**Task 5b Acceptance of Task Work**

This document verifies the completion and acceptance of tasks set forth in the contract agreed upon between the Agency (DOGAMI) and the Contractor (WSI) on February 9th, 2012. The line items for each task will be addressed in order and the details explored for each to ensure the satisfaction of the Agency and that the appropriate conclusion was reached in each instance.

Task 1 Kick off meeting

The project kick off meeting was held in Corvallis, at the WSI CVO office and was hosted by the Contractor on February 10, 2012.

Task 2 TIR Image Acquisition

Data acquisition was completed on March 3rd-5th, 8th, and 9th, 2012 for the Christmas Valley, Oregon Military, Paulina Marsh, and Summer Lake project areas. The Baker Pass was not collected until April 6th – 8th, 2012 due to snow cover during the previous month’s acquisition window. The data acquisitions were conducted at the very first date when project areas were snow free and the environmental conditions were within the parameters of the contract. The TIR image acquisitions were conducted to specifications and within the time windows approved by DOGAMI.

Task 3 TIR Measurements

All of the Task 3 specifications for the TIR Data were met.

1. WSI used the FLIR System SC6000 sensor which records wavelengths between 8-9.2 µm, and has a thermal resolution of >0.1ºC.
2. WSI used airborne IMU and GPS systems to provide the delivered Image Frame Indices (EO) which included x, y, z, o, k, and p data for each acquisition flight.
3. Flight planning and the subsequent acquisitions were performed at the appropriate altitude in order of achieving the native spatial resolution of 0.5 m, 60% side lap, and 40% vertical-lap.
4. All acquisition flights were conducted between 11pm-6am the following morning. In order to meet all the weather and ground condition criteria Baker Pass was acquired later than desired and was completed on the 8th of April, 2012. In each instance no air variables were present that would have degraded the data collection or image quality.
5. Thermal sensors were deployed during 2 of the flights in order to calibrate the radiant accuracy. What else do we need to add here?
6. TIR products were delivered and edits were addressed and included in this delivery. The following is the list of TIR related products delivered to the Agency.

Thermal Image Indices The thermal frame centroid location and time for each thermal frame used in all the project area, the ESRI shapefile is derived from the original EO (external orientation) file used for processing the TIR data.

TIR Mosaic Mosaic of full day of acquisition of thermal imagery over each project area

TIR Native Frames Calibrated and unrectified image frames (IMG format)

TIR Rectified Images Calibrated and orthorectified image frames (GEOTiff format)

Sensor File thermograph data (HOBO data logger spreadsheet) (.xls format)

Air Target Locations Catalytic and thermal blanket RTK for spatial accuracy assessment of thermal imagery. Files are made up of x, y, z, and type of target. (ESRI shapefile)

Task 4 LiDAR Processing

All of the Task 4 specifications for the LiDAR Data acquisition and processing were met.

1. Achieved pulse density = *all project areas had higher densities than 4 points/sq m (ranging from 5.43 – 8.73 points/ sq m)*
2. The vertical root mean square (RMSE) = *for all project areas was well within the specification of ≤ 15.0 cm (delivered data values ranged from 2 – 4 cm for all project areas)*

1. Acquisition flight specifications were designed to meet the TIR and LiDAR specifications. The following is the list of LiDAR related products delivered to the Agency.

All Return Point Clouds All point files were delivered for the full coverage of each project area. Each file will be a LAS v 1.2 format and will be classed with 1.) unclassified points and 2.) bare earth or ground points

Ground Return Point Clouds A separate set of bare earth or ground points were delivered with just the one classification.

Bare Earth DEM Raster datasets of the ground surface were delivered with 1 meter resolution, delineated into 7.5 USGS Quads, and output as ESRI GRIDs.

Highest Hit DEM Raster datasets of the ground and above ground objects not processed as erroneous were delivered with 1 meter resolution, delineated into 7.5 USGS Quads, and output as ESRI GRIDs.

Intensity Images 0.5 meter resolution laser intensity value mosaics were delivered in the same 1/100th USGS Quad delineation as the delivered point cloud files.

Project Specific Vectors *(ESRI shapefiles)*

AOI delivery boundaries

1/100th USGS Quad indices for LiDAR and Intensity Images for each AOI

USGS Quad indices for DEMs

AOI RTK checkpoints

All data was delivered in UTM Zone 10 & 11 N (NAD 83 CORS96 NAVD88 Geoid 03) and all units are in meters. All LiDAR data covers the entire project area deliverable boundaries.

Task 5 Close out documentation

This acceptance document is part of the Task 5 item for project close out, and will fulfill the requirements of this contract. WSI has not been able to identify any outstanding risks or issues the agency will have to manage. As will all remotely sensed data, the spatial patterns within the TIR imagery are subject to interpretation and the characteristics and limitations of these data should be considered during the analysis.