

05/13/15
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Agenda Sheet for City Council Meeting of:
 05/18/2015

Date Rec'd	4/15/2015
Clerk's File #	OPR 2015-0402
Renews #	
Cross Ref #	
Project #	
Bid #	
Requisition #	

Submitting Dept	INFORMATION TECHNOLOGY
Contact Name/Phone	MICHAEL SLOON 625-6468
Contact E-Mail	MSLOON@SPOKANECITY.ORG
Agenda Item Type	Contract Item
Agenda Item Name	5300 KITSAP INTERLOCAL (2015)

Agenda Wording
 Interlocal Cooperative Agreement with Kitsap County to purchase LiDAR topographic survey data for The City of Spokane LiDAR project. Contract term will commence upon signature date for one year. Estimated amount of \$13,386.00 plus tax if applicable.

Summary (Background)
 The City of Spokane is utilizing the Puget Sound LiDAR Consortium rate structure for this agreement. LiDAR is a remote sensing technology that measures distance by illuminating a target with a laser and analyzing the reflected light. LiDAR is used as a technology to make high-resolution maps with contour mapping. The City of Spokane would like to be included in the upcoming LiDAR survey to incorporate into the current GIS Application.

Fiscal Impact	Budget Account
Expense \$ 13,386.00 plus tax if applicable	# 5300-41630-18850-54820
Select \$	#
Select \$	#
Select \$	#

Approvals		Council Notifications	
Dept Head	SLOON, MICHAEL	Study Session	Finance - May 4, 2015
Division Director	DUNIVANT, TIMOTHY	Other	
Finance	SALSTROM, JOHN	Distribution List	
Legal	WHALEY, HUNT	Accounting - kbustos@spokanecity.org	
For the Mayor	SANDERS, THERESA	Contract Accounting - jsalstrom@spokanecity.org	
Additional Approvals		Legal - hwhaley@spokanecity.org	
Purchasing		Purchasing - cwahl@spokanecity.org	
		IT - jhamilton@spokanecity.org	
		Taxes & Licenses	
		Kitsap County - mgordon@co.kitsap.wa.us	

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APPROVED
 BY SPOKANE CITY COUNCIL on
 5/18/2015

 SPOKANE CITY CLERK

#4

**KITSAP COUNTY
DEPT. OF EMERGENCY MANAGEMENT
911 Carver Street
Bremerton, WA 98312
(360) 307-5871**

**INTERLOCAL COOPERATIVE AGREEMENT TO PURCHASE LIDAR DATA
FOR THE SPOKANE, WA. LIDAR PROJECT
KC- 139 -2015**

THIS AGREEMENT is between City of Spokane, Wa., a municipal corporation, and, and Kitsap County, Wa., a municipal corporation, all in the State of Washington.

WITNESSETH:

WHEREAS, The Cooperation Act, as amended and codified in Chapter 39.34 of the Revised Code of Washington provides for Interlocal cooperation between governmental agencies; and

WHEREAS, Chapter 39.33 of the Revised Code of Washington provides for the intergovernmental disposition of property, and

WHEREAS, both parties are required to make certain purchases by formal advertisement and bid process, which is a time consuming and expensive process; and it is in the public interest to cooperate in the combination of bidding requirements to obtain the most favorable bid for each party where it is in their mutual interest; and

WHEREAS, the parties also wish to utilize each other's contracts where it is in their mutual interest;

NOW, THEREFORE, the parties agree as follows:

1. **PURPOSE.** The purpose of this agreement is to acknowledge the parties' mutual interest to jointly bid the acquisition of goods and services and disposition of property where such mutual effort can be planned in advance and to authorize the acquisition of goods and services and the purchase or acquisition of goods and services under contracts where a price is extended by either party's bidder to other governmental agencies;
2. **ADMINISTRATION.** No new or separate legal or administrative entity is created to administer the provision of this agreement. The Administrator of this agreement is the Director of Emergency Management of Kitsap County, Washington.
3. **SCOPE.** This agreement shall allow the following activities:
 - A. Purchase or acquisition of goods and services by each party acting as agent for either or both parties when agreed to in advance, in writing;
 - B. Purchase or acquisition of goods and services by each party where provision has been provided in contracts for other agencies to avail themselves of goods and services offered under the contract.
 - C. Disposal of goods by each party acting as agent for either, or both parties when agreed to in advance, in writing.
4. **DURATION OF AGREEMENT - TERMINATION.** This agreement shall become effective upon signature of both parties for a one (1) year period.

COOPERATIVE PURCHASING AGREEMENT

5. RIGHT TO CONTRACT INDEPENDENT ACTION PRESERVED. Each party reserves the right to contract independently for the acquisition of goods or services and or disposal of any property without notice to the other party and shall not bind or otherwise obligate the other party to participate in the activity.
 6. COMPLIANCE WITH LEGAL REOUREMENTS. Each party accepts responsibility for compliance with federal, state or local laws and regulations including, in particular, bidding requirements applicable to its acquisition of goods and services or disposal of property.
 7. FINANCING. The method of financing of payment shall be through budgeted funds or other available funds of the party for whose use the property is actually acquired or disposed. Each party accepts no responsibility for the payment of the acquisition price of any goods or services intended for use by the other party.
 8. FILING. Executed copies of this agreement shall be filed as required by Section 39.34.040 of the Revised Code of Washington prior to this agreement becoming effective.
 9. INTERLOCAL COOPERATION DISCLOSURE. Each party may insert in its solicitations for goods a provision disclosing that other authorized government agencies may also wish to procure the goods being offered to the party and allowing the bidder the option of extending its bid to other agencies at the same bid price, terms and conditions.
 10. NON-DELEGATION/NON-ASSIGNMENT. Neither party may delegate the performance of any contractual obligation, to a third party, unless mutually agreed in writing. Neither party may assign this agreement without the written consent of the other party.
- II. HOLD HARMLESS. Each party shall be liable and responsible for the consequences of any negligent or wrongful act or failure to act on the part of itself and its employees. Neither party assumes responsibility to the other party for the consequences of any act or admission of any person, firm or corporation not a party to this agreement.
12. SEVERABILITY. Any provision of this agreement, which is prohibited or unenforceable, shall be ineffective to the extent of such prohibition or unenforceability, without invalidating the remaining provision or affecting the validity or enforcement of such provision.
 13. LiDAR SURVEY DATA. Kitsap County has contracted with Quantum Spatial Inc. (Watershed Sciences, Inc.). to provide public-domain high-resolution LiDAR topographic survey data in Washington and Oregon. Exhibit A outlines costs associated with Puget Sound LiDAR Consortium's rate structure agreed upon with Quantum Spatial, Inc. under its contract terms and Exhibit B is the Quantum Spatial, Inc. project Proposal. This LiDAR project is concurrent with other Spokane LiDAR projects and is treated as an "add on" at the same rate of \$.78 per acre. Pursuant to paragraph 3.A of this agreement, Kitsap County will act as the agent for the City of Spokane, Washington to obtain the data described in Exhibit B from Quantum Spatial/Watershed Sciences, Inc. The project, referred to as the City of Spokane Lidar Project has a total costs of \$13,386.00. The Project Costs is a total of LiDAR services at \$11,743.00 and a service fee for contract administration and Quality Assurance of \$1,644.00. The City of Spokane agrees to pay the costs and the amount specified in this contract not to exceed \$13,386.00. Kitsap County will obtain this data from Quantum Spatial/Watershed Sciences, Inc. under its contract with Watershed Sciences.

COOPERATIVE PURCHASING AGREEMENT

City of Spokane, Washington

Kitsap County Department of Emergency Management
Kitsap County, Washington

David A. Curran

Michael Gordon

Michael Gordon, Director
Kitsap County Emergency Management

5/18/2015

Date

5/26/15

Date

Assistant City Attorney
[Signature]

Approved as to form:

Attest:

[Signature]
Spokane City Clerk





February 25, 2015

Michael Gordon
Kitsap County Department of Emergency Management
911 Carver St
Bremerton, WA 98312
360-307-5872
mgordon@co.kitsap.wa.us

RE: LiDAR Data Acquisition Cost Proposal – City of Spokane Project Areas, WA

Quantum Spatial, Inc. appreciates the opportunity to present to **PSLC** a cost proposal for acquiring and processing high-resolution (> 8 pulses/m²) LiDAR data for the City of Spokane project areas west and north of the USGS Spokane project area already under contract. The following is a brief synopsis of our services, specifications, and associated costs for these areas of interest. Our cost for LiDAR acquisition and processing abides by our negotiated cost rate (\$0.78/acre) with PSLC given the total project area (USGS and City AOIs) of > 160,000 acres.

Services

Airborne LiDAR

QSI will collect LiDAR data using a Leica LiDAR system to produce a highly accurate, high resolution (≥ 8 pulses/m²) LiDAR dataset with no gaps and ample buffers (at least 100m) around project boundaries. Data will be collected at a $\leq 30^\circ$ field of view ($\pm 15^\circ$ from nadir), with at least 50% overlap among swaths to minimize gaps and laser shadowing. The LiDAR system records up to four range measurements (returns) per pulse (first, second, third, and last). All overlapping flight lines will be flown in opposing directions to maximize detection of swath to swath inconsistencies used to resolve system misalignments. Our GPS receivers and LiDAR systems are GNSS-capable ensuring low PDOP values and adequate satellite constellations throughout the mission. GPS quality is predicted before the flight and checked during post processing to ensure that positional accuracy exceeds specifications.

LiDAR Specifications Summary	
Multi-Swath Pulse Density	≥ 8 pulses/m ²
Scan Angle	$\leq 30^\circ$ ($\pm 15^\circ$ from Nadir)
Returns Collected Per Laser Pulse	Up to 4
Intensity Range	1-255
Swath Overlap	50% side-lap (100%)
GPS PDOP During Acquisition	≤ 3.0
GPS Satellite Constellation	≥ 6
Maximum GPS Baseline	13 nautical miles
Accuracy _z (1.96 σ), slope <20°	≤ 20 cm
Vertical Accuracy (σ), slope <20°	≤ 15 cm
Horizontal Accuracy (σ)	≤ 30 cm

Using a combination of automated and manual techniques that are tailored to the particular land cover and terrain of the study area, LiDAR processing will include kinematic corrections, calculation of laser point position, relative accuracy testing and calibrations, classification of ground and non-ground points, assessments of statistical absolute accuracy, and creation of ground surface models.

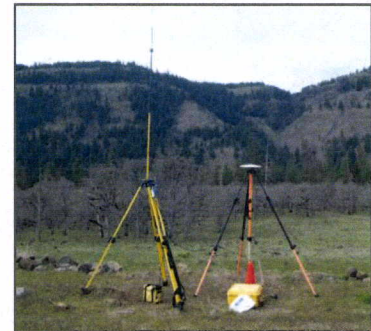
Absolute accuracy assessments will compare known RTK ground survey points to derived LiDAR points. Accuracies are described as the mean and standard deviation ($\sigma \sim \sigma$) of

divergence from RTK ground survey point coordinates. All accuracy statistics (RMSE_z, Accuracy_z - 1.96 σ , skewness/distribution, and percentile deviations) will be reported in the final report. Statements of statistical accuracy will apply to fixed terrestrial surfaces only.



Survey Control

Simultaneous to the LiDAR data collection mission, QSI will conduct a static (1 Hz recording frequency) survey of the horizontal and vertical positions of two or more survey control dual-frequency DGPS base stations established at monuments with known coordinates. Maximum baseline lengths between control points and the aircraft GPS do not exceed 24 kilometers (13 nautical miles). After the static GPS data have been collected, the files will be processed using the Online Positioning User Service (OPUS). Multiple sessions will be processed over the same monument to confirm antenna height measurements and reported OPUS position accuracy. Control monument locations for the entire Spokane project area will be certified by QSI Washington PLS.



Quality control real-time kinematic (RTK) ground check survey data will be collected within the project area, with an established Root Mean Square Error (RMSE) of less than 2 cm. Absolute laser spot accuracies will be statistically analyzed based upon an adequate sample of well-distributed RTK ground survey points on open, bare earth surfaces with level slope.

Deliverables

Deliverables will match standard for Puget Sound LiDAR Consortium (below). Deliverables will be provided integrated with the larger Spokane project area.

LiDAR	
Report of Survey	Text report that describes survey methods; results; vendor's accuracy assessments, including internal consistency and absolute accuracy; and metadata <i>.pdf, .doc, or .odt format</i>
Aircraft trajectories (SBET files)	Aircraft position (easting, northing, elevation) and attitude (heading, pitch, roll) and GPS time recorded at regular intervals of 1 second or less. May include additional attributes. <i>ASCII text format</i>
All-return point cloud	List of all valid returns. For each return: GPS week, GPS second, easting, northing, elevation, intensity, return#, return classification. May include additional attributes. No duplicate entries. <i>ASCII text and LAS version 1.2 format. 1/100th USGS 7.5-minute quadrangle (0.75 minute by 0.75 minute) tiles</i>
Ground point list	List of X,Y,Z coordinates of all identified ground points. <i>ASCII text. 1/100th USGS 7.5-minute quadrangle (0.75 minute by 0.75 minute) tiles</i>
Ground surface model	Raster of ground surface, interpolated via triangulated irregular network from identified ground points. No unavoidable point misclassification. <i>ESRI floating point grid, 3 ft cell size, snapped to (0,0), 1/4th USGS 7.5-minute quadrangle (3.75 minute by 3.75 minute) tiles</i>
First-return (highest-hit) surface model	Raster of first-return surface, cell heights are highest recorded value within that cell, voids may be filled with ground surface model. <i>ESRI floating point grid, 3 ft cell size, snapped to (0,0), 1/4th USGS 7.5-minute quadrangle (3.75 minute by 3.75 minute) tiles</i>
Intensity image	<i>GeoTIFF, 1.5. ft pixel size, 1/4th USGS 7.5-minute quadrangle (3.75 minute by 3.75 minute) tiles</i>
<i>Files shall conform to a consistent naming scheme. Files shall have consistent internal formats. Surface models shall have no tiling artifacts and no gaps at tile boundaries. Areas outside survey boundary shall be coded as NoData. Internal voids (e.g., open water areas, shadowed areas in first-return surface) may be coded as NoData.</i>	

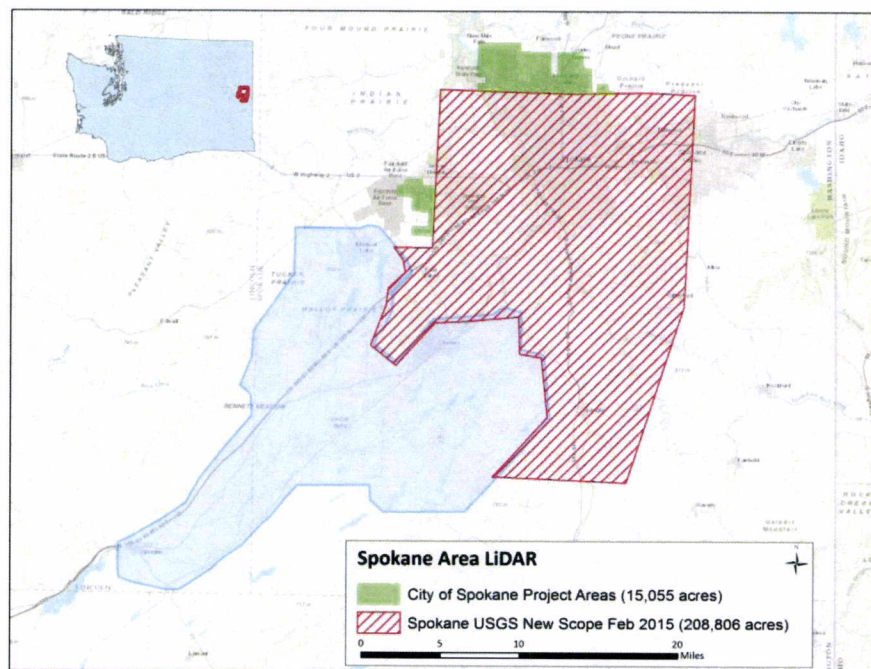


Coordinate System*	
Projection	UTM Zone 11
Horizontal Datum	NAD83 (2011)
Vertical Datum	NAVD88 (Geoid 12A)
Units	Meters
Delineations	USGS Quadrangle tiling scheme
*To match with existing data	

Area of Interest – City of Spokane Project Areas, WA

The areas of interest (AOI) for this cost proposal include 15,055 acres encompassing City of Spokane focal areas to the west and north of the USGS Spokane project area (Figure 1). Previous LiDAR collections for the Oregon LiDAR Consortium (OLC) are shown in blue. The AOI will be buffered by 100 meters to ensure complete coverage and adequate point densities around study area boundaries.

Figure 1. City of Spokane project areas of interest, WA.



Schedule

The project areas were acquired in mid-February 2015 (with USGS Spokane AOI). All data will be delivered to PSLC within 60 days of acquisition.

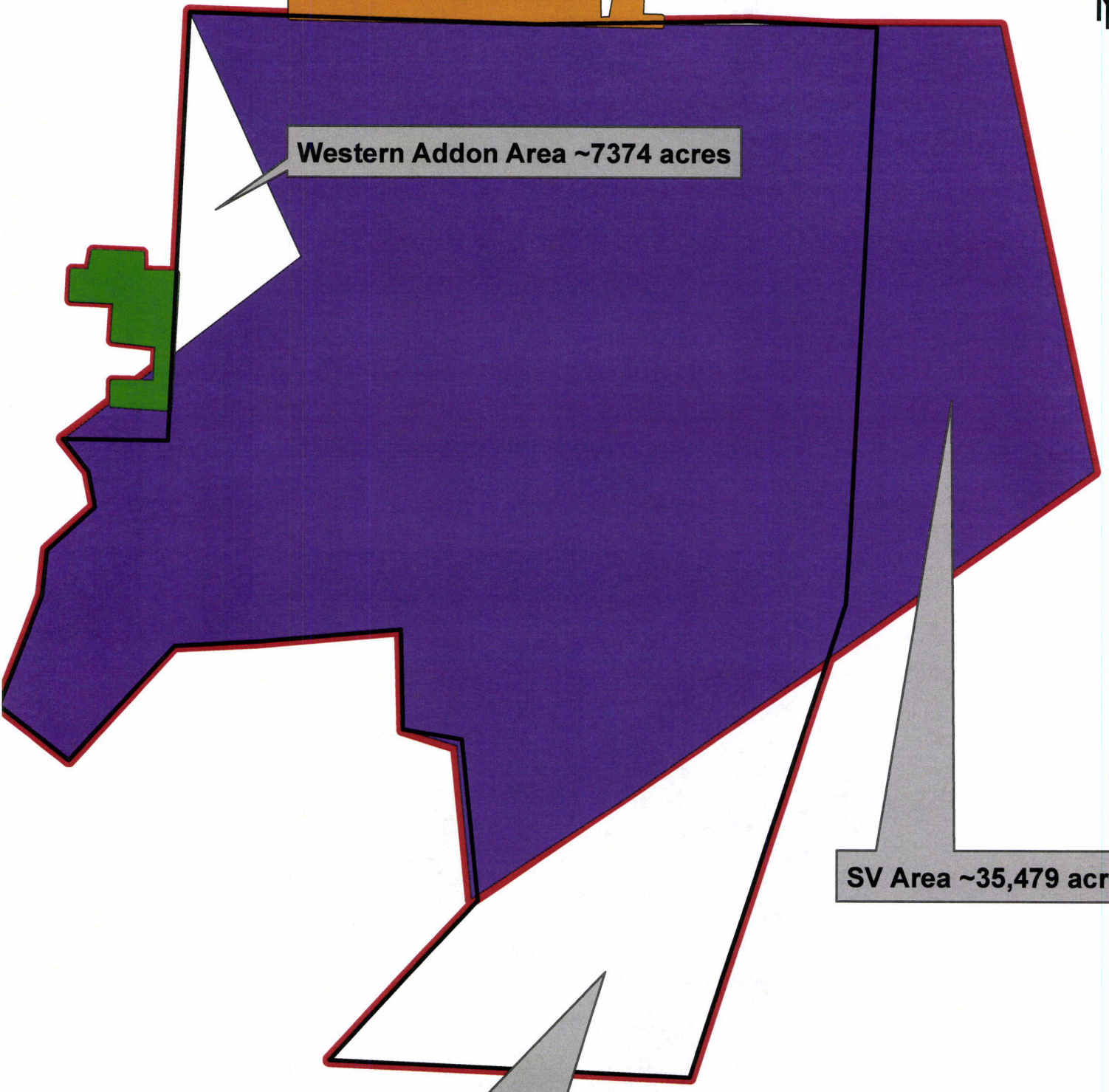
Cost Proposal

The following table presents LiDAR acquisition and processing costs for the City of Spokane project areas portrayed in Figure 1, assuming above specifications and deliverables, and assuming delivery of an integrated (City of Spokane with USGS) dataset to PSLC. Costs for are in accordance with QSI’s negotiated PSLC area-weighted rate structure for the larger area which is greater than 160,000 acres.

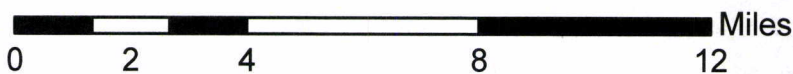
City of Spokane, WA (15,055 acres)	Total Cost	Per Acre Cost
LiDAR Acquisition and Base Processing	\$11,743	\$0.78






* budget does not include 14% PSLC administrative fee.

PSLC Spokane Scope



Area substituted for SV Area ~30,163 acres



-  Spokane USGS New Area
-  COS Addon West Area (2,909 acres)
-  COS Addon Northern Area (12,146 acres)
-  Spokane Original Scope (208,211 acres)
-  Spokane New Area With Western COS AOI