GEOLOGIC MAP OF THE PERSEVERANCE LANDING SITE BY THE MARS 2020 SCIENCE TEAM.

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ABSTRACT

The Mars 2020 Perseverance rover landing site is located within Jezero crater, a ~50 km diameter impact crater interpreted to be a Noachian-aged lake basin inside the western edge of the Isidis impact structure. Jezero hosts remnants of a fluvial delta, inlet and outlet valleys, and infill deposits containing diverse carbonate, mafic, and hydrated minerals. Prior to the launch of the Mars 2020 mission, members of the Science Team collaborated to produce a photo-geologic map of the Perseverance landing site in Jezero crater. Mapping was performed at a 1:5000 digital map scale using a ~25 cm/pixel High Resolution Imaging Science Experiment (HiRISE) orthoimage mosaic base map and a 1 m/pixel spatial resolution HiRISE stereo digital terrain model. Mapped bedrock and surficial units were distinguished by differences in relative brightness, tone, topography, surface texture, and apparent roughness. Bedrock units are generally consistent with those identified in previously published mapping efforts, but this study's map includes the distribution of surficial deposits and sub-units of the Jezero delta at a higher level of detail than previous studies. This study considers four possible unit correlations to explain the relative age relationships of major units within the map area. Unit correlations include previously published interpretations as well as those that consider more complex interfingering relationships and alternative relative age relationships. The photo-geologic map presented here is the foundation for scientific hypothesis development and strategic planning for Perseverance's exploration of Jezero crater.

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Figure Caption: Geologic map of the Mars 2020 Perseverance landing area in Jezero crater.