thin or too thick to be useful, resulting in safety and effectiveness concerns.

The use of demand-mixed water enhancers mixed through a proportioner and loaded from ground-based equipment will be acceptable according to their qualified applications as specified on the Forest Service QPL (https://www.fs.fed.us/rm/fire/wfcs/water-en.htm).

Attachments: USFS Qualified Product List – Colored Water Enhancers for Wildland Fire Management July 2019

To deal with:

Red Book Language. Cooperator Aircraft.

MNICS Task Force has written a letter requesting a waiver.

CTR_Fillable | RedBookAll | pms505_SAS

8. MAFFS, NICC ordered state cooperators, and NICC ordered Canadian airtankers will begin rotation at that base after the contracted and FS owned airtanker(s) at the beginning of each day.
9. Water scoopers will not be included in airtanker base rotations.

Rotation of State Airtankers

Rotation of State resources on State incidents at a state airtanker base is established by their agency.

In cases where federally-approved State airtankers are operated in conjunction with federally-contracted airtankers on an incident primarily on federal lands, the State airtankers are added to the rotation after the federal airtankers at the beginning of each day.

Additional Information

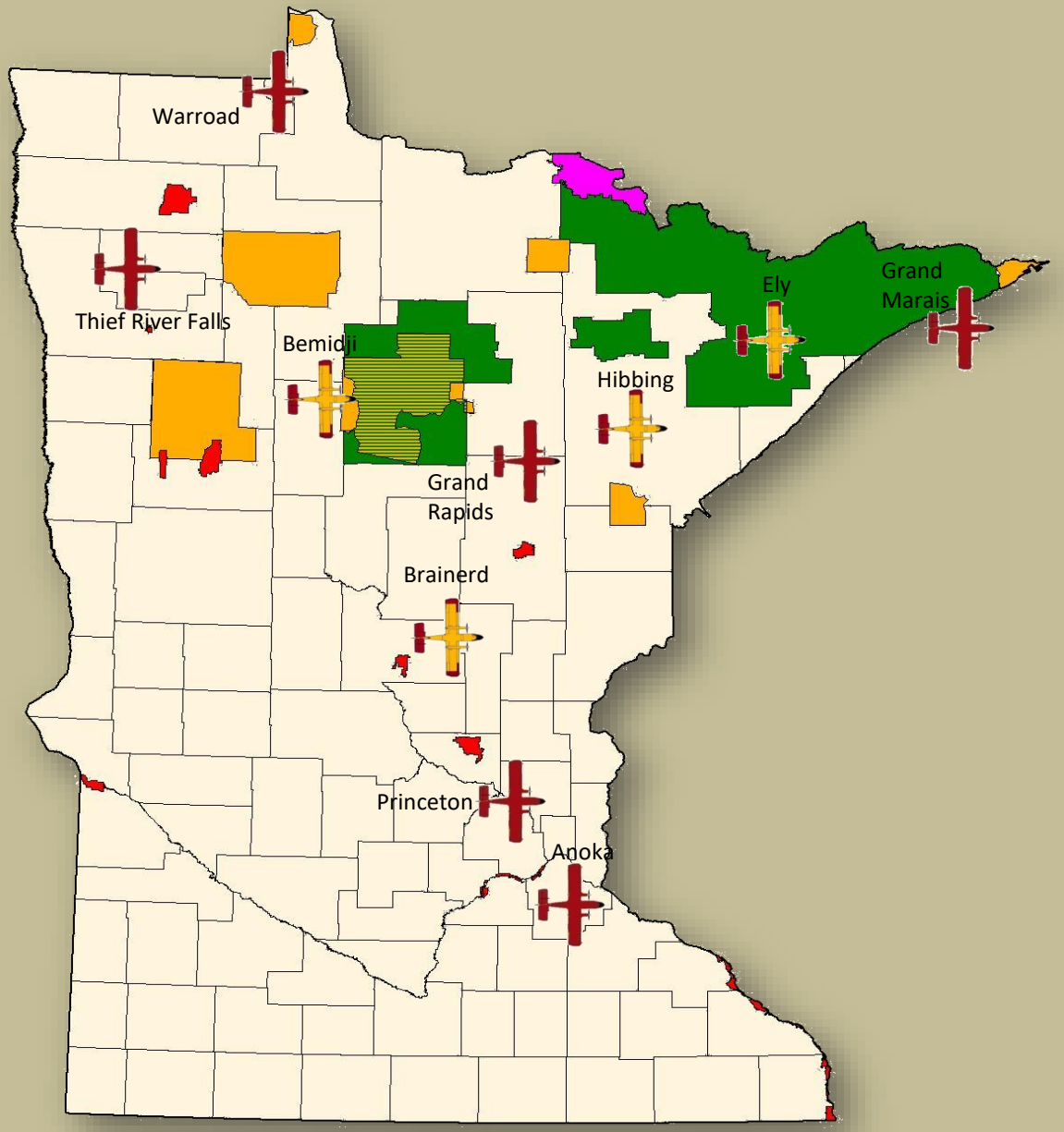
Forest Service/DOI contracted airtankers, when assigned to incidents managed by other agencies or state cooperators remain under the direction of the Contracting Agency. Forest Service and DOI Contracted airtankers are bound only by their contract and will be treated fairly and equitability during their

USFS

BIA

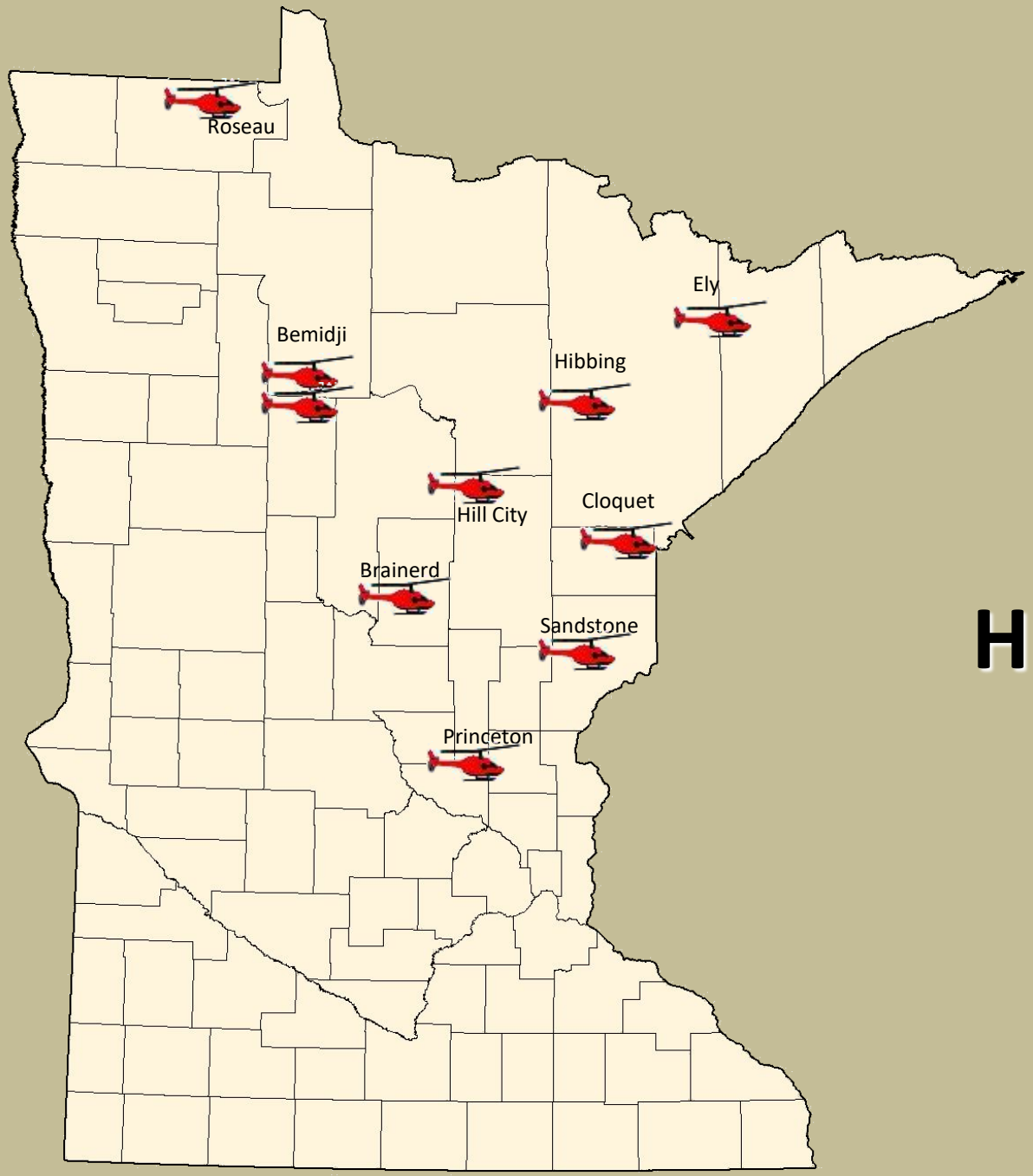
NPS

FWS



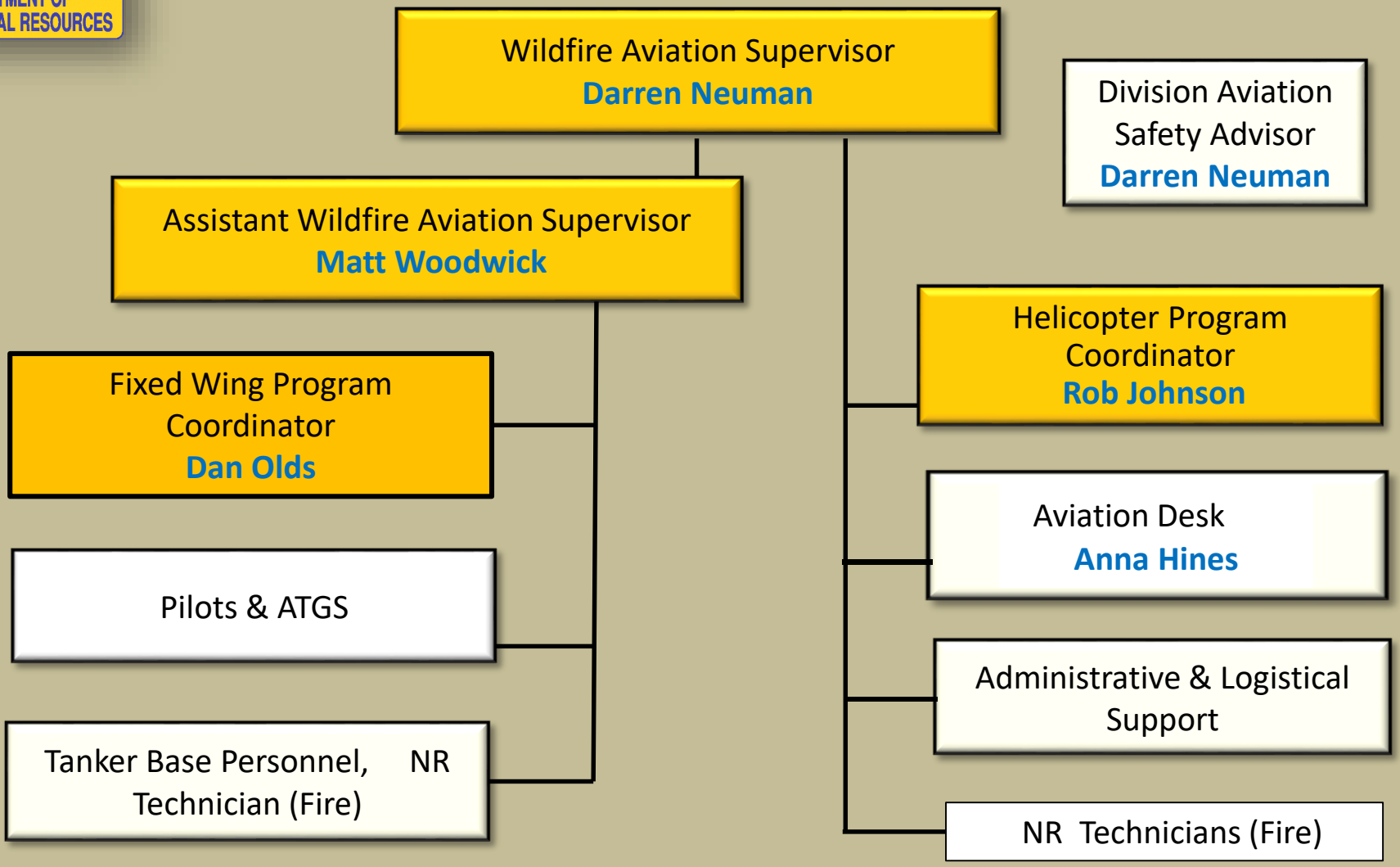
Minnesota DEPARTMENT OF NATURAL RESOURCES

DNR


Roseau
Bemidji
Hibbing
Ely
Hill City
Cloquet
Brainerd
Sandstone
Princeton

Helibases

MN DNR Forestry
Air Operations



BASE EXPECTATIONS

Behaviors

Harassment, sexual harassment or physical violence of any kind will NOT be tolerated.

Briefings

Daily morning briefing: Normally at 10:00 am-State bases
Normally at 10:30 am-Bemidji T.B.

Expected to attend
Encourage pilot inputs

State Contract Duty Day

Could be anytime from ½ hour prior to sunrise to ½ hour after sunset-14 hour maximum.

Determined by Fire Center according to staffing guidelines.

Pre-flight (duty day starts) normally at 09:30, flight ready at 10:00 am.

-No Extended Standby in MN.

BIA-Bemidji Contract Duty Day

****does not apply to State contracted aircraft based at BJI**

- BIA will set the duty day for BIA aircraft

-Pre-flight inspection will be done at start of duty day (normally 10:00am).
-Morning briefing starts after pre-flight approximately half hour into the duty day-normally 10:30am

-Extended standby after 9 hours
-Off base lunch determined by BIA staff according to contract

Alert Status

Off base lunch:

State contract - To be assessed and approved at the discretion of the ATBM or SEMG and the ATGS. Inform the ATBM/SEMG and ATGS when leaving.

BIA aircraft - per contract and determined by BIA staff.

Off base lunch on the State contract **will not be common** during spring fire season when one hour fuels are cured. **Plan to have lunch on base most days.**

Flight and Duty Limitations

14 hour duty day / 10 hours rest

8 hours max daily flight time
(track individual fire times separate)

42 hours max on 6 day period – day off (36/6)

2 days off in every 14 (minimum)

Dispatch Procedures

All dispatch requests will be forwarded to the Tanker Bases by email from the Fire Center.

- Tactical Aircraft Request form printed and distributed by Tanker Base Dispatch

- Option to forward via email instead of paper

- Expected to be launched no more than 15 min. after receipt of dispatch

DISPATCH FORM

AIRCRAFT DISPATCH

FIRE NAME:	Roadside
DATE:	5/7/18
TIME:	1400
REQUESTING PERSON:	Cindy
AGENCY/PHONE:	Bemidji
DESCRIPTIVE LOCATION:	6 E of Mahnomen
LATITUDE (DM):	47 18.665
LONGITUDE (DM):	95 46.923
BEARING (DEG):	251
DISTANCE (NM):	36
FROM:	BJI
LEGAL DESCRIPTION: (Sec - Twp - Rg)	5-144-40
AIR CONTACT:	AA1
A/A FREQUENCY:	NW - 119.550
OTHER AIRCRAFT:	Detection - Hawkeye 122.925
GROUND CONTACT:	Volhaber
A/G FREQUENCY:	CH3 DNR A-G 1 - 151.3400 t110.9
LOCAL IA DISPATCH OFFICE FREQUENCY:	21 BEMIDJI - 151.2650 t136.5
FLIGHT FOLLOWING:	14 NORTHWEST(D)Rx151.3700 $4A4 Tx156.1350 $4A4
FIRE SIZE:	Unk
FUEL TYPE:	Timber
VALUES THREATENED:	UNK
HAZARDS:	Unk

RESOURCES ORDERED:

Heli: 7CH

Tankers: FB-204 & FB-205

AA: AA1

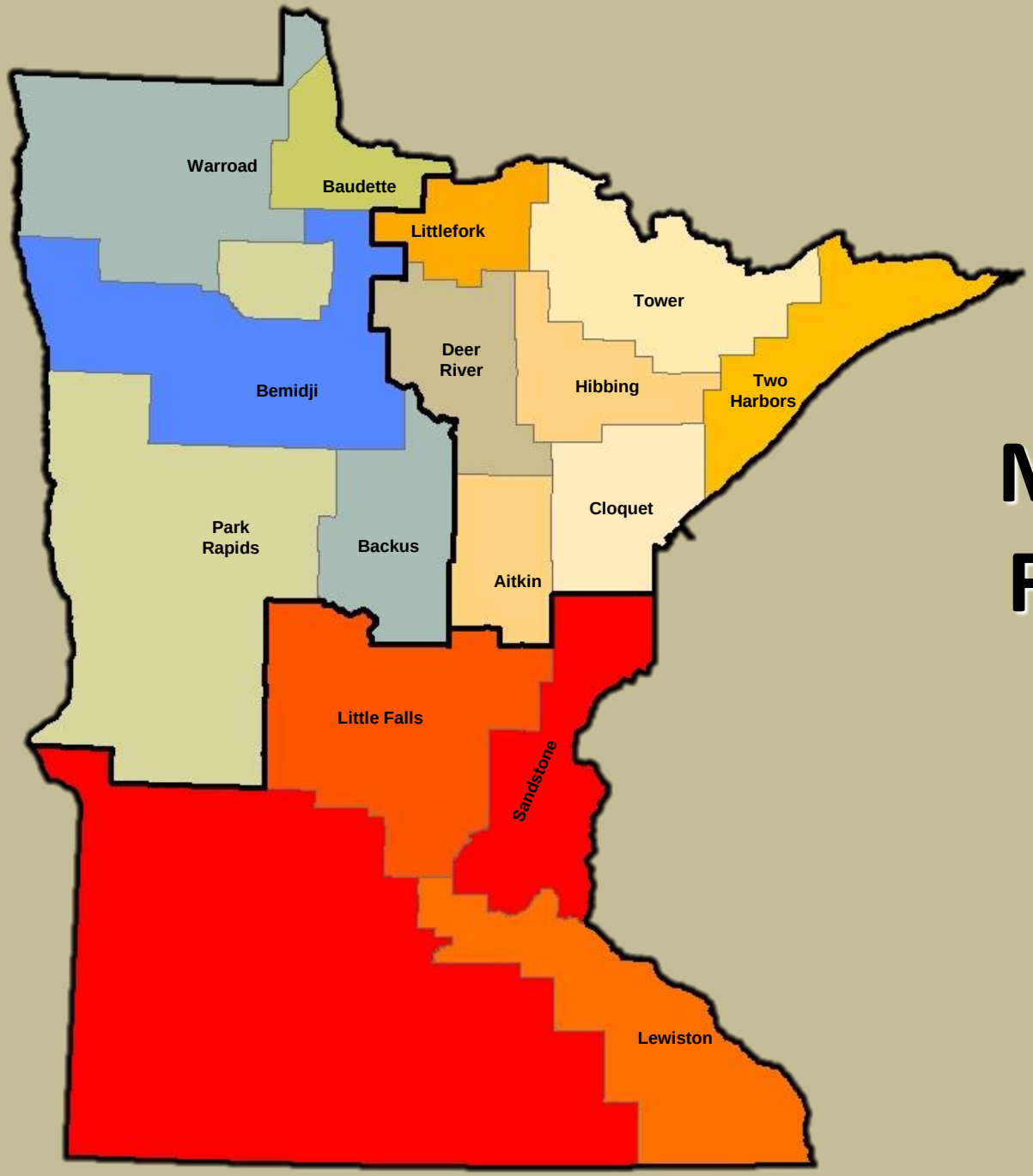
REMARKS:

MNCC AVIATION DESK 218-327-4582

mnccaviation@gmail.com

Call Signs

- **Fire Center** (MNCC Air Desk)
- **Tanker Base** (BRD, BJI, HIB, ELO)
- **SEAT Base** (PNM, RRT)
- **Red Lake 50** (five-oh)
- **Air Attack 1** (2,5,6,7,9)
- **MNDNR Administrative Areas** (by name- *Bemidji Area*)



MN DNR Forestry Areas

Ramp Procedures

All aircraft movement, operations, maintenance and parking on the ramp to be coordinated with the Ramp Manager.

Vehicle and foot traffic on the ramp to be approved and coordinated through the ramp or base manager.

Ramp frequency: 120.125

Fuel / Fueling

Contact the Tanker Base (BJI, BRD, HIB, ELO) to request fuel delivery if not self sufficient.

PNM-100LL self service only
RRT-self serve 100LL and JetA

Retardant

Loading

SEATS/FIREBOSS

As per standard SEAT ops . Hot loading permitted. Hot fueling permitted if properly equipped.
Simultaneous loading and fueling **NOT permitted.**

JETTISON AREAS

- List of 10 approved jettison areas included in pilot briefing pkt.
- Each has a Lat/Long.
- Some have a descriptive advisory.
- Some have aerial photos
- Recommend entering as waypoints-GPS or iPad

WARROAD JETTISON AREA

Describe the jettison area establish for the base:
Lat: 48:56.140 **Long: 95: 20.716**

Descriptive area:
NE of Hangar's along the tree line in the grass.

THEIF RIVER FALLS JETTISON AREA

Describe the jettison area establish for the base:
Lat: 48: 03.9' **Long: 96: 11.1**

Descriptive area: Jettison area is located west of the runways inside the perimeter of the fence.

PRINCETON JETTISON AREA

Describe the jettison area establish for the base:
Lat: 45:25.980 **Long: 93: 43.020**

Descriptive area: Off airport on state land.

MORA JETTISON AREA

Describe the jettison area establish for the base:
Lat: 46: 09.886 **Long: 93: 11.862**

Descriptive area: Off airport on state land.

HINKLEY JETTISON AREA

Describe the jettison area establish for the base:
Lat: 45:56.259 **Long: 92: 48.121**

Descriptive area: Off airport on state land.

DETROIT LAKES JETTISON AREA

Describe the jettison area establish for the base:
Lat: 46: 43.218 **Long: 95: 48.344**

Descriptive area: Section 36 of Lakeview Twp. TWP 138 Rng 41 Sec 36. **Note: Adhere to the 300' buffer for lakes, wetlands, creeks & rivers.**

ANOKA JETTISON AREA

Describe the jettison area establish for the base:
Lat: 45: 19.97" **Long: 93: 07.08"**

Descriptive area:Upland grass field Carlos Avery Wildlife Refuge. **Note: Adhere to the 300' buffer for lakes, wetlands, and rivers creeks & rivers.**

BEMIDJI JETTISON AREA

Describe the jettison area establish for the base:
Lat: 47 :22.583 **Long:95 : 07.783**

Descriptive area:
16-145-35

HIBBING JETTISON AREA

Describe the jettison area establish for the base:
Lat: 47 : 13.850 **Long: 92 : 51.950**

BRAINERD JETTISON AREA

Describe the jettison area establish for the base:
Lat: 46 : 36.360 **Long: 94 : 02.500**

COMMUNICATIONS PLANS

COMMONLY USED AM RADIO FREQUENCIES
MINNESOTA INTERAGENCY AIR OPERATIONS

122.750	MNICS - AIR-AIR - ALL RISK FREQUENCY (call in 10 minutes out)
122.925	AIR-AIR & AIR-GROUND DESIGNATED NATURAL RESOURCES FREQUENCY
124.650	ALPHA - AIR-AIR - INITIAL ATTACK
119.950	BRAVO - AIR-AIR - INITIAL ATTACK
119.850	CHARLIE - AIR-AIR - INITIAL ATTACK
123.975	AIR-GROUND - AIR TANKER BASE OPERATIONS WITHIN 10 MILES OF BASE
122.700	CTAF: BRAINERD, FOREST LAKE
	CLOQUET, ELY, GRAND RAPIDS
126.200	AIR-GROUND
126.500	AIR-GROUND - MINNEAPOLIS APPROACH
132.400	ANOKA TOWER
122.925 / 122.850	AIR-AIR & AIR-GROUND - STATE OF WIS
121.500	EMERGENCY LOCATOR TRANSMITTER

NOTE	
	All MN Tanker Bases Monitor 122.925, 123
	MONITOR AIR GUARD - 168.625(n) AT ALL TIMES
	WILDFIRE TRANSPONDER CODE - 1255
	USE 122.925 FOR INITIAL ATTACK. THE AIR TA
	FROM 122.925 TO USE ONE OF THE ALTERNAT

MINNESOTA AIR ATTACK PROGRAM
RADIO FREQUENCY CHART
Page 1 of 2 — Revised 2/19/09

CH	AREA / DESIGNATOR		SIMPLEX	TONE	N/W
1	DNR TAC 1		151.475		
2	DNR AIR/GROUND		151.340		W
3	MNICS TAC 2		170.475		N
4	FIRE MUTUAL AID		154.295		N
5	MIFC-FIRE AIR NET		171.475		W
6	QUADNA Air Net*		171.475		N
7	Central		172.375		N
8	EVELETH Air Net*	Rx	171.475	110.9	W
	Northeast	Tx	172.375		N
9	NORTHOME Air Net*	Rx	171.475	103.5	N
	Northwest	Tx	172.375		N
10	BUFFALO Air Net*	Rx	171.475	127.3	N
	Southern	Tx	172.375		N
11	TANKER BASE - RAMP		168.050		N
12	BRAINERD		151.175	100	N
13	AITKIN		151.265		N
14	LITTLE FALLS		151.400	146.2	N
15	CAMBRIDGE		151.325	110.9	N
16	ROCHESTER		151.266		N
17	HIBBING / EVELETH		166.275	Tx100	N
18	TWO HARBORS		172.425	100	N
19	CLOQUET		169.925		W
20	SANDSTONE		166.675	Tx114.8	W
21	DEER RIVER / EFFE				W
22	LITTLEFORK		168.650		W
23	ORR / TOWE		168.050		N
24	BEMIDJI		169.125	Tx110.9	N
25	PARK		168.200		N
26			168.600		N
	USFS NAT'L TAC 1		168.625	Tx110.9	N
	USFS SUPERIOR TAC 1			LIGHTS ON	N
	USFS NAT'L TAC 2				
	USFS NAT'L TAC 3				
	AIR GUARD				
	TRANSPONDER 1255				

Note: Channels 28, 30, 35 & GUARD - Tone on Tx Only
* Repeater

ZONE	
A	DNR & NO... ANOKA
B	DNR & SOUTH M... DAKOTA (DK),
C	DNR & CENTRAL REGIO... SHERBURNE (SH...
D	DNR & SOUTHEAST REGION OLMSTED (OL), GOODHUE, R...
E	ITASCA COUNTY (NORTHEAST REGI... ITASCA (IT), PINE, KANABEC, AITKIN, C...
F	CONVENTIONAL TAC ZONE - FIRE, EMS, SA... SCENE OF ACTION, SIMPLEX TALKGRO...
G	AIRCRAFT - ALL COUNTIES INITIAL CALL PLUS... A/G ANOKA, DAKOTA, CARVER, SHERBURNE, STEARNS, OLMSTED
H	NORTH METRO REGION IC-ZONE ANOKA (ANK), CHISAGO, ISANTI, RAMSEY, WASHINGTON
I	SOUTH METRO REGION IC-ZONE DAKOTA (DK), , CARVER (CV), HENNEPIN, SCOTT
J	CENTRAL REGION IC-ZONE CARVER (CV), STEARNS (ST)
K	SOUTHEAST REGION IC-ZONE OLMSTED (OL), GOODHUE, RICE, WABASHA, STEELE
L	NORTHEAST REGION IC-ZONE ITASCA (IT), PINE, KANABEC, AITKIN, CROW WING, CASS

Air Attack Plan (FM/AM)

Air-to-Ground Communications VHF-FM

VHF-AM Detection and IA Helicopters **122.925**

Fire Incidents **Air/Air to be assigned at time of dispatch

MN DNR FORESTRY AVIATION PROGRAM

TAC, A/G , AIR NET & AM (Victor) RADIO FREQUENCY CARD

Page 1 *Updated 1/31/18*

CH	AREA / DESIGNATOR		FREQUENCY	TONE/NAC	N/D
1	DNR TAC 1		151.4750	156.7	N
2	MNICS TAC 2		170.4750		N
3	DNR A/G 1		151.3400	110.9	N
4	DNR A/G 2		159.3000	110.9	N
5	A/G - 3		166.6125		N
6	A/G - 70		167.9500		N
7	AIR NET SIMPLEX {Digital}		151.3700	$555	D
8	AIR NET SIMPLEX {Analog}		151.3700	136.5	N
9	*CENTRAL REPEATER**	Rx	151.3700	$555	D
	Quadna {Digital}	Tx	156.1350	$455	
10	*CENTRAL REPEATER**	Rx	151.3700	136.5	N
	Quadna {Analog}	Tx	156.1350	110.9	
11	*NORTHEAST REPEATER**	Rx	151.3700	$555	D
	Eveleth {Digital}	Tx	156.1350	$40B	
12	*NORTHEAST REPEATER**	Rx	151.3700	136.5	N
	Eveleth {Analog}	Tx	156.1350	103.5	
13	*NORTH-CENTRAL RPTR **	Rx	151.3700	$555	D
	Northome {Digital}	Tx	156.1350	$4F9	
14	*NORTH-CENTRAL RPTR **	Rx	151.3700	136.5	N
	Northome {Analog}	Tx	156.1350	127.3	
15	CARLOS SIMPLEX - *Air Net* {A}		151.3700	100.0	N
16	*SOUTH REPEATER **	Rx	151.3700	100.0	N
	Buffalo {Analog}	Tx	156.1350	136.5	
17	*NORTHWEST REPEATER **	Rx	151.3700	$555	D
	Wannaska {Digital}	Tx	156.1350	$4A4	
18	*NORTHWEST REPEATER **	Rx	151.3700	136.5	N
	Wannaska {Analog}	Tx	156.1350	118.8	
19	*WEST REPEATER **	Rx	151.3700	$555	D
	New York Mills {Digital}	Tx	156.1350	$585	
20	*WEST REPEATER **	Rx	151.3700	136.5	N
	New York Mills {Analog}	Tx	156.1350	141.3	
21	*ARROWHEAD RPTR **	Rx	151.3700	$555	D
	Grand Marais {Digital}	Tx	156.1350	$4CE	
22	*ARROWHEAD RPTR **	Rx	151.3700	136.5	N
	Grand Marais {Analog}	Tx	156.1350	123.0	
23	HELIBASE DECK / RAMP		159.2400	100.0	N

VHF - AM (VICTOR) FREQUENCIES	
DETECTION & HELICOPTER INITIAL ATTACK - AIR/AIR	122.925
FIXED WING & ADDITIONAL AIR/AIR FREQUENCIES ASSIGNED THROUGH FIRE CENTER	AS ASSIGNED
MNICS - ALL RISK FREQUENCY - AIR/AIR	123.025
TANKER BASE OPERATIONS - AIR/GROUND/RAMP	120.125

TRANSPONDER 1255	LIGHTS ON

NAC codes for Digital in"HEX" format ($) -- * Indicates repeater

Note: AIR GUARD toned on Tx only

AIR GUARD	168.625	Tx - 110.9	N

MN DNR FORESTRY AVIATION PROGRAM

MN DNR & MNICS RADIO FREQUENCY CARD

Page 2 *Updated 1/30/18*

CH	AREA / DESIGNATOR		SIMPLEX	TONE/NAC	N/D
24	WARROAD *(Wannaska)*		151.3850	127.3	N
25	BAUDETTE		151.3250	127.3	N
26	BEMIDJI		151.2650	136.5	N
27	PARK RAPIDS		151.3850	136.5	N
28	BACKUS *(Brainerd)*		151.1750	146.2	N
29	LITTLEFORK		151.1750	127.3	N
30	TOWER		151.2650	103.5	N
31	TWO HARBORS		151.1750	103.5	N
32	CLOQUET		154.4300	103.5	N
33	HIBBING *(Eveleth)*		151.3250	103.5	N
34	DEER RIVER *(Grand Rapids)*		151.3850	110.9	N
35	AITKIN		151.2650	110.9	N
36	SANDSTONE		151.3850	146.2	N
37	LITTLE FALLS		151.4000	156.7	N
38	CAMBRIDGE		151.3250	146.2	N
39	ROCHESTER		151.2650	127.3	N
40	USFS - SUPERIOR NET		170.5250		N
41	USFS - NAT'L FLIGHT FOLLOW		168.6500	Tx - 110.9	N
42	USFS - SUPERIOR TAC 1		169.1250		N
43	A/G - 19		168.1250		N
44	USFS - CHIPPEWA NET		173.7750		N
45	USFS - CHIPPEWA TAC 1		171.5500		N
46	USFS - NAT'L TAC 1		168.0500		N
47	USFS - R9FTAC		166.5625		N
48	USFS - NAT'L TAC 3		168.6000		N
49	BIA - STATEWIDE		172.4250		N
50	BIA – RED LAKE *(Five-Oh)*		166.2750	Tx - 114.8	N
51	BIA - NETT LAKE		172.4250	Tx - 100.0	N
52	BIA - NETT LAKE REPEATER*	Rx	172.4250		N
	Nett Lake	Tx	171.7250	Tx - 100.0	
53	BIA - GRAND PORTAGE RPTR*	Rx	172.4250		N
	Grand Portage	Tx	171.7250	Tx - 156.7	
54	VOYAGEURS NP *{Digital}*		166.9000	$100	D
55	VOYAGEURS NP *{Analog}*		166.9000		N
56	VFIRE23 *(FIRE MUTUAL AID)*		154.2950	Tx - 156.7	N
57	VMED28 *(EMS)*		155.3400	Tx - 156.7	N
58	VLAW31 *(MINSEF)*		155.4750	Tx - 156.7	N
59	MNCOMM *(MIMS)*		155.3700	Tx - 156.7	N
60	V-CALL 10		155.7525	Tx - 156.7	N
61	V-TAC 11		151.1375	Tx - 156.7	N
62	V-TAC 12		154.4525	Tx - 156.7	N
63	V-TAC 13		158.7375	Tx - 156.7	N
64	V-TAC 14		159.4725	Tx - 156.7	N
65	BLANK (reserved)				

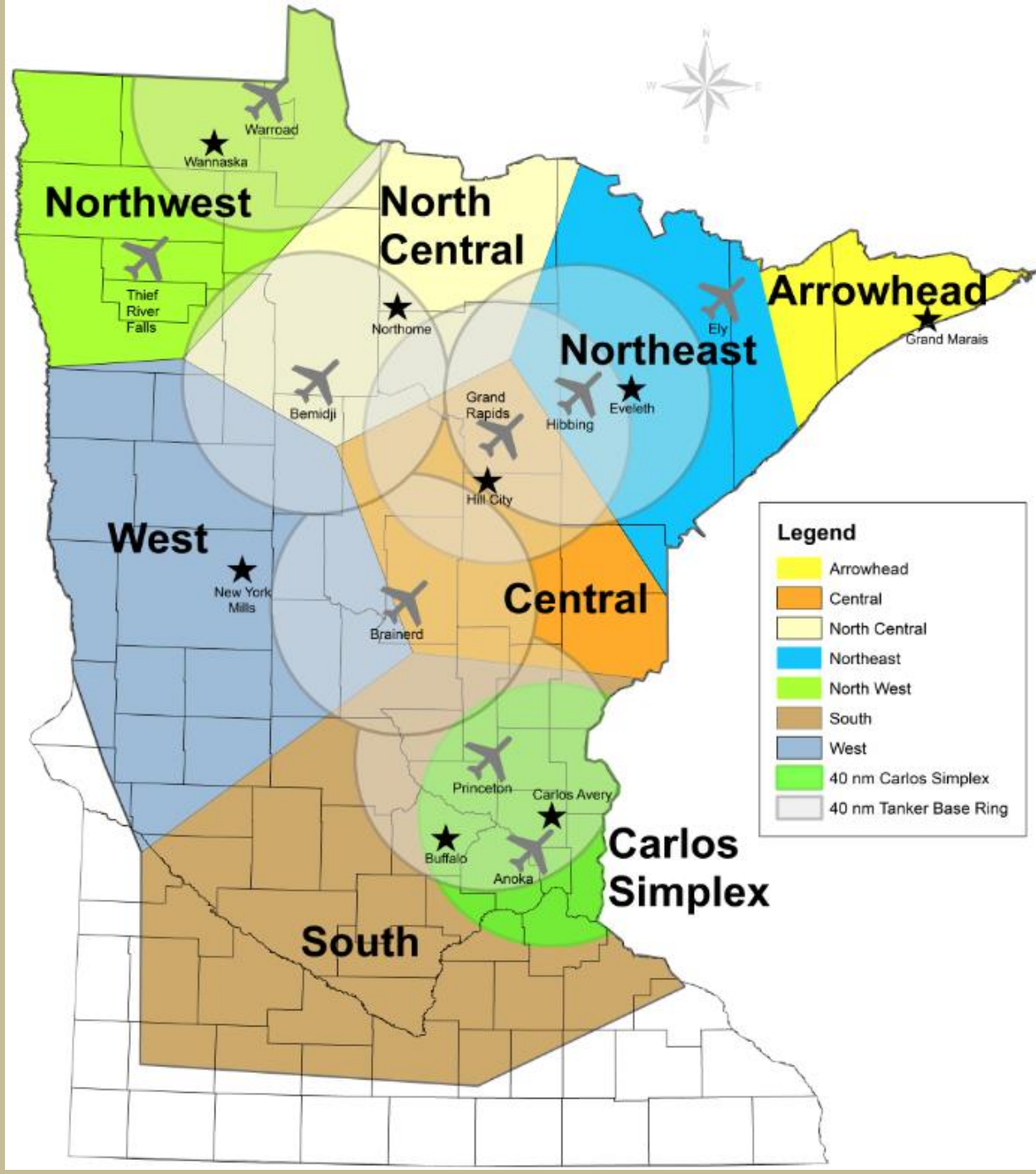
Note: Channels 41, 50-52, 55-64 are tone on Tx only

NAC codes for Digital in"HEX" format ($) -- * Indicates repeater

MN DNR Fire Air Net

Repeater Locations and Simplex Circles

A kml file for overlay on ForeFlight will be available for download.



Radio Checks

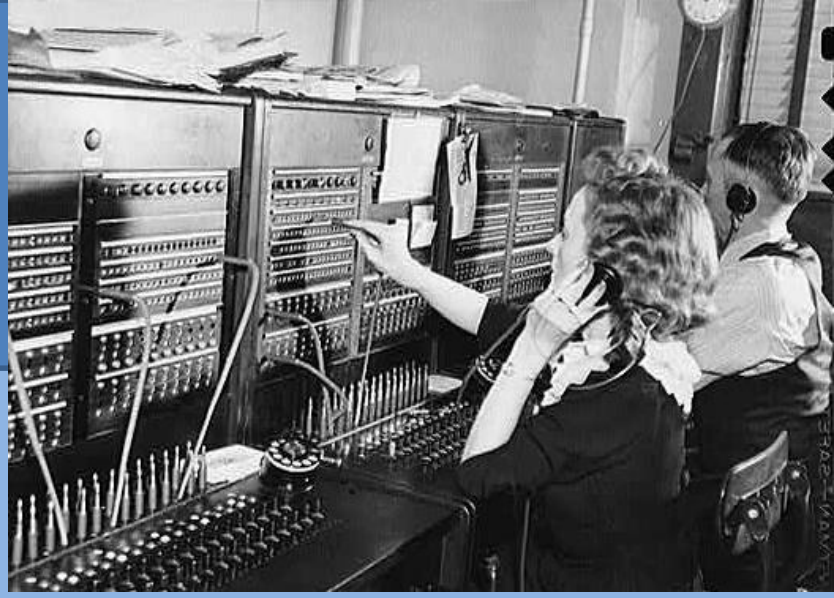
Do a complete radio check with Air Attack/SEMG/Tanker Base at startup

Check tones, narrow banding, etc

Check Guard

Air Net and Air Net repeaters

FLIGHT FOLLOWING



FLIGHT FOLLOWING COMMUNICATION IS WITH FIRECENTER

Flight Following
Fixed Wing Aircraft

- Flight following will be accomplished **with AFF.**
- Communicate directly with “Fire Center” on appropriate AirNet repeater
  - Initial call when airborne (Flight Following Vitals)
    - Identifier/call sign
    - # on board
    - Hours of fuel
    - ETE
    - Destination or Fire name
    - **Confirm AFF**

Flight Following
Fixed Wing Aircraft

After making contact with the fire (ATGS or IC), the pilot will contact “Fire Center” on the appropriate AirNet Repeater to inform they are in contact with the fire and will flight follow local.

- The Fire Center will continue to track the aircraft on AFF

Flight Following
Fixed Wing Tankers

Load and return - Pilots will contact “Fire Center” on the appropriate AirNet repeater to inform load and return.

Release - Upon release from the fire and Fire Traffic Area, the pilot will contact “Fire Center” on the appropriate AirNet Repeater with their intentions to return to base and hold.

Fire Traffic Area

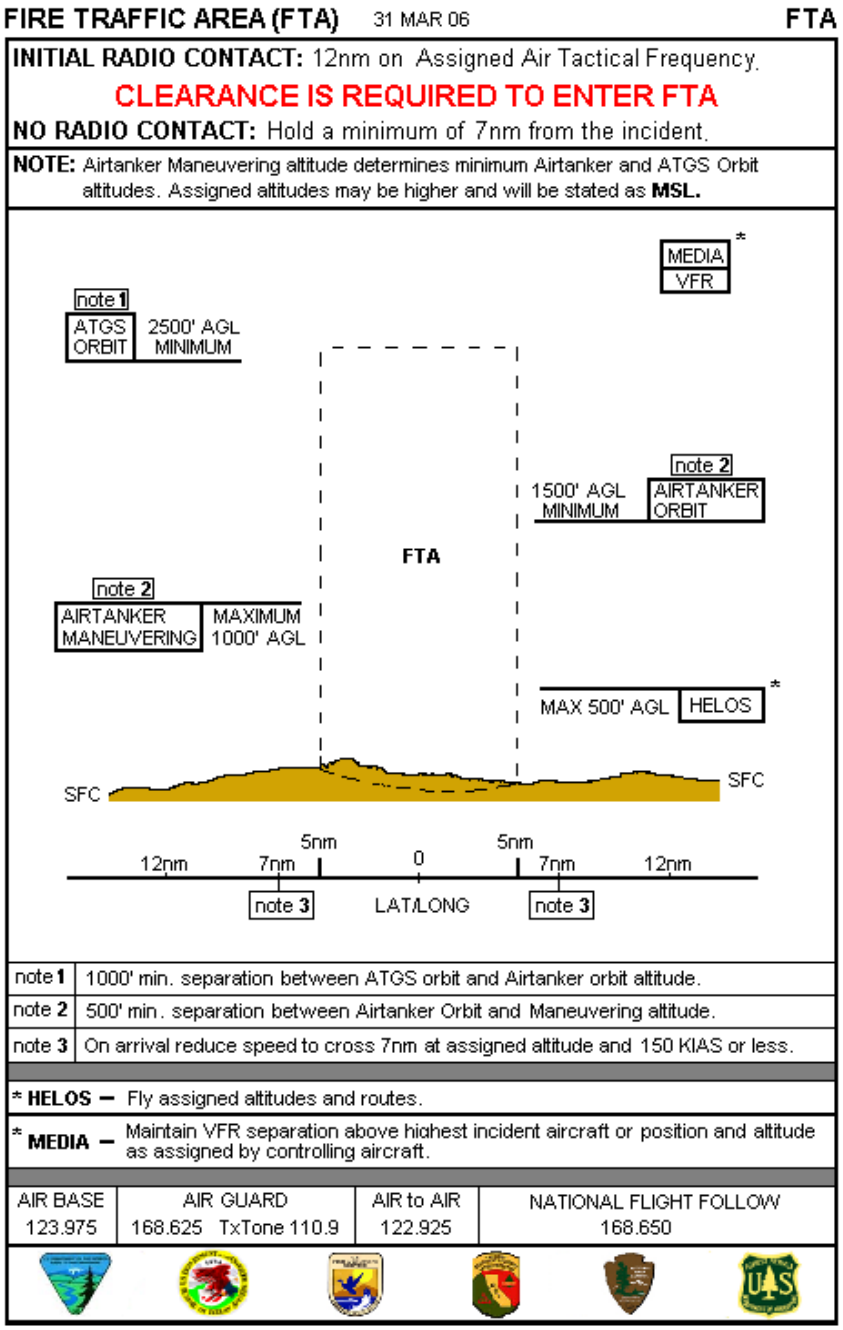
12nm+

Initial call – Call sign
Distance
Location
Altitude

7nm

No entry unless: **C**learance
Commo
Comply

Close out with
"Fire Center" when in contact with Air Attack or the fire



Tactical briefing

To include:

- Orientation to the fire
- Objective
- Coverage level
- Portion
- Turn out - if needed
- Specific hazards
- Clearance to maneuver
- Line is clear
- Clearance to drop

Drop Evaluation

Load placement
- -Line
- -Start/stop
- -Drift

Load and return or return and hold

Blazetamer

Application – ATGS will call for Blazetamer as appropriate (and if allowed by the host agency) prior to starting scooping operations.

Concentration

Default concentration will be set for approximately 0.3% with a second push of the button making 0.6%.

Debriefings

Will be done by the ATGS after every fire as soon as practical.

Expected to attend and encouraged to give candid observations.

UAS (DRONE) INTRUSION

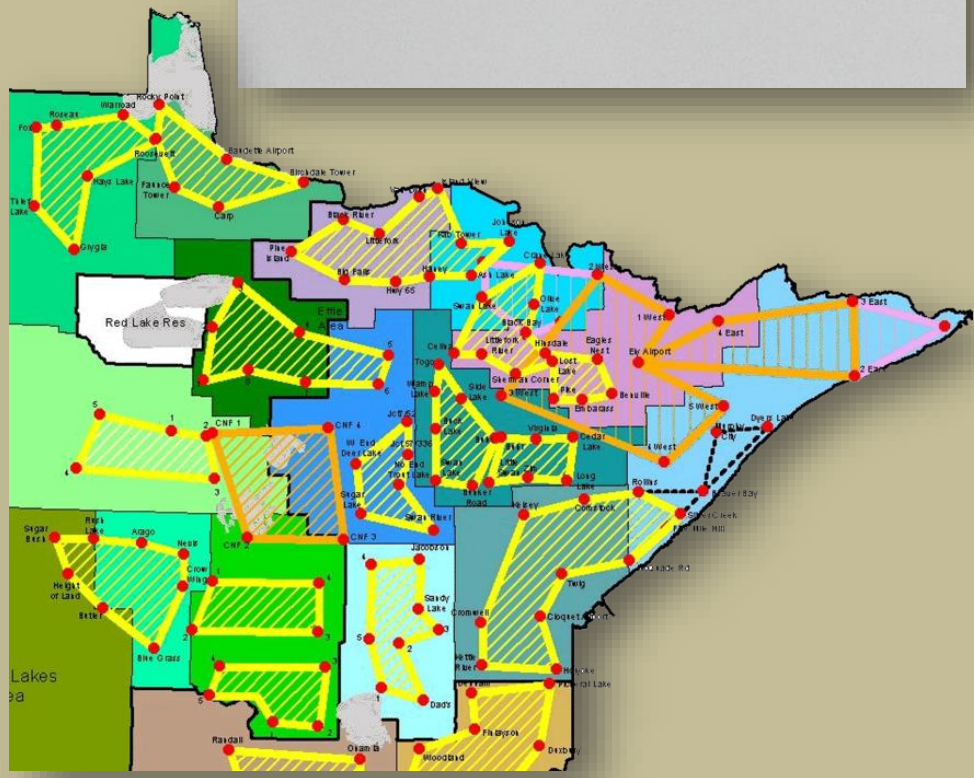
- **REPORTED UAS INTRUSION PROTOCOLS**

- Incident aircraft will immediately **disengage**
- ATGS will coordinate disengagement (if assigned)
  - Designate and assign aircraft to holding areas and flight altitudes or return to base or nearest airport
  - Assess/manage tanker fuel situation
  - Coordinate with Dispatch and IC
- Remain disengaged until reported all clear
- ATGS will coordinate re-engagement when safe

Detection Aircraft

A pilot and aerial observer fly a predetermined route over a large area to locate fires from the air.

Detection is often the first aircraft over the fire **and are typically found at 2500-3500 MSL on 122.925**



Initial Attack without ATGS

- The following procedures are recommended:
  - Establish communications with the IC on the assigned A/G frequency
  - Fly a high level (1000’ AGL) recon to size up fire
  - Relay your size up to the IC on the A/G frequency
  - Relay size up to “Fire Center” on AirNet repeater
  - Coordinate with the IC to form a suppression plan
  - Confirm that the line is clear/clear to drop
  - If requested to scoop, determine INV species

Infested Waters Procedure

UTILIZE INFESTED WATERS OR NOT??

Questions to ask:

-If I don't use this water, is loss of life or property likely?

If **yes**, **use** the infested lake.

If **no, do not use** the infested lake.

-Is there a non infested lake within a reasonable distance?

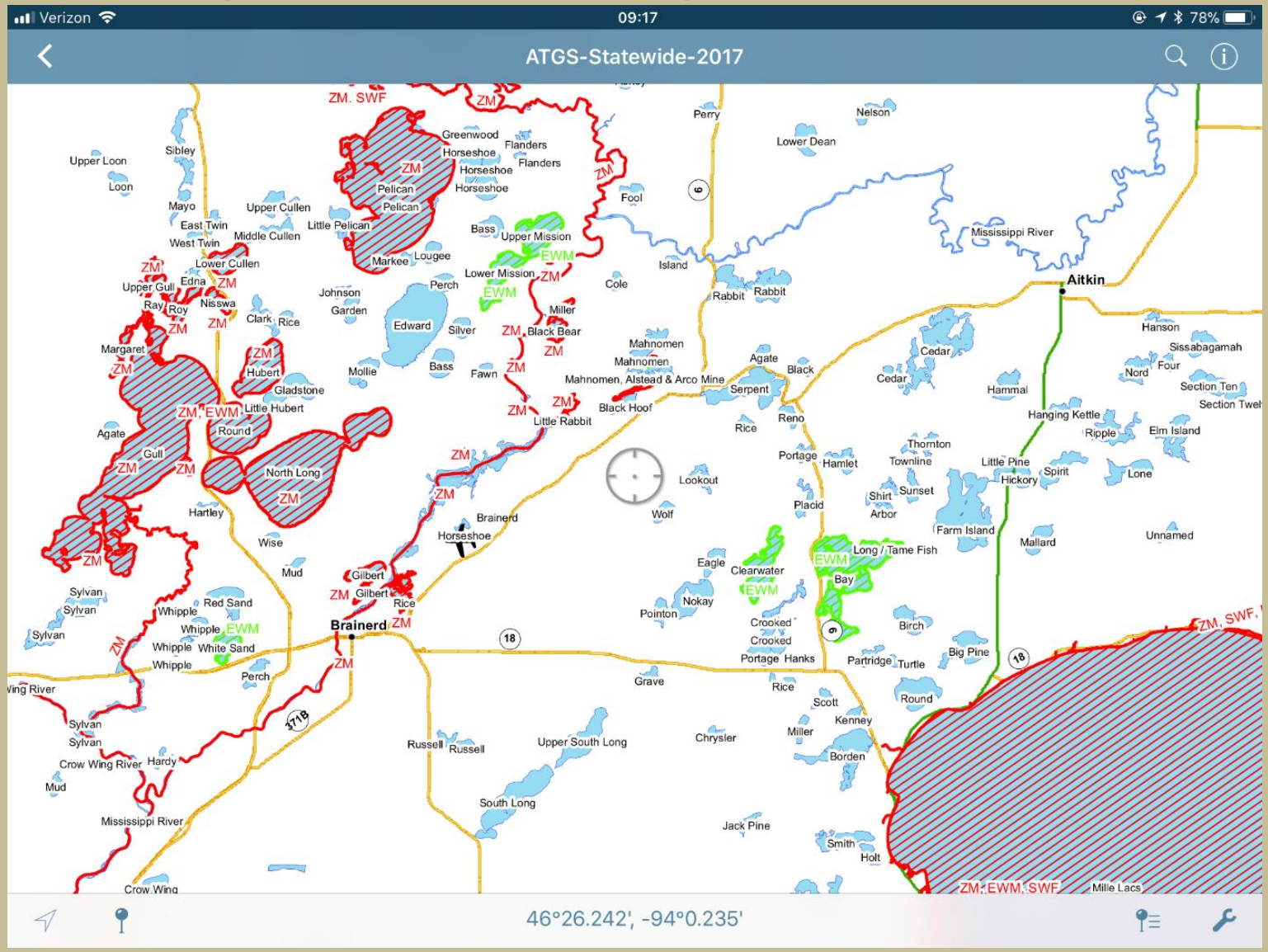
-Can I contain the fire using a farther, non-infested source?

If **yes, do not use** the infested water.

If **no, use** the infested water.

*If infested water was used and requested for another fire, notify Fire Center and ask for guidance.

INFESTED WATERS AVENZA MAP



KML for ForeFlight available. KMZ for GPS available.

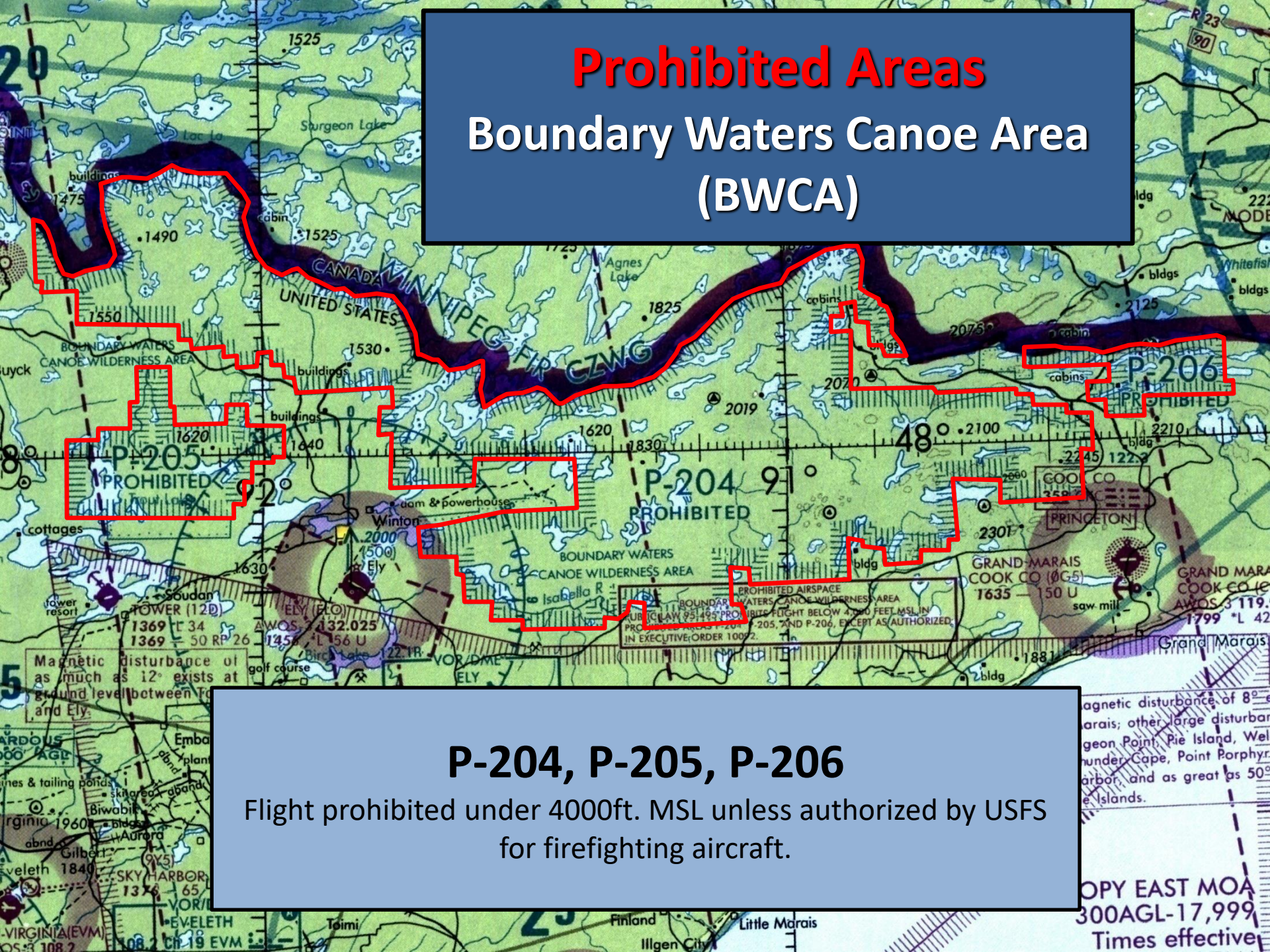
Infested Lakes

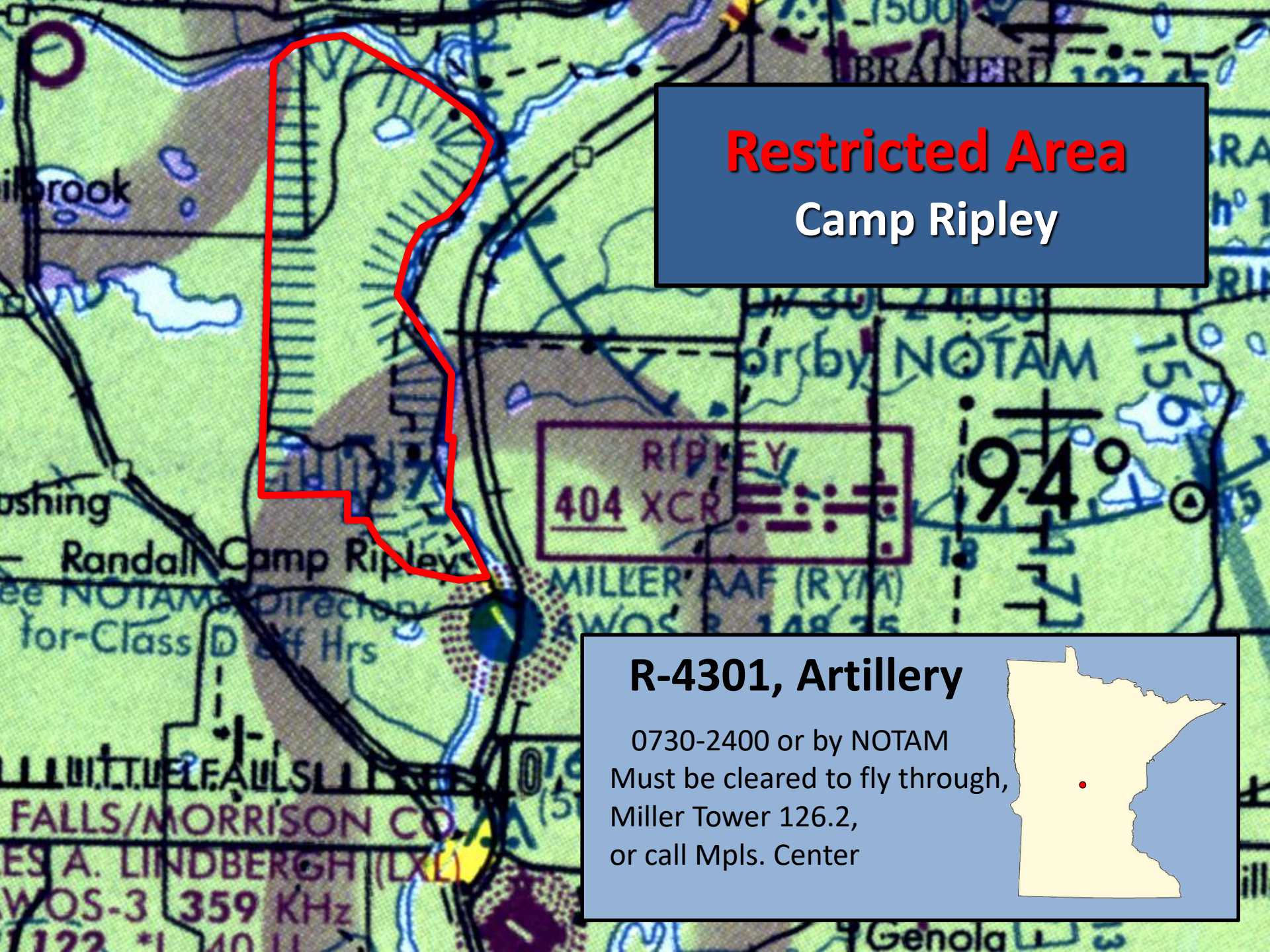
1. For **Plants,** visually inspect the aircraft. Pick off any plant material and discard on high ground.

2. For **Animals,** drain the floats, pressure wash the tank and floats with 140° water thoroughly.

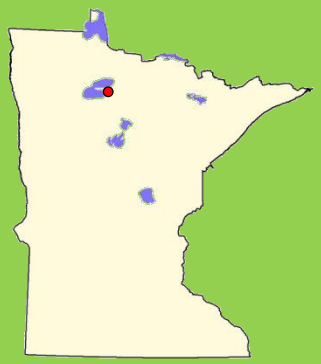
3. Allow to dry for 24 hours if feasible

SPECIAL USE AIRSPACE
UNITED STATES
WINNIPEG FIR CZWG
P-205
PROHIBITED
P-204
PROHIBITED
SNOOPY WEST MOA
6000 - 17,999 MSL
Times Effective
by NOTAM
PRINCETON
VOR/DME
ELY
109.6 CH 33 ELO
IR 605
IR 606
VR 604
Winton
Babbitt
Embarrass
Biwabik
Aurora
Skibo
Gilbert
Hoyt Lakes
Isabella
Schroeder
Whyte
dam & powerhouse
golf course
camp
bldgs
buildings
cabins
settlement
tailings ponds
plant
water tank
SKY HARBOR
(9Y5)
1620
1640
1825
2019
2070
1530
1550
1960
1840
1946
2020
2080
1950
1725
1720
1830
1893
1369
1376
1794°
92°
91°


Prohibited Areas
Boundary Waters Canoe Area
(BWCA)
P-205
PROHIBITED
P-204
PROHIBITED
P-206
PROHIBITED
BOUNDARY WATERS
CANOE WILDERNESS AREA
CANADA
UNITED STATES
WINNIPEG FIR CZWG
P-204, P-205, P-206
Flight prohibited under 4000ft. MSL unless authorized by USFS
for firefighting aircraft.

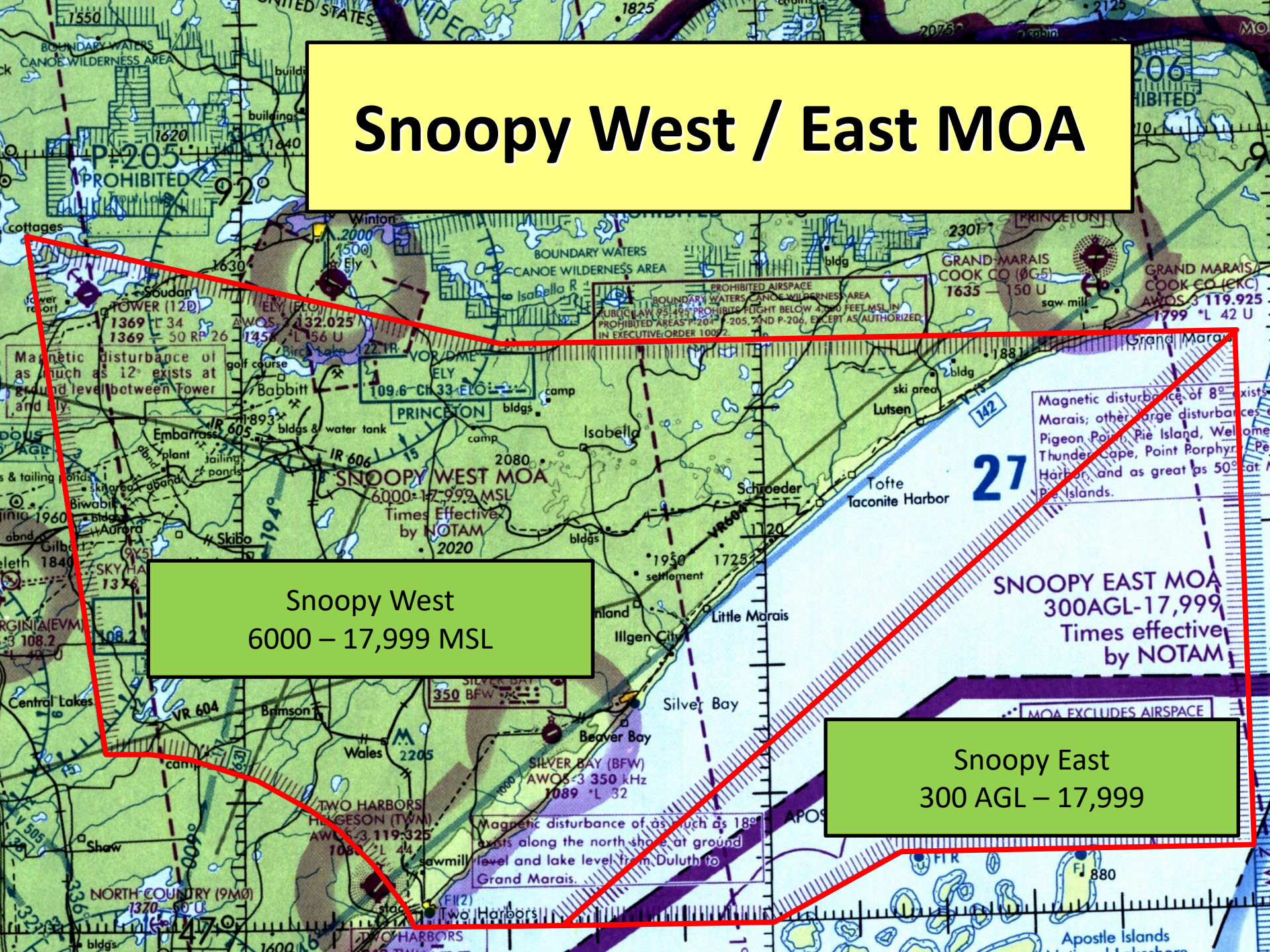

Restricted Area
Camp Ripley
R-4301, Artillery
0730-2400 or by NOTAM
Must be cleared to fly through,
Miller Tower 126.2,
or call Mpls. Center
RIPLEY
404 XCR
Camp Ripley
MILLER AAF (RYM)
FALLS/MORRISON CO
A. LINDBERGH (LXL)
359 KHz
94°

Beaver MOA



300 AGL – 17,999

Snoopy West / East MOA

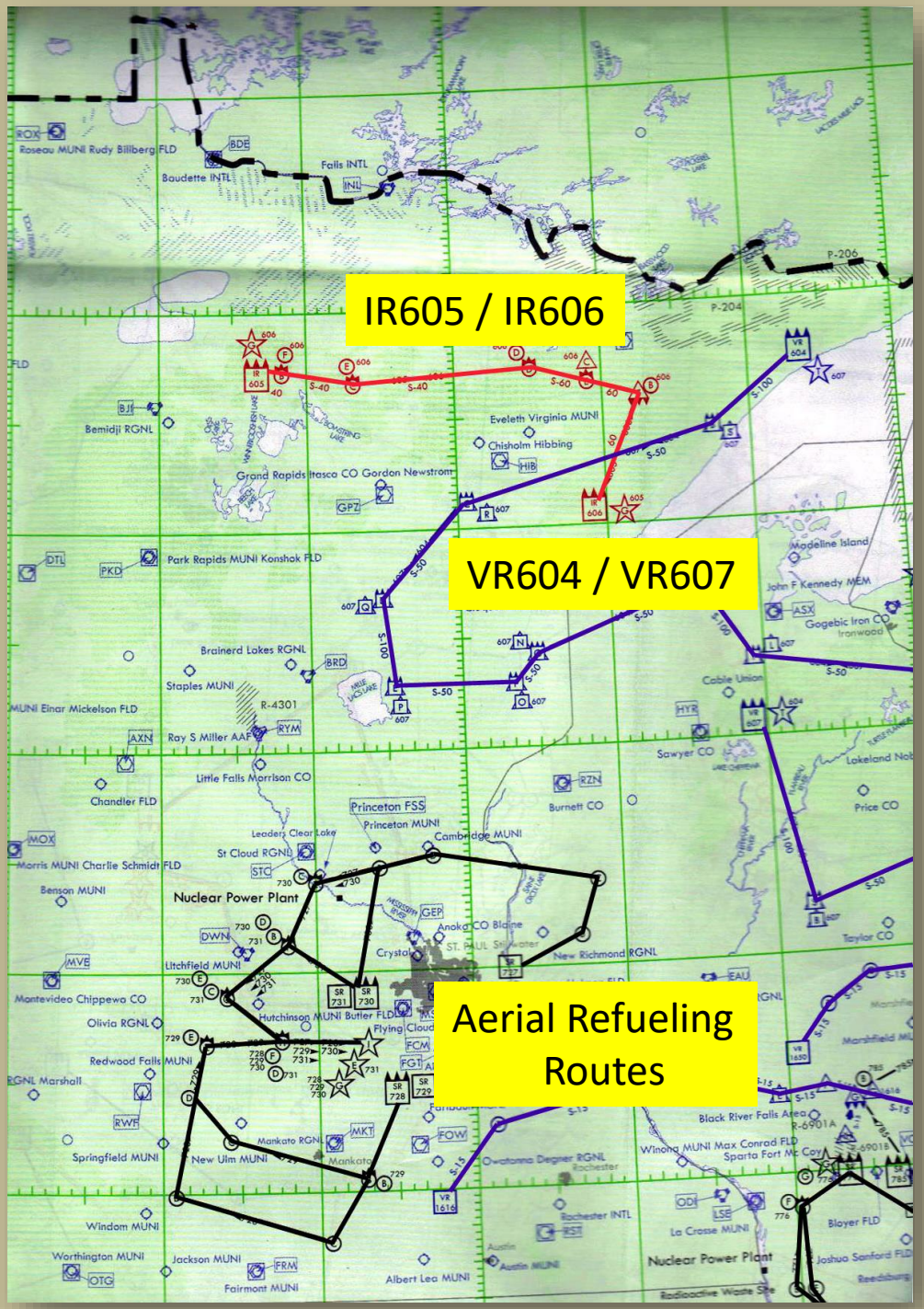


MTRs

There are three primary MTRs in Minnesota.

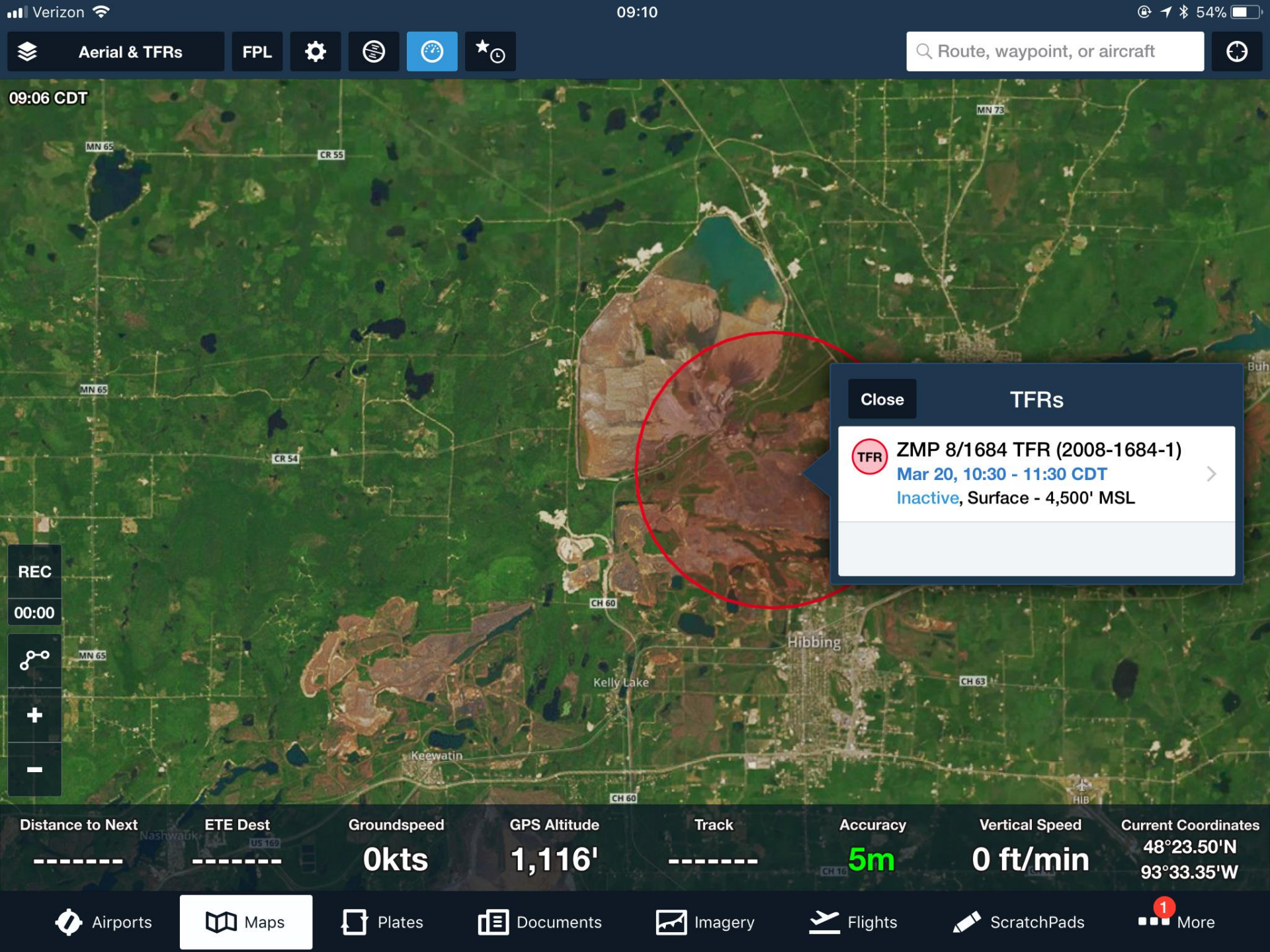
Status is updated daily as noted on Aircraft Status Report

Aviation Desk can deconflict airspace if needed



IRON MINE BLASTING TFR'S

- Numerous mines from Grand Rapids, ENE for about 75 NM to Ely/Babbitt.
- Large scale blasting occurs frequently.
- TFR's are routinely placed over mines when a blast is planned.
- TFR's are generally short term, 2 hours, usually during late morning to midday, and are usually surface to approx. 5,000' MSL.
- TFR's are briefed at the morning briefing, listed on the aircraft status report, and found on ForeFlight.


Verizon
09:10
54%
Aerial & TFRs
FPL
Route, waypoint, or aircraft
09:06 CDT
MN 65
CR 55
MN 73
MN 65
CR 54
CH 60
Hibbing
Kelly Lake
CH 63
MN 65
Keewatin
CH 60
HIB
Close
TFRs
TFR
ZMP 8/1684 TFR (2008-1684-1)
Mar 20, 10:30 - 11:30 CDT
Inactive, Surface - 4,500' MSL
REC
00:00
Distance to Next

ETE Dest

Groundspeed
0kts
GPS Altitude
1,116'
Track

Accuracy
5m
Vertical Speed
0 ft/min
Current Coordinates
48°23.50'N
93°33.35'W
Airports
Maps
Plates
Documents
Imagery
Flights
ScratchPads
More
1

BORDER OPS
ONTARIO
MINNESOTA
WISCONSIN
Kenora
Ignace
Longlac
Kapuskasing
Nipigon
Marathon
Thunder Bay
International Falls
Crookston
Bemidji
Moorhead
Duluth
Ironwood
Sault Ste. Marie
St. Ignace
Mackinaw City
Alpena
Escanaba
Iron Mtn.
Rhinelander
Rice Lake
St. Cloud
Ortonville
Wilmar
Minneapolis
St. Paul
Eau Claire
Wausau
Stevens Point
Green Bay
Menominee
Manitowoc
Traverse City
Ludington
Bay City
Lake Superior
Lake Nipigon
NOPIMING PROV. PARK
WHITESHELL PROV. PARK
QUETICO PROV. PARK
VOYAGEURS N.P.
ISLE ROYALE N.P.
PUKASKWA N.P.
LAKE SUPERIOR PROV. PARK
CHIPPEWA N.F.
CHEQUAMEGON N.F.
NICOLET N.F.
HIAWATHA N.F.
SLEEPING BEAR DUNES N.L.
HURON N.F.

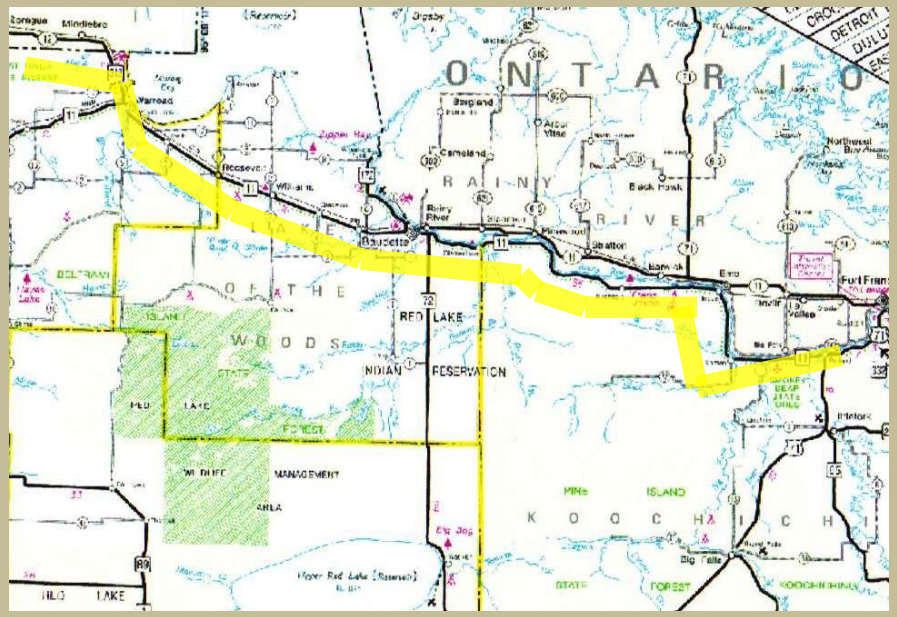
US / Canadian Border Issues

122.925 is a dedicated frequency 7 miles either side of border

Border Patrol / Airbust

Unmanned Aircraft Systems (UAS)

Quickstrike Agreement



Border Crossing Procedures

The Air Desk at MIFC will:

- Call Minneapolis Center Watch Desk (FAA), Customs and Border Protection, and AMOC with aircraft and flight info.
- Provide aircraft and pilot information to the requesting dispatch office.

Canadian fire agency will advise US aircrew:

- Where to land for fuel
- Confirm CBSA has been advised and clearance to land has been obtained

Pilot's Responsibilities

Quickstrike:

- Pilots do not need to file a flight plan
- Contact Fire Center with flight information
- Prior to crossing the border, ensure aircraft will squawk the frequency assigned by the FAA

Pilot's Responsibilities

Pre-positioning

- Pilots need to file a flight plan
- Contact Fire Center with flight information
- Prior to departure, pilot should contact CANPAS and eAPIS with aircraft and pilot information
- Prior to crossing the border, ensure aircraft will squawk frequency assigned by the FAA

Canadian Customs Letter

For placement in the Tanker

Canada Border Services Agency | Agence des services frontaliers du Canada

Program Services Division
3rd Floor, 2265 St. Laurent Blvd.
Ottawa, Ontario
K1G 4K3

December 5, 2016

Ontario Ministry of Natural Resources
Aviation Forest Fire Emergency Services
Dryden Fire Management Centre
P.O. Box 850
Ghost Lake Road
Dryden, Ontario
P8N 2Z5

Confidential
Attention: Mike Shapland

Re: Entry of Aircraft into Canada (Northern Ontario Region - Northwestern District)

The Canada Border Services Agency acknowledges that Canadian and United States aircraft are required to fly between Canada and the United States for the purposes of fighting fires in the border lakes areas.

The aircraft may be required landing at various border lake areas in Canada for refueling purposes, and at other locations for emergency assistance/evacuation. As long as the entry into Canada remains restricted for those purposes, the following procedures that will be in effect beginning January 1, 2017 and remain in effect for the 2017 calendar year.

1. Contact the local management responsible for the fire area as far in advance as possible:

   - Sault Ste Marie Superintendent
     (North of Huntsville up to Marathon)
     Telephone: 705-941-3063 Fax: 705-941-3068

   - Thunder Bay Superintendent
     (Marathon through to Saganaga Lake area)
     Telephone: 807-626-1606 Fax: 807-626-0117

   - Fort Frances Superintendent
     (Fort Frances, Dryden, Rainy River and West to the Manitoba border)

Canada

CIRCUIT DISCIPLINE

FIVE CHARACTERISTICS OF A QUALITY CIRCUIT

- Efficient, shortest possible turnaround time
- All aircraft following same flight pattern
- Coordinated and controlled
- Well communicated
- Rhythmic

CONFIGURATION

- **Staggered**
  - One tanker at the lake, the other at the fire
- **Factors to consider**
  - Very quick turnarounds-close water source
  - Smaller narrow scoop lakes
  - Tactics may influence staggered configuration
    - Multiple changing targets (structure protection)

CONFIGURATION

- **Flight**
  - Flight lead established
  - **Factors to consider:**
  - Adequate size lake to minimize wake turbulence
  - Sequencing helicopters in same target area
  - Working closely with ground suppression

  - MNDNR recommends approximately half mile separation or approximately 6-8 seconds between drops
  - Adequate spacing is required to evaluate drops and make adjustments for subsequent drops to maximize effectiveness

CIRCUIT DISCIPLINE

EXPECTATIONS

- Scooper pilots will call “up with a load” from the lake on every scoop
- Deviations from the established flight pattern must be communicated/pre-approved

ENCOURAGED

- Continually assess risk/benefit. Not all fires are urgent, not all phases of the fire are urgent.
- Pilot to pilot reports

SAFETY

SAFECOM *v. 2016*

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	**Phone**
Click here to enter text.	Click here to enter text.
Organization	**Date**
Click here to enter text.	Select date

EVENT

Date	Local Time	Injuries	Damage	Location	State
Date	24 hr format	Y/N	Y/N	Click here to enter text.	State

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)
Click here to enter text.		Click here to enter text.
Departure Point		**Destination**
Click here to enter text.		Click here to enter text.
Number of Persons Onboard	**Special Use**	**Hazardous Materials Onboard**
Select	Y/N	Y/N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
N #	Manufacturer	Model	Owner/Operator	Pilot

NARRATIVE *Please provide a brief explanation of the event. Use additional sheet if necessary.*

Click here to enter text.

Select HOS/FWOS/Pilot, #

- Safety is a priority in the MNDNR Aviation Program.
- Identifying potential safety issues is encouraged.
- Reporting safety related and/or mechanical occurrences is supported and respected.
- Our safety program is supportive and not punitive.

- **IF YOU SEE SOMETHING, SAY SOMETHING!**