**TASK ORDER DETAIL** September 6, 2005

**USGS CONTRACT: 01CRCN0014**

**CONTRACTOR: Sanborn**

**TASK ORDER NUMBER: 01010C00xx *(contingent upon award)***

**TASK NAME: North Puget Sound, Washington Lidar**

The Contractor shall furnish all facilities, labor, materials and equipment, unless specifically identified otherwise, to provide the mapping services and products in accordance with the specifications, terms and conditions contained in Contract No. 01CRCN0014, and the following requirements specific to this Task Order:

## SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

The following Section C additional requirements are applicable to this Task Order:

1) **Statement of Work.** Reference C303 of the contract. The North Puget Sound, Washington Lidar task order is to provide high accuracy bare-earth processed lidar data, for approximately one-thousand seven hundred thirty five (1735) square miles, located in northwest Washington State.

   a) **The following deliverables are requested:**
      i) **Bare Earth**:
         (1) The contractor shall provide the Government with variably spaced, ASCII, comma delimited X, Y, Z, return #, intensity format data (see Paragraph C.2.b below) produced to the following specifications:
         (2) All elevation data points shall represent the topographic surface (i.e. last-return bald earth DEM) and shall be reported to the nearest thousandth of foot, along with the related State Plane Coordinates Feet.
         (3) Elevations will be in feet (MSL, NAVD88, Geoid 99).
         (4) Horizontal coordinates will be in Washington State Plane Coordinate Feet, North Zone, NAD83.
         (5) The vertical RMSE of the digital elevation data shall be no more than 18.5 centimeters (7.2 inches) or better relative to NAVD88.
         (6) LIDAR data will be captured at a nominal post spacing of no more than 1.4 meters.
         (7) Project Level Metadata shall be delivered that fully comply with FGDC metadata format standard in XML format.
         (8) The tile scheme for the bare-earth lidar is approximately 1 x 1.4 km. With tiling examples as shown in Attachment D.

      ii) **Raw Lidar Data:** All raw lidar data shall be required to be delivered in Optec ALTM LAS or ascii format. Data shall be delivered in the following format:
         (1) One row per reflection, and each row shall contain the following:
            (a) Easting,

(b) Northing,
(c) Orthometric height,
(d) Geoid height,
(e) GPS second,
(f) Return number,
(g) Scan angle,
(h) Off-nadir angle,
(i) GPS week
(j) Intensity

(2) The tile scheme for the "All-Return" lidar is approximately 1 x 1.4 km. With tiling examples as shown in Attachment D. Tiling shall match that of the bare-earth as listed in C.1.a.i.8 above.

b) **The contractor shall** provide the Government with project documentation in a report to include the following items:
   i) A record of field work procedures;
   ii) Data derivation and adjustments;
   iii) Quality control procedures and results;
   iv) FGDC compliant metadata.

c) **Special Acquisition Conditions:** Snow, flood, and Leaf-on/off: LIDAR shall be acquired while no snow is on the ground and rivers remain within their channels (i.e., non-flood conditions.) at or below normal levels.
   i) Acquisition shall be collected during the spring 2006 leaf off season.
   ii) Time of Day: Time of day is not of concern.
   iii) Earth-surface data voids are unacceptable and reason for rejection of the entire data set.
   iv) Notification: The USGS POC named below shall be notified 24 hours prior to planned acquisition of data. Notification is for information purposes, not permission to proceed.

d) **Data Accuracy:** Data collected under this task order shall have the following accuracy requirements:
   i) Vertical Bare earth accuracy
      (1) 18.5 cm RMS @ 95% confidence,
      (2) 15 cm RMS @ 90% confidence,
   ii) Vertical in Vegetation
      (1) 37 cm RMS @ 95% confidence.
   iii) Horizontal 1m RMS @ 95% confidence.
   iv) No data voids due to system malfunctions or lack of overlap
   v) Dense vegetation data voids minimized by automatic removal process
   vi) Artifact/Feature removal:
      (1) 90% of artifacts or more removed depending on terrain and vegetation;
      (2) 95% of outliers removed; 95% of all vegetation removed;
      (3) 98% of all buildings removed

e) **Use and Distribution Rights:** All deliverable data and documentation shall be free from restrictions regarding use and distribution. Data and documentation provided under this task order shall be freely distributable by government agencies.

f) **The Government Point-of-Contact (POC)** for this Task Order is:


**POC:** **Robert Kelly**
**Address:** Mid-Continent Mapping Center
ATTN: Robert Kelly, MS 604
1400 Independence Road
Rolla, MO 65401
**Telephone:** (573) 308-3612
**FAX:** (573)-308-3810
**e-mail:** ckelly@usgs.gov


2) **Digital Deliverables.** Reference C303, 3.11 of the contract.

a) **Accuracies:** The lineage (metadata), positional, content (completeness), attribution, and logical consistency accuracies of all digital elevation data produced in this Task Order shall conform to the specifications as stated above in Section C.1 of this Task Order. All data and products associated with contract deliverables will meet or exceed relevant NSSDA standards and full comply with FGDC metadata format standard

b) **Format:**

i) Bare Earth Data shall be delivered in ASCII comma delimited X, Y, Z, intensity format. Elevations shall be meters to three decimal places (thousandths)
ii) Raw Lidar data shall be delivered in ASCII comma delimited or Optec ALTM LAS format

c) **Delivery Medium:** The digital elevation data shall be delivered on external hard drive i.e. Firewire, or other mutually agreed to media.

d) **Deliverable Validation.** Reference C303, 3.12. The Government will perform validation on all submitted deliverables.

## SECTION D - PACKAGING AND MARKING

No additional Section D requirements are applicable to this Task Order.

## SECTION E - INSPECTION AND ACCEPTANCE

The following Section E additional requirements are applicable to this Task Order:

**1. Inspection Period.** Reference E720 of the contract. All deliverables will be validated within a sixty (60) calendar-day inspection period, the inspection period beginning the day after the data has been delivered.

**2. Inspection and Acceptance Procedures.** Reference E780. The Government will perform a full inspection of Bare Earth deliverables in C.1.a.i above **(Raw data will not be included in deliverable review, other than for completeness)**, and will inspect in accordance with E780 (b) of the Contract.

## SECTION F - DELIVERIES OR PERFORMANCE

The following Section F additional requirements are applicable to this Task Order:

1) **Place of Delivery.** Reference F904. The contractor shall submit all requested deliverables and GFP to the address of the Point-Of-Contact (POC), as shown in Section C of this Task Order.

2) **Delivery Schedule.** Reference F980. The Government requests the following delivery schedule:

   a) **Delivery lot one** (1) consisting of all requested deliverables sixty (60) calendar days following acquisition of LIDAR data, but no later than June 14, 2006
   b) **Delivery lot two** (2) consisting of one complete copy of accepted data fourteen (14) calendar days following acceptance of delivery lot one, but no later than August 28, 2006*

** Note: Delivery lot 2 assumes a maximum 60 day review of Delivery lot 1.*

3) **Negotiated Delivery Date(s) for Task Order:**

   a) Delivery Lot One (1) consisting of complete delivery area deliverables by _____*_____
   b) Delivery Lot two (2) consisting of complete delivery area deliverables by _____*_____

## SECTION G - CONTRACT ADMINISTRATION DATA

No additional Section G requirements are applicable to this Task Order.

## SECTION H - SPECIAL CONTRACT REQUIREMENTS

The following Section H additional requirements are applicable to this Task Order:

**1. Government Furnished Property.** Reference H1434.1.(c) of the contract. No Government furnished property is being supplied with this task order.

**2. Return of GFP.** Reference H1480.(d). GFP items do not need be returned with the deliverables in accordance with H1480(d)(1) of the Contract.

## SECTION I - CONTRACT CLAUSES

No additional detail is required for this Task Order.

## SECTION J - LIST OF ATTACHMENTS TO THIS TASK ORDER

| Identifier | Title/Description |
|---|---|
| Attachment A - | Project Description (1 Page) |

| | |
|---|---|
| Attachment B - | Project Diagram (1 Page) |
| Attachment C - | ArcView Shape file in Zip format |
| Attachment D - | ArcView Shape file in Zip format |

**TASK ORDER Attachment A - (Page 1 of 1)**
**North Puget Sound, Washington LIDAR – Project Description**

This project is comprised of approximately 1735 Square miles located in western Whatcom and Skagit County in northwest Washington state.

**It is the intent of this task order to make sure that the entire coastal area of Whatcom and Skagit counties are collected. Off shore islands are not part of this project area.**

Terrain includes coastal and mountainous regions of conifer forest, river basins, and moderately urbanized regions.

- **End of Attachment A –**

**TASK ORDER Attachment B -**
**North Puget Sound, Washington LIDAR – Project Diagram**

**"North_Puget_Sound_WA_Lidar_Attachment_B.pdf"**

**- End of Attachment B -**

**TASK ORDER Attachment C - (Page 1 of 1)**
**North Puget Sound, Washington LIDAR – Shape File**

**"North_Puget_Sound_WA_Lidar.zip"**

*(See attached file)*

**- End of Attachment C -**

**TASK ORDER Attachment C - (Page 1 of 1)**
**North Puget Sound, Washington LIDAR – Shape File**

**"Tiling_Example.zip"**

*(See attached file)*

**- End of Attachment D -**