

## MEMORANDUM OF UNDERSTANDING

The Memorandum of Understanding ("MOU") is made effective as of this 23<sup>rd</sup> day of October, 2019, by and between the Matanuska-Susitna Borough ("MSB") and the Alaska Industrial Development and Export Authority ("AIDEA"), each a "Party" and collectively the "Parties."

The Parties recite that:

A. In 2014, the Alaska Department of Transportation and Public Facilities (DOT&PF) Roads to Resources program completed an extensive natural resources inventory and access corridor study known as the West Susitna Reconnaissance Study for Access to Resource Development Opportunities. The purpose of the study was to identify multiple resource development opportunities that can be accessed by one transportation corridor, thereby attracting multiple private sector investments across resources.

B. AIDEA's purpose is to promote, develop, and advance the general prosperity and economic welfare of the people of Alaska. One of the ways in which AIDEA pursues the fulfillment of this purpose is by supporting and encouraging the development of natural resources in Alaska. AIDEA has the statutory authority to finance, develop, and own and operate facilities and improvements, including roads and related infrastructure, that are intended for use in connection with the extraction, transportation and production of timber, metals, minerals, hydrocarbons, petroleum products and other resources (each a "Resource" and collectively known as "Resources").

C. MSB intends to plan, permit and construct an access route to the west side of the Little Susitna River. The Parties are exploring the possibility of building a multi-user transportation corridor within the MSB to the Little Susitna River and further west within the MSB in advancing the work initiated by DOT&PF. The Parties acknowledge that such road(s) and infrastructure could and may be used, subject to the appropriate permits and agreements, to access MSB's Resources, as well as enhancing MSB's fire suppression activities.

D. The Parties intend to foster partnerships with other Resource owners, both publicly and privately owned, whose commercial and business activities within the MSB will benefit from the development of road(s) and infrastructure.

E. The purpose of this Memorandum of Understanding (MOU) is to clarify rights, roles, responsibilities, and expectations of each Party for the phased feasibility analysis, due diligence and development of the West Susitna Access Road (the "Project").

NOW, THEREFORE, the Parties agree as follows:

1. **COOPERATION.** The Parties will work cooperatively, act in good faith, and use reasonable best efforts to coordinate activities and responsibilities with each other in pursuit of the Project. The parties will cooperate with one another and furnish each other with any information regarding the Project or the planned development of the Project that the other Party may reasonably request. No Party, however, shall be obligated to disclose to the other Party confidential, proprietary information or information that is required to be kept confidential under applicable law.

This MOU is non-exclusive for both Parties. Either Party may cooperate and work with any other third persons and/or entities regarding the Project. This MOU is not intended, and shall not be deemed, to create a partnership or joint venture between the Parties. Neither Party shall owe a fiduciary duty to the other Party.

**2. PHASED DEVELOPMENT.** The Project will be budgeted and progressively pursued in phases to be mutually agreed by the Parties.

Subject to the terms of this MOU, the Parties hereby agree to pursue Phase I of the Project and will seek to complete all agreed tasks for Phase I by December 31, 2019. The tasks for Phase I are agreed to be the following:

- a. Identification of the proposed and alternative transportation corridors;
- b. Gathering and acquiring digital data on the routes;
- c. Conducting field reconnaissance as required; and
- d. Defining the next phase(s) of the Project.

The Parties hereby agree that AIDEA engages HDR Alaska, Inc. (HDR) and the Department of Natural Resources – Division of Geological & Geophysical Surveys (DNR DGGS) for their respective components of Phase I. The Parties have reviewed and approved detailed scopes of work and contract terms for Phase I of the Project and find the timeline acceptable to the Parties. The agreed scopes of work are attached as Exhibits B and C to this MOU.

**3. BUDGET.** The Parties will establish a project budget for each phase prior to the initiation of each phase of the Project.

The budget for Phase I of the Project is attached as Exhibit A. The Parties agree that costs for Phase I of the Project shall not exceed two hundred thousand dollars (\$200,000). The Parties shall share the costs of Phase I proportionately based on the following:

- a. MSB agrees to pay one-third of costs incurred, subject to a cap of \$50,000;
- b. AIDEA agrees to pay one-third of costs incurred, subject to a cap of \$50,000; and
- c. Funding will be raised from third party participants to pay one-third of costs incurred, subject to an initial cap of \$50,000 with an additional \$50,000 available as contingency to address incurred costs in excess of \$150,000.

MSB will provide its \$50,000 funding share up front to AIDEA who will also contribute its \$50,000 funding share to a designated project account held and controlled by AIDEA for Phase I of the Project. Third party participants will enter into a Contribution Agreement with AIDEA, attached as Exhibit A to this MOU. No funds will be disbursed from the designated project account, unless otherwise agreed to in writing by the Parties, until a full balance of \$200,000 is achieved.

Any expenditures to be incurred that exceed the Phase I Budget will require the written approval of the Parties. Any funded amounts which have not been disbursed from the project account at the end of

the term of Phase I shall be refunded to the Parties and to any third party participants upon their written request, unless otherwise agreed to in writing by the Parties and the third party participants.

**4. ROLES.** The Parties shall have to the following roles and responsibilities:

a. MSB will:

- i. Lead the designation of the proposed and alternative transportation corridors;
- ii. Identify Resources owned by MSB along the proposed and alternative transportation corridors and assist AIDEA in determining programs to achieve the economic value of the Resources; and
- iii. Represent the Parties as applicant in all applicable approvals or permits necessary for the Project and lead discussions with federal, state and other local governmental entities (if any) regarding the Project.

b. AIDEA will:

- i. Engage HDR as consultant to undertake the agreed Phase I scope of work and lead communications between HDR and the Parties;
- ii. Engage DNR DGGS to acquire, process, and distribute to AIDEA airborne Light Detection and Ranging (LIDAR) elevation data under a Reimbursable Services Agreement;
- iii. Manage disbursements from the designated project account;
- iv. Use commercially reasonable best efforts to raise \$100,000 in committed Phase I funding from third party Resource owners;
- v. Identify and approach other third party Resource owners that will benefit from the Project to participate in future phases of the Project;
- vi. Determine and structure the finance plan for the Project phases.

c. MSB and AIDEA will jointly prepare and facilitate strategies to maximize the local and regional economic benefits and job opportunities associated with the Project.

**5. RIGHTS.** Except as provided for under Section 9 of this MOU, each Party to this MOU shall have full access and rights to use the data, reports, studies, analysis or any other work product produced under this MOU for any purposes determined at the sole discretion of that Party.

**6. NO COMMITMENT.** Nothing in this MOU obligates the Parties to take any specific action with respect to the Project other than Phase I. Nothing in this MOU obligates AIDEA to provide any financing for the development of the Project.

**7. TERMINATION.** The MOU may be terminated:

- a. By mutual consent of the Parties;
- b. For convenience of one Party, provided that the terminating Party notifies the other Party of its intent to terminate at least thirty (30) days prior to the effective date of the termination; or

- c. For cause, by either Party where the other Party fails in any material way to perform its obligations under the MOU. Termination for cause requires the terminating Party to notify the other Party of the intent to terminate, stating with reasonable specificity the grounds therefore, and the termination for cause shall be effective only if the other Party fails to cure the failure to perform within (30) days after receiving the notice.

Notwithstanding a termination, each Party will remain obligated to fund its share of the Phase I Budget, and any other approved budgets for subsequent phases of the Project, with respect to those costs that cannot be avoided or that must be incurred in closing out a contract or previously approved task order.

**8. THIRD PARTY CLAIMS.** Each Party will bear its own costs (including attorney's fees) with respect to any third-party claim brought against one or both of them that arises from or is related to this MOU.

**9. CONFIDENTIALITY.** The Parties acknowledge that their records with respect to the Project and matters connected to it are generally available to the public for inspection upon request.

In the event MSB desires AIDEA to keep confidential any information or records that MSB provides to AIDEA, MSB must specifically request that the Executive Director of AIDEA determine that the information or records be treated as confidential and MSB must demonstrate to AIDEA that the information or records are within the categories established in AS 44.88.215 or are confidential under other applicable law. Upon MSB complying with the preceding sentence, AIDEA shall keep all such information and records confidential pursuant to the provisions of AS 44.88.215.

The Parties acknowledge that certain documents and records related to this MOU or the Project may be subject to the attorney-client privilege. Nothing in this MOU is intended or will alter the Parties' ability or authority to maintain the privilege within their own respective organizations.

**10. Governing Law; Forum Selection.** This MOU and the rights of the parties under it are governed by the law of the State of Alaska. Any judicial proceeding arising out of or related to this MOU shall be filed and heard in the Superior Court for the State of Alaska, Third Judicial at Anchorage, and not elsewhere.

**11. Amendments.** Any Party may request changes to this MOU. Any changes, modifications, revisions or amendments to this MOU must be in a written instrument, which shall be effective when executed and signed by both of the Parties.

**12. Third-Party Beneficiary Rights.** The Parties do not intend to create in any other individual or entity the status of a third-party beneficiary, and this MOU shall not be construed so as to create any third-party rights.

**13. Assignment.** No Party may assign its rights or delegate its duties under this MOU to any other person or entity without the prior written consent of the other parties to the assignment or delegation.

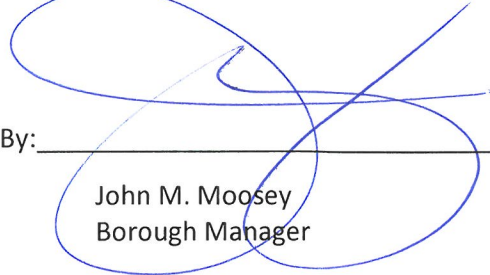
**14. Expiration.** Unless sooner terminated as provided for in Section 7, this MOU and the Parties obligations under it expire three years after the effective date first stated above. The Parties, however, may extend this MOU by mutual written consent.

**IN WITNESS WHEREOF**, the parties to this MOU through their duly authorized representatives have executed this MOU effective as of the date first written above.

**ALASKA INDUSTRIAL DEVELOPMENT  
AND EXPORT AUTHORITY**

By:   
Thomas Boutin  
CEO & Executive Director

**MATANUSKA-SUSITNA BOROUGH**

By:   
John M. Moosey  
Borough Manager

# EXHIBT A

## WEST SUSITNA ACCESS CONTRIBUTION AGREEMENT

This West Susitna Access Contribution Agreement (the “Agreement”), dated as of \_\_\_\_\_, 2019 is hereby entered into by and between the Alaska Industrial Development and Export Authority (hereinafter “AIDEA”) and \_\_\_\_\_, a party which may own, develop or use (hereinafter collectively or individually “ODU”) resources in the Susitna Region.

**WHEREAS**, in 2014, the Alaska Department of Transportation and Public Facilities (DOT&PF) Roads to Resources program completed an extensive natural resources inventory and access corridor study known as the West Susitna Reconnaissance Study for Access to Resource Development Opportunities. The purpose of the study was to identify multiple resource development opportunities that can be accessed via one or more transportation corridors, thereby attracting multiple private sector investments for resource development.

**WHEREAS**, on or about October 23 2019, AIDEA and the Matanuska Susitna Borough (hereinafter “MSB”) entered into a Memorandum of Understanding (hereinafter “MOU” and attached to this Agreement as Exhibit A), and the MOU is intended to initiate a phased feasibility analysis, due diligence and development of a West Susitna Access Corridor (hereinafter “Project”); and

**WHEREAS**, AIDEA is seeking contributions for the purposes of funding advance field work and acquiring digital data known as Lidar for potential transportation corridor routes as described in the MOU (hereinafter “Phase 1 Work”); and

**WHEREAS**, ODU desires to make a contribution in order to obtain the rights to and license in, as may apply, all of the data, technical reports and related information acquired and produced as a result of Phase 1 Work; and

**WHEREAS**, ODU understands that AIDEA has established and will administer a bank account for Phase 1 Work expenses relating to the Project (hereinafter “Project Account”), with a contingency of \$50,000 for potential cost overruns (hereinafter “Contingency”). The Phase I Work Budget is not to exceed \$200,000.

**NOW, THEREFORE**, in consideration of the mutual covenants, terms and conditions set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. AIDEA and MSB Funding

With the execution of the MOU, AIDEA has deposited \$50,000 into the Project Account and the MSB has deposited an additional \$50,000 into the Project Account.

2. ODU Capital Pool

Funds from participating ODU and other ODUs will be credited to a capital pool (the "Capital Pool"), the purpose of which is to raise \$50,000 to be spent on the Phase I Work and an additional \$50,000 for the Contingency.

3. ODU Contribution

ODU agrees to contribute \$ \_\_\_\_\_ to the Capital Pool.

4. Return of Unused Funds

The Parties hereby covenant and agree that if the total cost of the Phase 1 Work does not exceed \$150,000.00, all remaining funds of the Capital Pool shall be returned to participating ODUs as agreed amongst themselves. In the event that Phase I Work costs exceed \$150,000 the balance of the Contingency not used will be returned to participating ODUs as agreed amongst themselves. In the event there is a dispute or no agreement as to the return of funds from the Capital Pool or the Contingency, funds shall be returned to participating ODUs in proportion to their respective contributions.

5. ODU Rights and License

In consideration for the contributions contemplated hereunder, any contributing ODU shall have the right to receive and use the data, reports, studies, analysis or any other work product (collectively, the "Work Product") produced during Phase 1 Work, upon completion of Phase I Work, for any purpose at its sole discretion. This Agreement shall constitute an unlimited license agreement for the Work Product in the event that any supplier asserts intellectual property or similar rights over the Work Product.

6. No Liability of ODU

It is agreed that ODU is not responsible for nor liable for the Phase I Work in any way, including but not limited to, all field work. AIDEA covenants that it is contracting with independent contractors that AIDEA will require to be self-insured in order to conduct the Phase I Work.

7. No Commitment Beyond Phase I Work

Nothing herein obligates any Party hereto to take any action with respect to the Project not related to Phase 1 Work or as otherwise set forth herein.

8. Confidentiality

ODU acknowledges that AIDEA is a public entity, and therefore, documents and records of AIDEA are generally available to the public for inspection upon request. However, to the extent



that ODU desires to transmit confidential information, such a request must be made in writing to AIDEA prior to transmission of the information to AIDEA. In making its request, ODU must demonstrate that the information is subject to one of the categories set forth in AS 44.88.215 or is otherwise protected by law. To the extent any information is protected by law it shall be maintained as confidential pursuant to the provisions set forth in AS 44.88.215.

The parties acknowledge that certain documents and records related to the Project may be subject to the attorney-client privilege. Nothing herein is intended to or will alter any Party's ability or authority to maintain the privilege within its respective organization.

#### 9. Cooperation

This Agreement is non-exclusive. Each Party reserves the right to work with any other person or entity regarding the Project. This Agreement is not intended, nor shall it be deemed, to create a partnership or joint venture between the Parties. Neither Party shall owe a fiduciary duty to the other.

#### 10. Amendment

This Agreement may only be amended, modified or supplemented by an agreement in writing and signed by each Party hereto. Any such amendment, modification or supplementation shall be considered effective when executed when signed by all Parties hereto.

#### 11. Assignment

No Party hereto may assign its rights or delegate its duties hereunder without the prior written consent of the other Party to this Agreement.

#### 12. Entire Agreement

This Agreement constitutes the sole and entire agreement of the Parties hereto with respect to the subject matter contained herein, and supersedes all prior and contemporaneous understandings, representations and agreements, both written and oral, with respect to such subject matter.

#### 13. Governing Law; Forum Selection

This Agreement shall be governed by and construed in accordance with the laws of the State of Alaska. Any proceeding arising out of or based on this Agreement shall be filed and heard in the Superior Court for the State of Alaska, Third Judicial District at Anchorage, Alaska, and not elsewhere.

14. Counterparts

This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement. A signed copy of this Agreement delivered by facsimile, email or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Agreement.

**IN WITNESS WHEREOF**, the Parties hereto have executed this Agreement as of the date first written above.

AIDEA

ODU  
[INSERT COMPANY NAME]

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By: Tom Boutin  
Its: CEO & Executive Director

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By:  
Its:

# EXHIBIT B



October 11, 2019

Alan Weitzner, Chief Investment Officer  
Alaska Industrial Development and Export Authority  
[AWeitzner@aidea.org](mailto:AWeitzner@aidea.org)

Subject: Request for Proposal – West Susitna Access Study, Phase 1

Dear Mr. Weitzner,

We appreciate the opportunity to propose on Phase 1 of the West Susitna Access Study. We understand that AIDEA and the Matanuska-Susitna Borough (MSB) are collaborating on this study to advance a multi-modal access corridor to the west of the Susitna River. We understand that AIDEA is leading this effort and that AIDEA is asking HDR Alaska, Inc. (HDR) to provide preliminary engineering and environmental services to better define the project corridor(s) and inform upcoming field efforts. We understand that if HDR is awarded this work it will be contracted as a task order under our AIDEA Project Support Services Term Agreement (Agreement No. 18009).

AIDEA and the MSB desire that the study consider three corridors: the Port MacKenzie Route (PMR), an East-West Route (EWR), and a South Route (SR). The PMR is already well defined from Port MacKenzie to the confluence of the Skwetna River and Talachulitna River with a crossing of the Susitna River at Susitna Station. The remainder of the PMR from the confluence of the Skwetna River and Talachulitna River west to the terminus in the Whistler Mining District is less defined. The EWR would follow the same route as the PMR from the Whistler Mining District to the Susitna River crossing, but east from the Susitna River the EWR would follow a more directly east-west alignment and tie into existing road and rail infrastructure to the West of Big Lake. The SR would follow the same route as the PMR from the Whistler Mining District to the vicinity of Thursday Creek and then would go south to Ladd Landing.

### **Scope of Services**

HDR proposes the following scope of services:

- A. Preliminary Corridor Identification. The purpose of this initial task is to determine where to collect LiDar data so that LiDar data collection can be accomplished as soon as possible this fall.
  1. Desktop Corridor Identification: HDR will perform a brief engineering and environmental evaluation to identify potential corridors for the EWR and for the segment of the PMR from approximately the confluence of the Skwetna River and Talachulitna River to the proposed Whistler Mine. This effort will make use of publically available mapping and information to speed the process.
  2. HDR will use the work from the above task to identify where additional LiDar data needs to be collected. This information will be submitted to AIDEA in a .kmz file and an email describing the specifications for the desired LiDar data. AIDEA will use this information to procure LiDar data collection.

3. Preliminary Field Reconnaissance:

- a. HDR will perform field reconnaissance of the PMR and EWR corridors. Field reconnaissance will consist of one team operating for two days. It is assumed that an R44 helicopter will be contracted by HDR. The team will consist of one senior engineer, one junior engineer, and one environmental scientist. Teams will fly preliminary corridors looking for large scale physical and environmental constraints and to provide general awareness of the landscape. If possible teams will also land for closer evaluation of major waterway crossings. Limited wetland data will be collected in order to verify common wetland and upland vegetation signatures of the area. Videos and photographs will be taken from the helicopter as a reference for future analysis. Field work days are estimated at up to 10 hours including driving to and from the helicopter.
- b. The deliverable from the field reconnaissance will be a brief (approximately 2 to 4 page) technical memorandum documenting the field work, field conditions, key observations, corridor adjustments considered, and recommendations for efforts or decisions for future phases of the project. The memo will include photographs where applicable.

Preliminary field reconnaissance is scheduled for October 2019, soon after receipt of Notice to Proceed (NTP). The technical memorandum will be submitted in pdf approximately 3 weeks following completion of field work.

Labor and expenses arising from flight delays or false-starts, which are outside of HDR's control, will be billed to AIDEA as additional services.

F. Meetings and Project Management:

1. Meetings: The following meetings are included in addition to any meetings identified in the tasks above:
  - a. Progress Meetings: HDR will organize and attend up to four ½-hour teleconference meetings with AIDEA to discuss progress, upcoming work efforts, and information needs.
  - b. Project Team Meetings: HDR will hold ½-hour bi-weekly project team meetings to discuss progress, upcoming work efforts, and information needs. These meetings will be internal HDR and subconsultant/vendor (if any) staff only.
2. Project Management: HDR includes project management activities; project start up, accounting, invoicing, and project close out; and administration of HDR's safety and quality programs on this project.

**Schedule**

HDR estimates completion of the above services by December 13, 2019. This schedule is based on the following assumptions:

- Receipt of an executed task order or NTP by October 15, 2019
- No delays of the field reconnaissance work
- Timely receipt of information to be provided by AIDEA

**Cost**

HDR proposes a firm fixed price of \$50,463 for the above scope of services. A detailed breakdown of this price by task is provided below:

TASK DESCRIPTION	HDR Labor	Subs	Expenses	Total
<b>A. Preliminary Corridor Identification</b>				<b>35,376.81</b>
1. Desktop Corridor Identification	4,075.14	-		4,075.14
2. Identify LiDar data needed	2,411.06	-		2,411.06
3a1. Preliminary Field Recon Prep & Safety	3,804.29	-	440.00	4,244.29
3a2. Preliminary Field Recon	11,616.83	-	6,050.00	17,666.83
3b. Preliminary Field Recon Tech Memo	6,979.49	-		6,979.49
<b>F. Meetings and Project Management</b>				<b>15,085.72</b>
1a. Progress Meetings w/AIDEA	1,850.25	-		1,850.25
1b. Project Team meetings	3,154.25	-		3,154.25
2. Project Management	10,026.23	-	55.00	10,081.23
<b>Total</b>	<b>43,917.53</b>	<b>-</b>	<b>6,545.00</b>	<b>50,462.53</b>

HDR will provide monthly invoices based on HDR’s estimate of the percent completion of the work broken down by task. Invoices will not include a narrative progress report or backup project accounting information. This price is based on the following assumptions:

- The following are not included:
  - Assistance with procuring LiDar data
  - Review or use of collected LiDar data
  - Assistance with procuring aerial imagery
  - Review or use of aerial imagery
  - Engineering refinement of corridors/routes
  - Environmental science and permitting efforts beyond the one environmental scientist participating in the field reconnaissance task
- Costs arising due to delays or false starts of the field reconnaissance work are not included. *This will be negotiated as appropriate*
- All deliverables and other information will be submitted electronically.
- Costs for project management are built on an assumed three months of project duration.

HDR understands that this work is contingent on a Memorandum of Understanding (MOU) between AIDEA and other parties and that the MOU will need to be approved by the AIDEA board. HDR understands that NTP for this work could precede a decision on the MOU by the AIDEA board. HDR understands that in the event that the ADIEA board does not approve the MOU, HDR will be instructed to stop work. In the event of a stop work order, HDR will be paid for work performed, expenses incurred, closeout of the project, archiving of files, transfer of information to AIDEA (if requested), and reasonable profit earned up to the date of the stop work order. The final invoice amount and payment will be based on HDR’s estimate of the percentage of completion by task.

Wescott Bott, PE, will serve as HDR's project manager and he can be reached directly at 907-644-2124 or [wescott.bott@hdrinc.com](mailto:wescott.bott@hdrinc.com).

Sincerely,  
HDR Alaska, Inc.



Timothy Gallagher  
Vice President / Area Manager

# EXHIBT C



## **Lidar Acquisition and Ground Control for West Susitna Access Study**

**State of Alaska, Division of Geological & Geophysical Surveys**

**October 14, 2019**

Principal Investigator: TBD, based on availability during acquisition window(s)

### **Summary**

The Alaska Division of Geological & Geophysical Surveys (DGGS) proposes to acquire for the Alaska Industrial Development and Export Authority (AIDEA) airborne Light Detection and Ranging (lidar) elevation data for an area of approximately 205 mi<sup>2</sup> in corridors for a West Susitna Access Study.

### **Background**

The Alaska Industrial Development and Export Authority (AIDEA) seeks the acquisition of airborne Light Detection and Ranging (lidar) elevation and ground control data for roughly 205 mi<sup>2</sup> in corridors for a West Susitna Access Study. The Alaska Division of Geological & Geophysical Surveys (DGGS) has the equipment and expertise to collect lidar elevation data. Collecting lidar in the area supports Alaska resource development on State lands and aligns with the DGGS mission of determining the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources (AS 41.08.020).

### **Project Plan/DGGS Tasks**

- Mobilize to collection area in October/November 2019\* with lidar equipment during maximum leaf-off and snow-free conditions, to the extent practical
- Fly lidar for the AOI(s), via fixed-wing aircraft, during appropriate weather conditions (visibility)
- Collect ground control points, with helicopter support
- Store data in duplicates on secure media
- Deliver data for collected area on or before December 1, 2019\*\*

\*If fall 2019 conditions are not favorable for collecting the complete area prior to establishment of winter snow pack the remaining area will be collected in spring 2020

\*\*If data collection is delayed until spring 2020, data delivery for those areas will be equally delayed

### **Deliverables (minimum specifications)**

Lidar data will be of Quality Level 2 (QL2). This includes minimum 8 points per square meter average native pulse density (ANPD), 95% confidence level, with 50% swath overlap. Checkpoints are required.

Deliverables shall include:

- Raw point clouds
- Collection and survey reports

Lidar Point Cloud: All point deliverables will be in LAS format, version 1.4.

## Budget, AIDEA RSA for Lidar Acquisition and Ground Control

**Scenario 1:** Total for lidar acquisition and ground control, entire area (205 mi<sup>2</sup>): **\$56,580**  
*(Recommended option, for overall cost savings and minimized number of mobilizations; each separate mobilization incurs a minimum fixed base cost of approximately \$12,000 for personnel travel and helicopter standby time)*

<b>Lidar Acquisition</b>	
Salary	\$15,360
Travel	\$8,220
Contractual (fixed-wing aircraft & fuel)	\$11,300
Equipment/Supplies	\$0
<i>Subtotal</i>	<i>\$34,880</i>

<b>Ground Control</b>	
Salary	\$0
Travel	\$0
Contractual (helicopter & fuel)	\$21,700
Equipment/Supplies	\$0
<i>Subtotal</i>	<i>\$21,700</i>

## **Lidar Processing for West Susitna Access Study**

**State of Alaska, Division of Geological & Geophysical Surveys**

**October 14, 2019**

Principal Investigator: TBD, based on availability during acquisition window(s)

### **Summary**

The Alaska Division of Geological & Geophysical Surveys (DGGs) proposes to process for the Alaska Industrial Development and Export Authority (AIDEA) airborne Light Detection and Ranging (lidar) elevation data for an area of approximately 205 mi<sup>2</sup> in corridors for a West Susitna Access Study.

### **Background**

The Alaska Industrial Development and Export Authority (AIDEA) seeks the processing of airborne Light Detection and Ranging (lidar) elevation data for roughly 205 mi<sup>2</sup> in corridors for a West Susitna Access Study. The Alaska Division of Geological & Geophysical Surveys (DGGs) will have collected lidar in this area under a separate agreement, and has the equipment and expertise to process the elevation data. Processing lidar in the area supports Alaska resource development on State lands and aligns with the DGGs mission of determining the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources (AS 41.08.020).

### **Project Plan/DGGs Tasks**

- Process GNSS/IMU data
- Process point cloud data
- Calibrate flight lines
- Classify ground points
- Adjust ground control points
- Convert orthometric height and trim edges
- Develop metadata and reporting on the dataset
- Deliver data for collected area on or before January 1, 2020\*

\*If data collection is delayed until spring 2020, data delivery for those areas will be equally delayed

### **Deliverables (minimum specifications)**

Lidar data will be of Quality Level 2 (QL2) with associated classification scheme and accuracy assessment.

Deliverables shall include:

- Bare-earth Digital Elevation Models (DTM)
- Top-of-canopy, “first return” Digital Surface Models (DSM)
- Canopy height DEMs (DSM minus DEM)
- 5-foot automated contours
- Intensity images
- Hillshade

- Tiling scheme (1-km tiles)
- FGDC-compliant metadata
- Classified and raw point clouds
- Collection, quality control, and survey reports

Lidar Point Cloud: All point deliverables will be in LAS format, version 1.4. Lidar points will be classified, at minimum, based on USGS NGP Lidar Base Specifications v1.3.

Lidar Accuracy: Prior to development of derivative products from the point data, the absolute and relative vertical accuracy of the point data shall be verified. A detailed report of the validation processes used shall be delivered.

**Budget, AIDEA RSA for Lidar Processing**

**Scenario 1:** Total for lidar processing, entire area (205 mi<sup>2</sup>): **\$33,440**

<b>Lidar Processing</b>	
Salary	\$33,440
Travel	\$0
Contractual (fixed-wing aircraft & fuel)	\$0
Equipment/Supplies	\$0
<i>Subtotal</i>	<i>\$33,440</i>