APPENDIX A

BATHYMETRIC SURVEY METHODOLOGY

DATA ACQUISITION PROCEDURES

The bathymetric survey at the Gold Creek Reclamation Project was conducted on November 12, 1981. Utilizing a 21-foot vessel, 27 lines were surveyed on arcs approximately normal to the shoreline. Additionally, 8 shore parallel lines and 2 diagonal lines were surveyed to cross-tie the data in the survey area.

Positioning for the surveys was provided using a two-range Motorola Mini-Ranger III Radio Positioning System with a repeatable accuracy of ±3 meters on each range. This system was calibrated on a measured baseline prior to initiating the survey. Water depths were measured and recorded continuously with a Raytheon precision fathometer (Model DE–719) which is capable of accuracies of 0.5 percent ±1 inch of indicated depth. The fathometer was calibrated at the beginning and end of the survey utilizing a conventional bar check (steel plate suspended beneath the transducer to 10– and 20-foot depths on a premeasured steel cable). Positioning data, including time and boat location (two ranges), were recorded on a strip chart recorder.

Radio positioning shore stations were located at the Union 76 Terminal southeast of the survey area and at the waters edge on Douglas Island south of the survey area. This baseline orientation was selected for optimum positioning geometry. Coordinates on the shore stations were provided by EMPS. Periodic positioning interference was encountered due to reflection of radio signals off of the numerous buildings along the north shore of Gastineau Channel.

Tidal levels in Gastineau Channel were measured manually during the survey from a reference point selected near the Harbormaster's office at Harris Harbor. After the completion of the survey, EMPS determined an elevation on the reference point. The reference elevation (26.66 MLLW)
was used to compute tidal elevations which were used to apply time-variable tidal corrections to survey soundings. Tidal elevations ranged from +20.0 to 11.3 feet MLLW during the survey.

**DATA PROCESSING AND ANALYSIS**

At the conclusion of the field data collection effort, survey positioning and depth data were transferred to a computer data file. Utilizing a data preparation program, all necessary tidal corrections, unit conversions, and triangulations were computed to prepare the survey data for plotting. Positioning post-plot, depth-plot, and contoured maps were produced utilizing a surface approximation and contour mapping program. These maps were then edited and combined as required and a final contour map was prepared.

The survey area is characterized by two topography distinct areas. Along the northern half of the survey area, a relatively shallow, gently sloping delta extends into the Gastineau Channel from Gold Creek. Elevations over this area range from +12 to −6 feet MLLW. Although the Gold Creek Channel dissects the delta and is distinct at the north of the site, it quickly branches off and is distinguishable only in the irregular character of the contours east of the creek. At an average elevation ranging between +4 and −6 feet MLLW along the delta front, the bottom slope drops off quickly to the Gastineau Channel. The apparent slope of the delta front averages about 2−1/2:1 (horizontal to vertical) but steepens locally to less than 1:1. The toe of the slope occurs at elevations ranging from −100 to −112 feet MLLW. The axis of Gastineau Channel extends to an elevation of between −104 and −127 feet MLLW in the survey area and its character varies from a fairly wide flat area to a "V"-shape. The results of the subject bathymetric survey are presented on Plate 3.