

Appendix A. Ultra-high resolution digital images of the study shorelines. All shown shorelines were surveyed for fluorimetric response. Numbers and red dots represent sample sites for water chemistry and field algal sampling. All shown shorelines were classified for algal spectral reflectance.

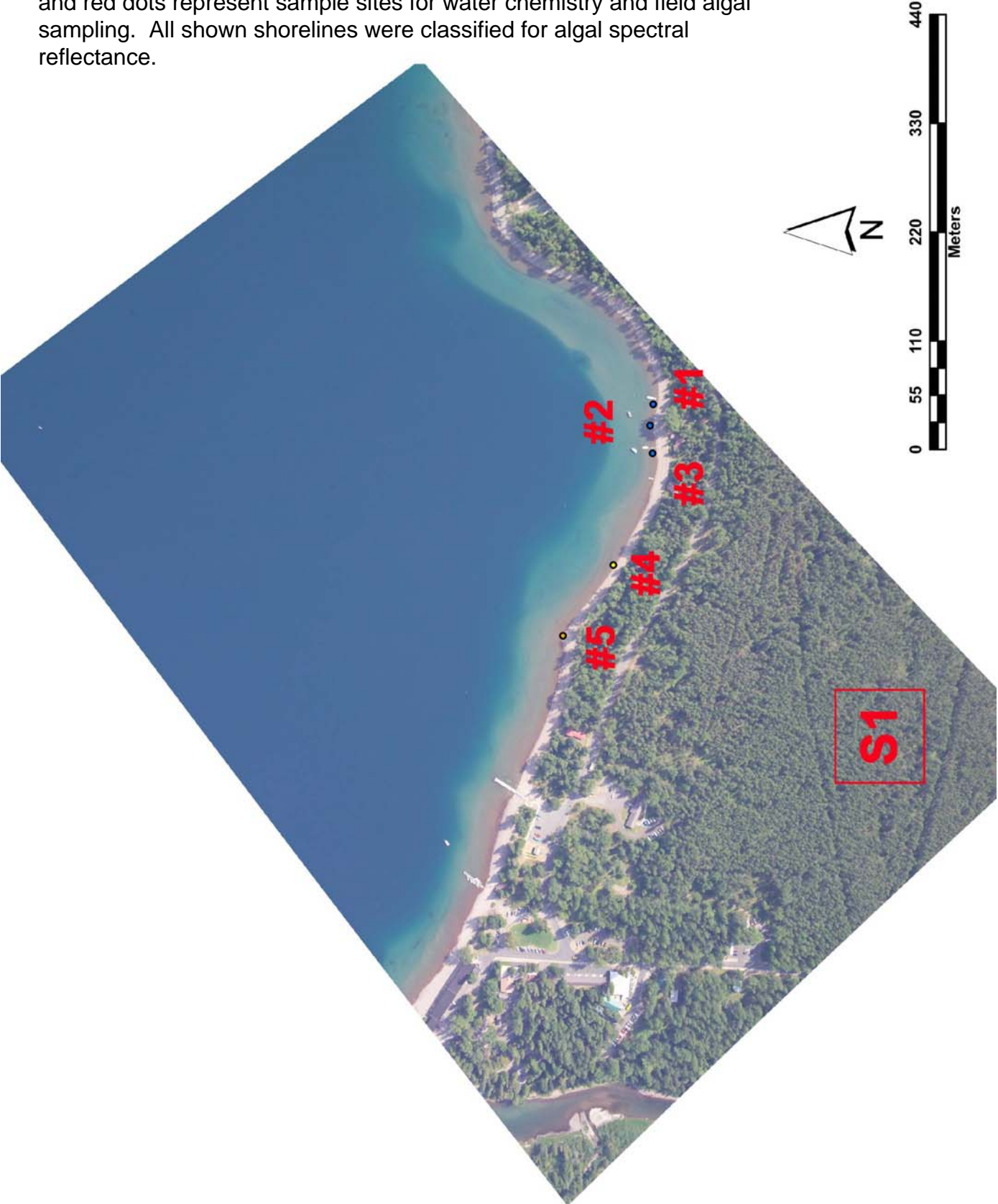


Figure A1

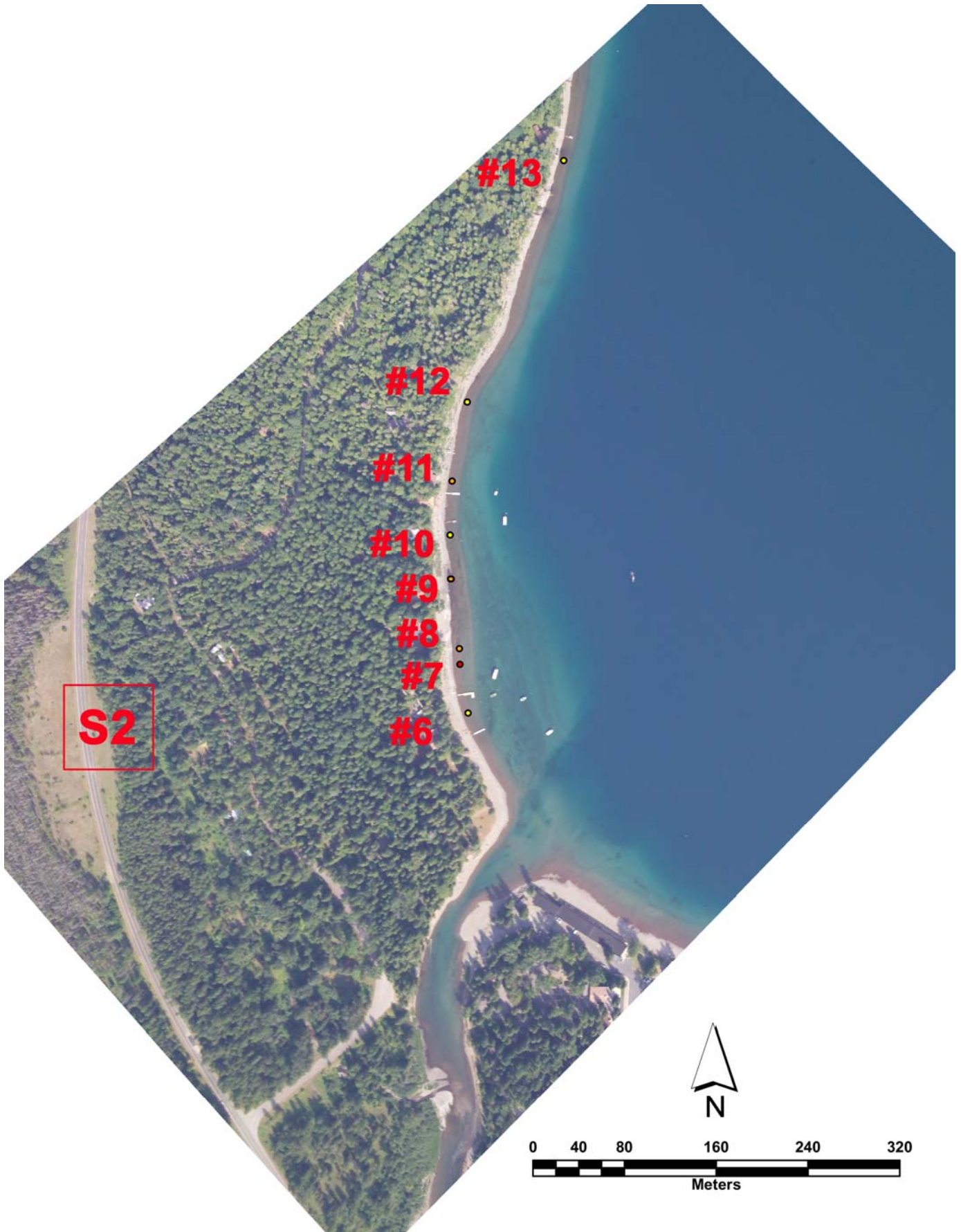


Figure A2

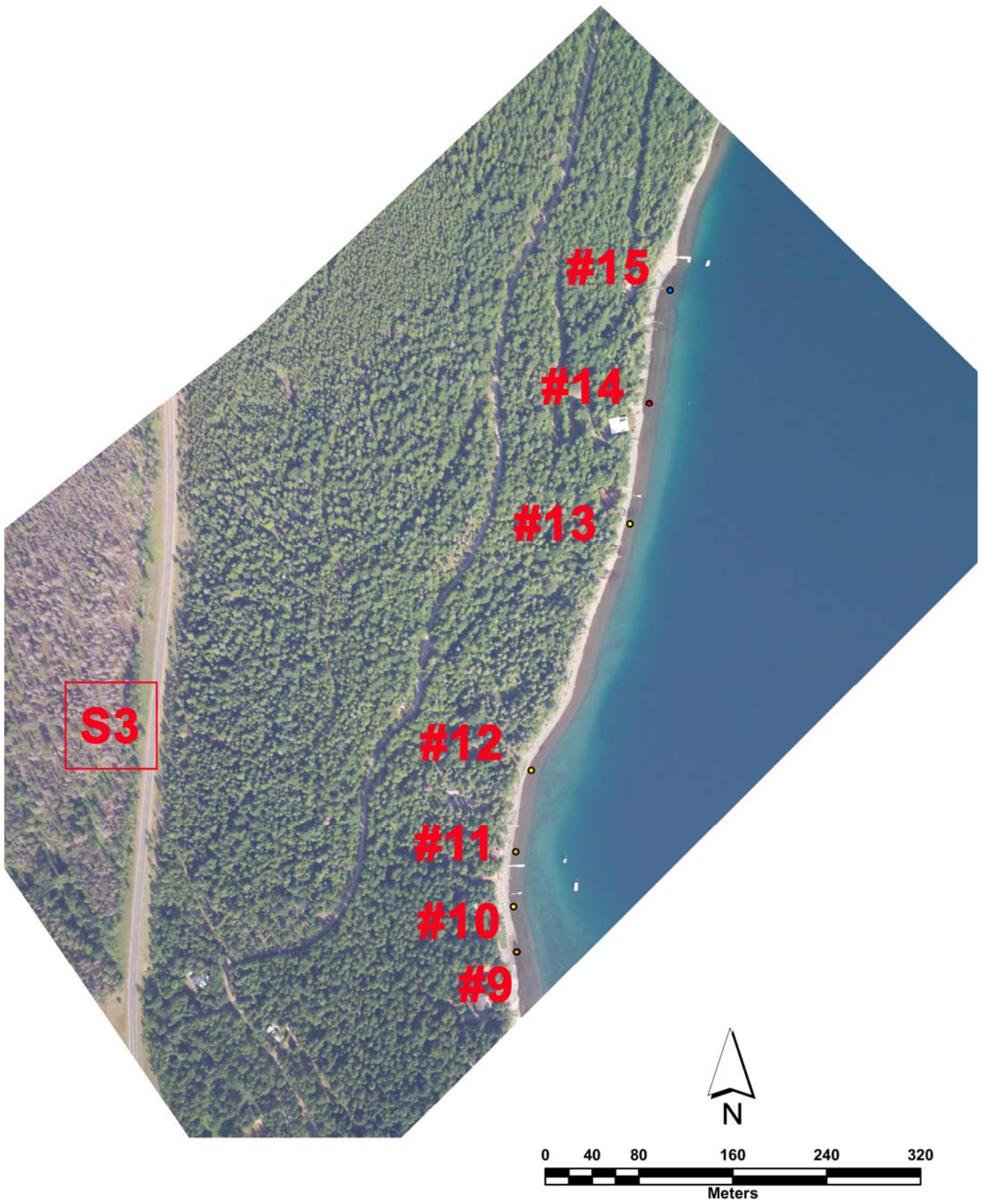


Figure A3

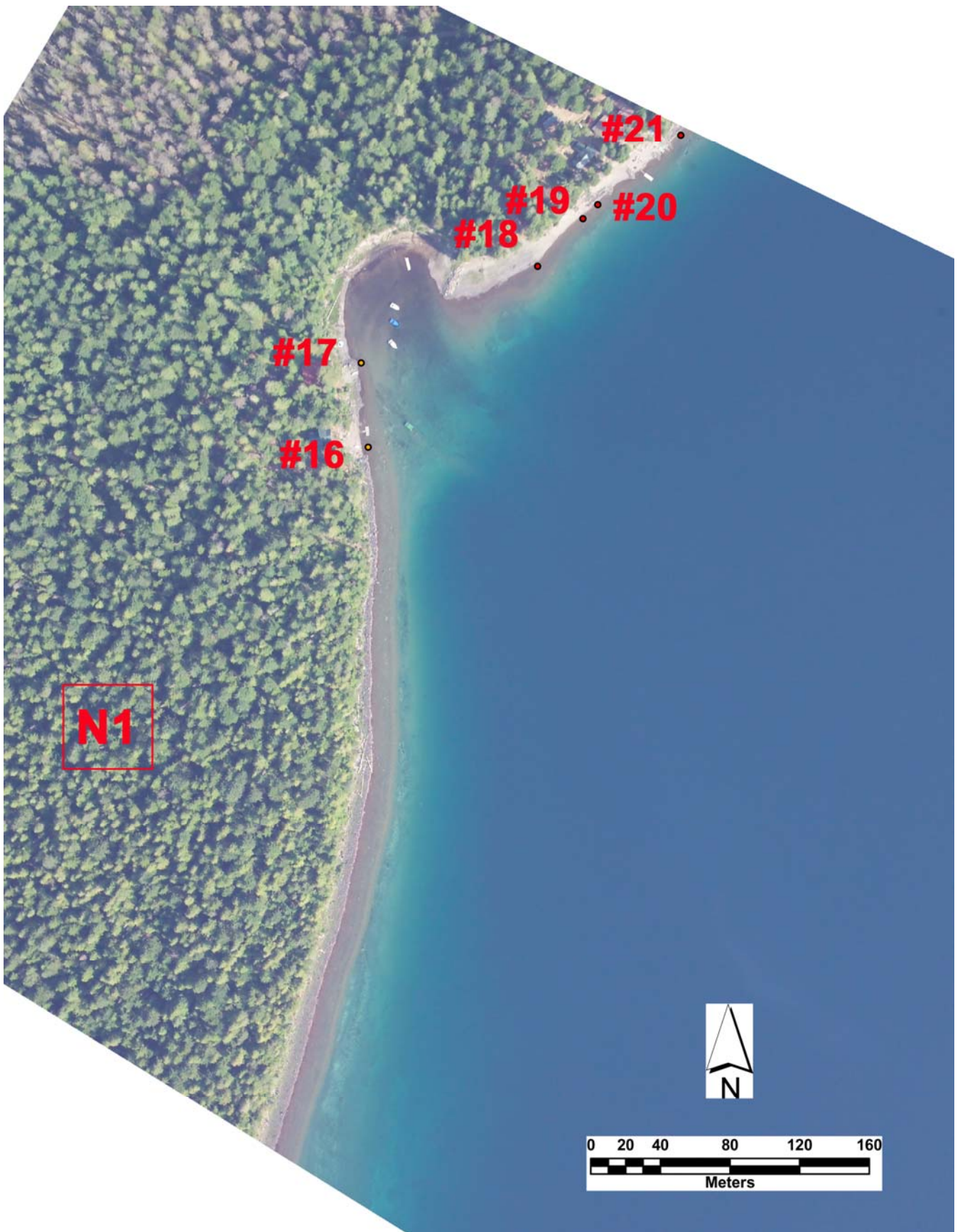


Figure A4



Figure A5



Figure A6



Figure A7

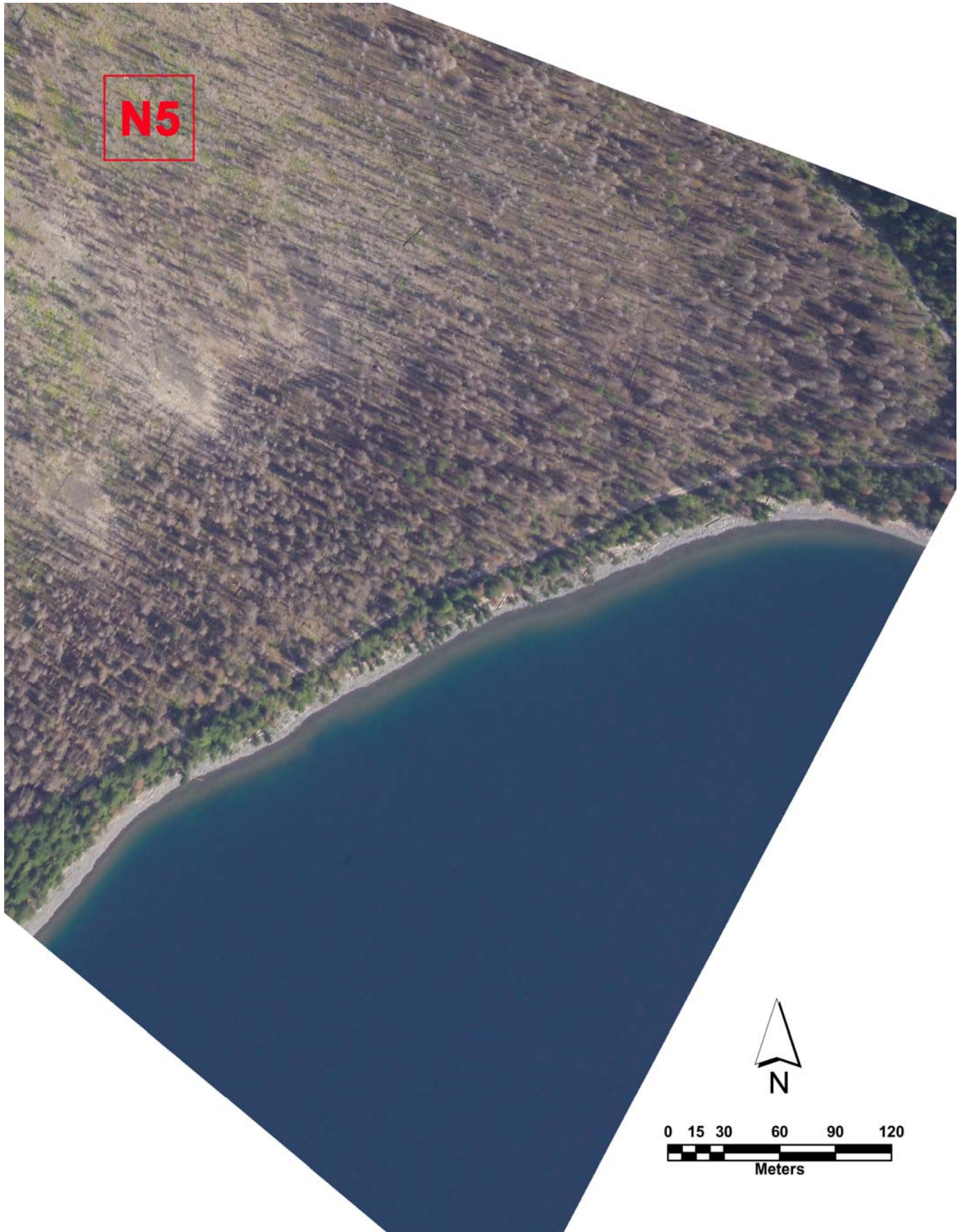


Figure A8

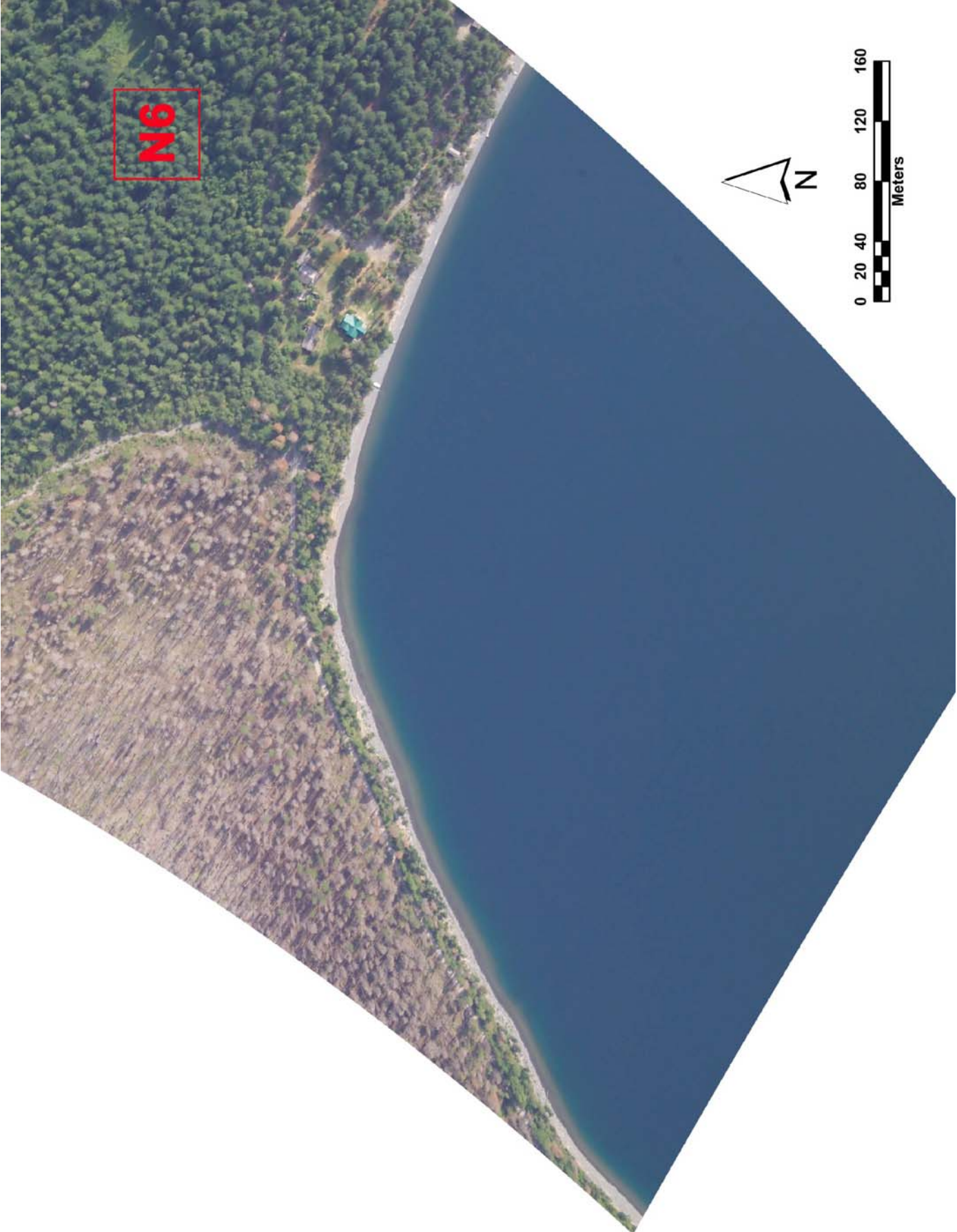


Figure A9

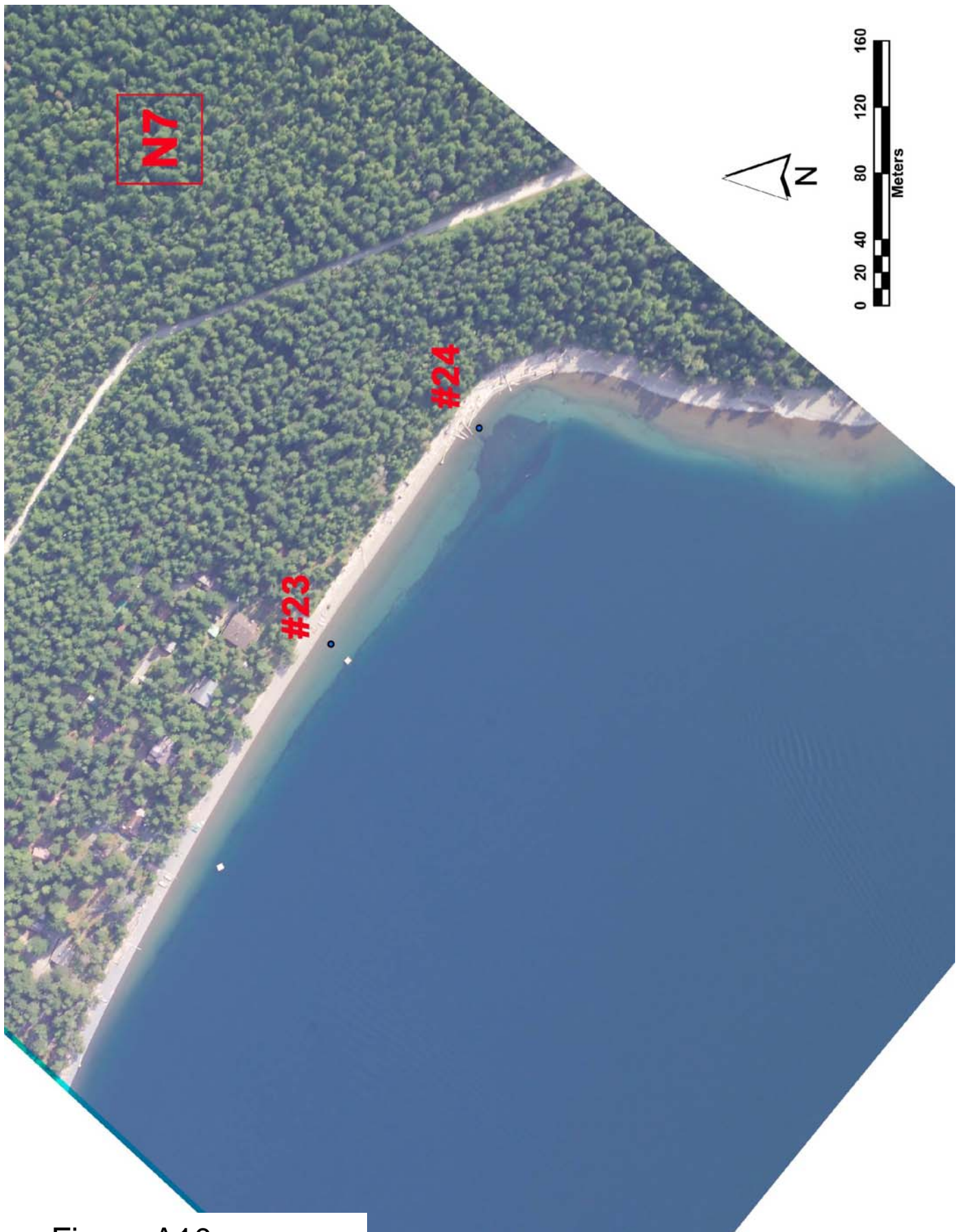


Figure A10



Figure A11



Figure A12



Figure A13



Figure A14

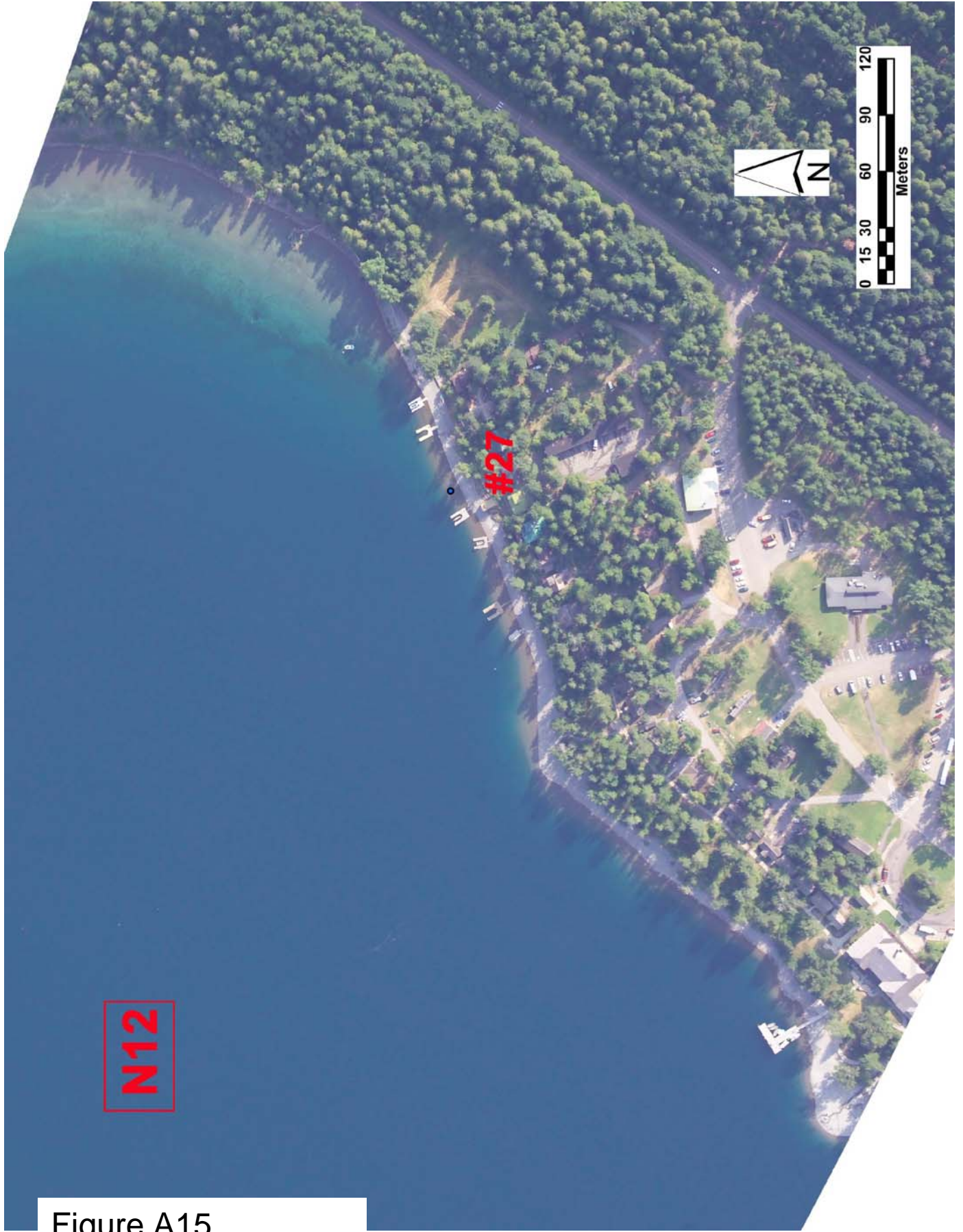


Figure A15



Figure A16

Lake McDonald Septic Leachate Study

This study is being conducted by Dr. Richard Hauer, Professor of Limnology, Flathead Lake Biological Station, The University of Montana.

The purpose of the study is to determine if there is “leakage” of septic waste water into Lake McDonald prior to it being processed by properly functioning septic systems.

There are three approaches or “lines of inquiry” that are being taken simultaneously in this study:

- 1) A dye test which, with the cooperation of lake residents, introduces a powerful dye into the septic system by flushing down the toilet. This is an organic dye that is metabolized by the septic system if it is working properly. If it is not working properly, the dye maybe carried by groundwater to the lake and appear along the shoreline.
- 2) A chemical test that relies on increased nutrient concentrations appearing in the near shore area of the lake. This is coupled with examination of the water with a Fluorometer that works somewhat like a “septic sniffer.”
- 3) A biological test that looks at the response by the attached algae community along the shoreline. If there is an increase in nutrients, then there would be an expectation of a biological response. This part of the study will be looking at algal growth along selected shorelines where there are cabins.

If you have questions call Dr. Hauer at:

Biological Station 406-982-3301
Personal cell 406-250-9900

Email ric.hauer@umontana.edu

Dye Test Instructions

- 1) READ THESE INSTRUCTIONS ALL THE WAY THROUGH BEFORE YOU START.
- 2) The dye you are administering to your septic system is an organic, non-toxic dye. It will not harm your system or you if you get it on you. However, it will turn your skin pink if you splash it on you. And, if you spill it, it will permanently dye cloth or wood flooring. So, be very careful as you do the following.
- 3) You should consider putting on either old clothes or wearing an apron to prevent accidentally splattering the dye on good clothes in case you slip.
- 4) Put on both of the enclosed blue polypro gloves.
- 5) While holding the enclosed bottle of dye over the toilet, carefully uncap the bottle. After uncapping the bottle, set the cap on the zip-lock bag to prevent any dye from getting onto a counter top.
- 6) While holding the bottle below the rim of the toilet, pour the dye that is in the bottle into the toilet water. Immediately flush the toilet.
- 7) In succession, flush the toilet 5 more times to clear the dye from the toilet and wash it into the septic system.
- 8) Recap the bottle and place the bottle in the zip-lock bag.
- 9) Remove the blue gloves, turning them inside out as you take them off. Place the gloves in the zip-lock bag.
- 10) Dispose of zip-lock bag and its contents in the trash.

If you have questions call Dr. Hauer at:

Biological Station 406-982-3301
Personal cell 406-250-9900

Email ric.hauer@umontana.edu