



Engineers · Surveyors  
Environmental Consultants

## APPENDIX B

### Field Procedures for Elevation Survey of InSAR Artificial Reflectors

Due to the remote locations and mounting height of the InSAR Artificial Reflectors, FENSTERMAKER cannot include all the reflectors in a closed loop precision level survey. FENSTERMAKER can however survey the reflectors using two techniques, one for the landbased reflectors and another for the swamp based reflectors.

The Land based reflectors will be included in the closed loop level survey. An iron rod will be driven into the ground just beneath the outer edge of the reflector. The iron rod will be tied included in a closed loop level run between monuments. The reflector will then be measured from the top of the iron rod to the top of the reflectors flat plate using a hand tape and measured to the nearest 0.01 of a foot. The reflectors will also be marked on the underside of the reflectors with an "X", so repeatable measurements can be taken over time.

Swamp based reflectors will be surveyed using the water surface as a critical component of the survey. Initially, a level loop will be run from an existing well or monument to the onsite transducer located behind Pad No. 3 to establish a datum for the surface of the water. This loop will have to be repeated once all reflectors have been surveyed. The transducer located behind Pad No. 3 will have to have the internal clock updated and the data output set to output data at a one minute interval. (This fathometer data must be made available to FENSTERMAKER).

Swamp based reflectors will be measured in a similar way as the land based reflectors however instead of iron rods driven into the ground, a set of steel rods with an adjustable plate will be used. This technique involves driving 4 foot steel rod sections into the ground to a sufficient depth to provide for a reasonable stable platform in the swamp bottom to facilitate accurate measurements. A sliding plate with a bubble level will be assembled to the top of the final steel rod. The plate is engineered to be raised or lowered to the same level as the water surface and then locked. Measurements from the top of the plate to the top of the reflector plate will then be measured to the 0.01 foot. The exact time of these measurement will be recorded in the field notes and later adjusted using the transducer easements.

To provide redundancy to the survey a closed loop level run will also be made down Texas Brine main access road with periodic ties to the surface of the water at monument tie points. A similar set of rods with an adjustable plate will be used to establish the surface of the water and provide a rest for the level rod.