Final

ANGOON AIRPORT WETLAND WESPAK WETLAND ASSESSMENT

SURVEY RESULTS

Prepared for
ADOT&PF Southcoast Region

November 2019

ESA

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APPROACH

Several wetlands were delineated in the Proposed Project Area, and each has been classified as one of four types: *bog forest*, *bog woodland*, fen, and *salt marsh*; using the naming convention provided by the National Environmental Policy Act, Final Environmental Impact Statement (FEIS) for the Proposed Project (FAA 2016). For the wetlands likely to be determined to be jurisdictional (see ESA 2019), an assessment of their function and value has been performed to provide key mitigating metrics in the event they are impacted by the Proposed Project. Assessments were performed using Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE) (Adamus 2015). Because both tidal and non-tidal wetlands are present in the Proposed Project Area, and WESPAK provides two assessment methods based on whether a wetland is tidally influenced, both methods were used as appropriate. A summary of the delineated wetlands is provided in Table 1.

With the exception of fen wetlands, more than one wetland was delineated for each wetland type. In some cases, each delineated wetland was assessed independently because of being unique to the Proposed Project Area. However, in other cases, more than one wetland shared a diversity of characteristics, allowing them to be grouped and assessed by a single WESPAK-SE. These wetlands are generally part of larger wetland complexes; are the same wetland type; and share multiple characteristics such as geography, geology, and hydrology. An example from this survey is Wetland A (Table 1), which is composed of 10 separately delineated wetlands that share numerous characteristics. The similarity across the 10 Wetland A wetlands allows them to be grouped for WESPAK-SE, with a single representative wetland being assessed, and output applied to all wetlands in that group.

To assess the delineated wetlands using WESPAK-SE in a manner applicable to the greater Proposed Project, each wetland type was aligned across the three classification systems that have been used to date:

- The system established by the FEIS (FAA 2016)
- Cowardin classification system (Cowardin et al. 1979)
- HGM classification system (Powell et al. 2003)

Once each wetland was coded across these three wetland typing systems, they were then matched to the four wetland classes established by WESPAK-SE: *forested peatland*, *open peatland*, *fen/marsh*, and *tidal marsh* (Adamus 2015) (included in Table 1). The wetland ratings were performed using *Non-tidal WESPAK-SE v.2* for non-tidal wetlands, and *Tidal WESPAK-SE v.2* for tidally-influenced wetlands.

The condition of the wetlands in the Proposed Project Area have been degraded through time due to the various environmental and geotechnical studies performed in support of the Proposed Project. Thus, this WESPAK-SE wetland assessment is based specifically on the condition of the wetlands prior to the start of the study and degradation.

Table 1. Summary of wetlands delineated within the Proposed Project Area, including acreage and type

Wetland Name	Delineated Area (acre)*	Wet Habitat**	Cowardin Class	HGM Class	WESPAK-SE Wetland Type
A1	0.7	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A2	0.4	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A3	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A4	0.4	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A5	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A6	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A7	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A8	0.05	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A9	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
A10	0.1	Salt Marsh	E2EM1N	Estuarine Fringe Tidal	Tidal Marsh
B	0.1	Bog Forest	PFO4B	Slope Forest	Forested Peatland
C	0.006	Bog Forest	PFO4B	Slope Forest	Forested Peatland
D	1.0	Bog Forest	PFO4B	Slope Forest	Forested Peatland
E	0.2	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G1	67.0	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G2	2.7	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G3	0.6	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G4	0.2	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G5	2.7	Bog Forest	PFO4B	Slope Bog	Forested Peatland
G6	14.3	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G7	9.6	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G8	1.2	Fen	PEM1H	Slope Tidal	Fen/Marsh
G9	0.8	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G10	0.3	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G11	2.4	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G12	1.7	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G13	0.2	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G14	0.2	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G15	120.1	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G16	24.5	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G17	0.7	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G18	0.3	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G19	2.7	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G20	14.5	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G21	10.1	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G22	1.5	Bog Woodland	PFO1B	Slope Bog	Open Peatland
G23	0.1	Bog Forest	PFO4B	Slope Forest	Forested Peatland

Wetland Name	Delineated Area (acre)*	Wet Habitat**	Cowardin Class	HGM Class	WESPAK-SE Wetland Type
G24	0.6	Bog Forest	PFO4B	Slope Forest	Forested Peatland
G25	1.5	Bog Forest	PFO4B	Slope Forest	Forested Peatland
I	1.5	Bog Forest	PFO4B	Slope Forest	Forested Peatland
J	0.5	Bog Forest	PFO4B	Slope Forest	Forested Peatland
K	0.8	Bog Forest	PFO4B	Slope Forest	Forested Peatland
L	0.09	Bog Forest	PFO4B	Slope Forest	Forested Peatland
M	0.04	Bog Forest	PFO4B	Slope Forest	Forested Peatland
N	2.2	Bog Forest	PFO4B	Slope Forest	Forested Peatland
O	0.02	Bog Forest	PFO4B	Slope Forest	Forested Peatland
P	0.1	Bog Forest	PFO4B	Slope Forest	Forested Peatland
Q	1.2	Bog Forest	PFO4B	Slope Forest	Forested Peatland
R	0.5	Bog Forest	PFO4B	Slope Forest	Forested Peatland
S	3.0	Bog Forest	PFO4B	Slope Forest	Forested Peatland

* Some wetlands extend outside of the Proposed Project Area, and only portions located within are reported

** The water resource names used in the FEIS (FAA 2016)

RESULTS

Delineated wetlands with shared characteristics were clustered into 9 different groups for WESPAK-SE assessment (Table 2). Each wetland group received one WESPAK-SE assessment that represented all of the wetlands within that group.

Following the performing of WESPAK-SE on each group, outputs were produced that provide both quantitative and qualitative scores of quality. These scores are summarized in Table 3, below. Because more specific scores are also calculated and can provide additional insight on the functions and values of each wetland, a copy of the scoresheet for each group is provided in Appendix A. Copies of each entire workbook from each WESPAK-SE group are provided in Appendix B.

Table 2. Grouped wetlands with shared characteristics and their associated WESPAK-SE wetland type

Group Number	Grouped Wetlands	WESPAK-SE Wetland Type
1	A (1-10)	Tidal Marsh
2	B, J	Forested Peatland
3	C, K, O, P	Forested Peatland
4	D, E, I	Forested Peatland
5	G1, 4, 6, 7, 16, 20, 22	Open Peatland
6	G2, 3, 5, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 23, 24, 25	Forested Peatland
7	G8	Fen
8	L, M	Forested Peatland
9	N, Q, R, S	Forested Peatland

Table 3. Summary table of WESPAK-SE overall scores and ratings for each wetland group

Group Number	Grouped Wetlands	Overall Score	Overall Rating
1	A (1-10)	5.36	Moderate
2	B, J	6.68	Moderate
3	C, K, O, P	6.58	Moderate
4	D, E, I	7.18	Higher
5	G1, 4, 6, 7, 16, 20, 22	7.89	Higher
6	G2, 3, 5, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 23, 24, 25	7.64	Higher
7	G8	8.09	Higher
8	L, M	7.45	Higher
9	N, Q, R, S	7.79	Higher

LITERATURE CITED

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Appendix A

WESPAK-SE Scoresheets for each Wetland Group Assessed in the Proposed Angoon Airport Project Area; Groups are Presented in the Order They Appear in Table 2 and Table 3

ESA

Group 1

Scores for TIDAL Wetland Functions and Values: WESPAK-SE version 2	
Site Name or Site ID#:	Angoon Airport
Investigator Name:	Environmental Science Associates (ESA)
Date of Field Assessment:	13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018
Nearest Town:	Angoon, Alaska
Latitude (decimal degrees):	57.475520°
Longitude (decimal degrees):	-134.553167°
HUC12 Watershed #:	19010204
Approximate size of the Assessment Area (AA, in acres)	8 acres, including area of open water (2.15 acres of fringe wetland)
AA as percent of entire wetland (approx.)	100
Tidal phase during most of visit:	Low
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Have you attended a training session for this protocol? If so, indicate approximate month & year.	No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM
How many wetlands have you assessed previously using this protocol (approx.)?	6

Scores will appear below after data are entered in worksheets OF, T, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this Tidal Wetland Assessment Area (AA):										**FUNCTION**			**VALUE**		
										Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)*		Median of Normalized V Scores	*Thresholds for Value Rating (normalized)*	
Functions and Their Values:	Score Raw	Score Raw	**Score (normalized)**	**n Rating**	**Score (normalize**	**Value Rating**	FV	FV Index	**(normalized)**		Low is < or =	High is >		Low is < or =	is > or =
Sediment Retention & Stabilization (SR)	7.25	10.00	6.33	High	10.00	High	8.17	8.17	7.90	4.11	3.56	5.96	5.22	5.22	10.00
Carbon Sequestration (CS)	6.64		3.85	Moderate			3.85	3.85	2.93	3.40	2.65	5.62			
Organic Nutrient Export (OE)	6.21		7.33	High			7.33	7.33	7.33	5.72	3.81	6.80			
Anadromous Fish Habitat (FA)	5.12	10.00	9.20	High	10.00	High	9.60	9.60	9.60	6.95	6.12	7.64	5.00	3.56	6.67
Waterbird Feeding Habitat (WBF)	6.94	10.00	8.92	High	10.00	High	9.46	9.46	9.46	4.12	3.34	5.88	0.00	0.00	0.67
Songbird, Raptor, & Mammal Habitat (SB	2.36	10.00	1.13	Low	10.00	High	5.57	5.57	5.18	5.79	2.98	6.41	0.00	0.00	10.00
Native Plant Habitat (PH)	3.60	1.00	1.71	Low	0.00	Low	0.86	1.71	1.43	5.14	2.93	6.42	2.59	2.59	6.30
Other Values or Attributes:															
Public Use (PU)		2.29			0.73	Low	0.73	0.73	0.00				4.40	3.30	6.24
Subsistence & Provisioning Services (Subsis)		4.35			6.53	Moderate	6.53	6.53	6.53				4.17	4.72	7.22
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.35			2.51	Moderate	2.51	2.51	0.68				3.20	2.48	4.42
Stress Potential (STR) - *not used in subsequent calculations*		3.30			2.22	Moderate	2.22	2.22	0.96				2.89	1.72	4.13
						AVG w/o Social	with Social	selected Higher	normalized						
Overall Score (see Manual for explanation of how the spreadsheet calculates it):	**5.36**					6.39	7.60	7.60	5.36						
Overall Rating:	Moderate														

Group 2

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.60**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	Function Score (normalized)	Function Rating	Value Score (normalized)	Value Rating	FV raw	FV Index	FV Index (normalized)	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized score) Low is < or =	VALUE: Thresholds for Value Rating (normalized score) High is >
Surface Water Storage (WS)	6.06	7.78	5.54	Moderate	7.78	Higher	6.66	6.66	5.82	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	1.36	0.81	1.63	Lower	1.22	Lower	1.43	1.63	1.63	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	2.33	1.67	2.33	Lower	2.20	Moderate	2.27	2.33	1.79	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	5.93	0.62	5.93	Moderate	1.16	Lower	3.54	5.93	5.15	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	5.00	3.60	3.64	Moderate	7.85	Higher	5.74	5.74	5.80	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.00	7.78	1.02	Lower	10.00	Higher	5.51	5.51	5.14	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	4.72	6.50	1.89	Lower	7.39	Higher	4.64	4.64	4.64	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	5.22		2.22	Lower			2.22	2.22	2.22	6.53	3.66	6.43			
Organic Nutrient Export (OE)	4.75	5.70	6.86	Moderate	5.73	Moderate	6.30	6.86	6.86	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	3.24	10.00	0.88	Lower	10.00	Higher	5.44	5.44	5.44	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.09	6.67	3.32	Lower	8.48	Higher	5.90	5.90	5.36	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.88	0.00	5.61	Moderate	0.00	Lower	2.80	5.61	5.61	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.83	8.89	7.20	Moderate	8.89	Higher	8.04	8.04	7.95	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	3.46	7.15	4.59	Moderate	9.58	Higher	7.08	7.08	6.89	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.75	9.53	3.24	Lower	9.44	Higher	6.34	6.34	5.81	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		3.06			4.09	Moderate	4.09	4.09	4.09				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.58			3.68	Lower	3.68	3.68	4.03				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		2.53			2.66	Lower	2.66	2.66	2.80				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		7.31			10.00	Higher	10.00	10.00	10.00				6.43	3.31	5.73
Summary Scores for Groups:								Group Score Not Normalized	Group Score Normalized	Group Rating					
HYDROLOGIC Group (WS)								5.82	5.82	Moderate	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								5.12	3.46	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								5.52	1.23	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.63	3.51	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								7.41	6.56	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

		AVG w/o Soci	with Soci	selected higher	normalized
Overall Score (see Manual for explanation of how the spreadsheet	6.68	4.99	7.18	7.18	6.68
Overall Rating:	**Moderate**				

Group 3

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.93**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Score raw	Score (normalized)	Function Rating	Value Score (normalized)	Value Rating	FV raw	FV Index	(normalized)	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized score) Low is < or =	VALUE: Thresholds for Value Rating (normalized score) High is >
Surface Water Storage (WS)	3.11	1.81	2.19	Lower	1.81	Lower	2.00	2.19	0.24	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	5.83	1.44	7.00	Higher	2.16	Moderate	4.58	7.00	7.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	6.20	3.17	6.20	Higher	4.18	Moderate	5.19	6.20	5.93	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.25	3.68	6.25	Moderate	6.84	Higher	6.54	6.54	5.88	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	3.27	0.42	1.43	Lower	0.57	Lower	1.00	1.43	0.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.61	1.15	1.92	Lower	1.16	Lower	1.54	1.92	1.26	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	4.63	3.13	1.74	Lower	3.29	Moderate	2.52	2.52	2.52	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.41		4.53	Moderate			4.53	4.53	4.53	6.53	3.66	6.43			
Organic Nutrient Export (OE)	5.60	6.67	8.09	Higher	6.71	Moderate	7.40	8.09	8.09	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.75	10.00	5.97	Higher	10.00	Higher	7.98	7.98	7.98	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.73	6.25	4.48	Moderate	7.72	Higher	6.10	6.10	5.59	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	2.84	0.00	4.10	Moderate	0.00	Lower	2.05	4.10	4.10	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	6.73	10.00	8.31	Higher	10.00	Higher	9.16	9.16	9.11	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.90	7.15	11.74	Higher	9.58	Higher	10.66	11.74	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.46	9.53	8.58	Higher	9.44	Higher	9.01	9.01	9.27	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.20			2.56	Moderate	2.56	2.56	2.56				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		10.00			10.00	Higher	10.00	10.00	10.00				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		5.05			8.74	Higher	8.74	8.74	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.65			5.95	Higher	5.95	5.95	6.26				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.90			7.30	Higher	7.30	7.30	10.00				6.43	3.31	5.73
Summary Scores for Groups:								Group Score Not Normalized	Group Score Normalized	Group Rating					
HYDROLOGIC Group (WS)								0.24	0.24	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								3.30	0.50	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								7.53	5.76	Moderate	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.41	3.23	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.73	9.64	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								10.00	10.00	Higher	3.66	6.58			

Overall Score (see Manual for explanation of how the spreadsheet	6.58
Overall Rating:	Moderate

AVG w/o Socia	with Socia	selected higher	normalized
6.43	7.10	7.10	6.58

Group 4

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**2.70**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	Function Score (normalized)	Function Rating	Value Score (normalized)	Value Rating	FV raw	FV Index	FV Index (normalized)	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized score) Low is < or =	VALUE: Thresholds for Value Rating (normalized score) High is >
Surface Water Storage (WS)	3.96	0.00	3.16	Moderate	0.00	Lower	1.58	3.16	1.44	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	6.71	1.40	8.05	Higher	2.10	Moderate	5.08	8.05	8.05	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.25	3.75	7.25	Higher	4.95	Moderate	6.10	7.25	7.05	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	4.43	5.85	4.43	Moderate	10.00	Higher	7.22	7.22	6.68	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	4.94	2.46	3.56	Moderate	5.25	Moderate	4.41	4.41	2.56	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	6.61	3.38	4.92	Moderate	4.74	Moderate	4.83	4.92	4.51	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.35	6.17	2.86	Moderate	6.99	Higher	4.92	4.92	4.92	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.55		4.82	Moderate			4.82	4.82	4.82	6.53	3.66	6.43			
Organic Nutrient Export (OE)	7.05	6.67	10.18	Higher	6.71	Moderate	8.44	10.18	10.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.58	10.00	5.63	Higher	10.00	Higher	7.82	7.82	7.82	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.96	6.25	4.90	Moderate	7.72	Higher	6.31	6.31	5.83	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	4.05	0.00	5.85	Moderate	0.00	Lower	2.93	5.85	5.85	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	7.32	10.00	9.04	Higher	10.00	Higher	9.52	9.52	9.49	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	8.11	7.15	12.07	Higher	9.58	Higher	10.83	12.07	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.66	9.53	9.22	Higher	9.44	Higher	9.33	9.33	9.68	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.54			3.17	Moderate	3.17	3.17	3.17				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.41			6.53	Moderate	6.53	6.53	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		6.83			7.19	Higher	7.19	7.19	7.57				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		5.40			8.42	Higher	8.42	8.42	10.00				6.43	3.31	5.73
Summary Scores for Groups:								Group Score Not Normalized	Group Score Normalized	Group Rating					
HYDROLOGIC Group (WS)								1.44	1.44	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								4.56	2.54	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.96	8.97	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.87	3.81	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.86	9.82	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

		AVG w/o Soc	with Soc	selected higher	normalized
Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.18	7.12	7.61	7.61	7.18
Overall Rating:	Higher				

Group 5

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**131.60**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Score raw	Score (normalized)	Function Rating	Value Score (normalized)	Value Rating	FV raw	FV Index	(normalized)	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized score) Low is < or =	VALUE: Thresholds for Value Rating (normalized score) High is >
Surface Water Storage (WS)	6.28	1.11	5.79	Moderate	1.11	Lower	3.45	5.79	4.73	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	8.33	2.80	10.00	Higher	4.21	Moderate	7.11	10.00	10.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	10.00	3.00	10.00	Higher	3.96	Moderate	6.98	10.00	10.00	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	10.00	5.24	10.00	Higher	9.75	Higher	9.88	10.00	10.00	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	6.11	0.28	5.05	Moderate	0.25	Lower	2.65	5.05	4.12	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	7.67	1.54	6.51	Higher	1.79	Lower	4.15	6.51	6.23	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.38	3.17	2.90	Moderate	3.34	Moderate	3.12	3.12	3.12	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	8.12		7.88	Higher			7.88	7.88	7.88	6.53	3.66	6.43			
Organic Nutrient Export (OE)	4.93	5.70	7.12	Moderate	5.73	Moderate	6.43	7.12	7.12	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	5.21	6.67	7.21	Moderate	6.67	Moderate	6.94	7.21	7.21	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.98	10.00	6.45	Higher	10.00	Higher	8.22	8.22	8.22	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	4.79	6.25	2.77	Lower	7.72	Higher	5.25	5.25	4.62	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.14	10.00	6.34	Moderate	10.00	Higher	8.17	8.17	8.08	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	6.67	7.15	9.76	Higher	9.58	Higher	9.67	9.76	9.74	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.93	9.53	3.79	Lower	9.44	Higher	6.61	6.61	6.17	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		1.98			2.16	Lower	2.16	2.16	2.16				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		7.78			7.78	Higher	7.78	7.78	7.78				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		5.14			9.05	Higher	9.05	9.05	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.17			5.44	Higher	5.44	5.44	5.72				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.70			6.84	Higher	6.84	6.84	10.00				6.43	3.31	5.73
Summary Scores for Groups:								Group Score Not Normalized	Group Score Normalized	Group Rating					
HYDROLOGIC Group (WS)								4.73	4.73	Moderate	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								6.61	5.87	Moderate	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								9.53	10.00	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								5.41	5.41	Moderate	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								3.08	1.57	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								8.87	8.50	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								7.78	8.91	Higher	3.66	6.58			

		AVG w/o Socia	with Socia	selected higher	normalized
Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.89	8.01	8.21	8.21	7.89
Overall Rating:	Higher				

Group 6

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**147.70**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):										**FUNCTION**			**VALUE**		
										Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)*		Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)*	
Specific Functions or Values:	Function Score raw	Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**		Low is < or =	High is >		Low is < or =	High is >
Surface Water Storage (WS)	3.96	1.11	3.16	Moderate	1.11	Lower	2.13	3.16	1.44	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	6.50	4.01	7.80	Higher	6.05	Higher	6.92	7.80	7.80	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.53	5.84	7.53	Higher	7.70	Higher	7.62	7.62	7.44	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	4.03	4.63	4.03	Moderate	8.61	Higher	6.32	6.32	5.61	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	5.33	2.85	4.06	Moderate	6.14	Higher	5.10	5.10	4.24	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	6.99	4.68	5.48	Moderate	6.82	Higher	6.15	6.15	5.84	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.39	6.00	2.91	Moderate	6.78	Higher	4.85	4.85	4.85	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.66		5.04	Moderate			5.04	5.04	5.04	6.53	3.66	6.43			
Organic Nutrient Export (OE)	6.86	5.70	9.92	Higher	5.73	Moderate	7.83	9.92	9.92	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	5.01	4.71	6.53	Moderate	4.71	Moderate	5.62	6.53	6.53	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	5.93	6.67	8.20	Higher	6.67	Moderate	7.44	8.20	8.20	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.12	10.00	4.70	Moderate	10.00	Higher	7.35	7.35	7.35	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.72	6.25	4.45	Moderate	7.72	Higher	6.09	6.09	5.57	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.63	0.00	5.24	Moderate	0.00	Lower	2.62	5.24	5.24	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	7.37	10.00	9.10	Higher	10.00	Higher	9.55	9.55	9.53	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.94	7.15	11.81	Higher	9.58	Higher	10.69	11.81	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.48	9.53	8.65	Higher	9.44	Higher	9.04	9.04	9.31	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		1.98			2.16	Lower	2.16	2.16	2.16				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		7.78			7.78	Higher	7.78	7.78	7.78				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.46			6.72	Moderate	6.72	6.72	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		6.42			6.75	Higher	6.75	6.75	7.11				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.90			7.29	Higher	7.29	7.29	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								1.44	1.44	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								5.41	3.93	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.77	8.54	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								7.79	7.79	Higher	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.59	3.45	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.81	9.74	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								7.78	8.91	Higher	3.66	6.58			
			AVG w/o Socia	with Socia	selected higher	normalized									
Overall Score (see Manual for explanation of how the spreadsheet	7.64		7.78	8.00	8.00	7.64									
Overall Rating:	**Higher**														

Group 7

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**1.20**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):										FUNCTION			VALUE		
										Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)*		Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)*	
Specific Functions or Values:	Function Score raw	Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**		Low is < or =	High is >		Low is < or =	High is >
Surface Water Storage (WS)	2.13	0.56	1.08	Lower	0.56	Lower	0.82	1.08	0.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	8.06	4.35	9.67	Higher	6.55	Higher	8.11	9.67	9.67	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	4.69	5.89	4.69	Moderate	7.77	Higher	6.23	6.23	5.96	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.90	5.29	6.90	Higher	9.84	Higher	8.37	8.37	8.05	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	4.09	3.75	2.48	Lower	8.20	Higher	5.34	5.34	4.81	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.46	5.24	1.71	Lower	7.71	Higher	4.71	4.71	4.27	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.62	5.88	3.26	Moderate	6.63	Higher	4.95	4.95	4.95	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	5.23		2.23	Lower			2.23	2.23	2.23	6.53	3.66	6.43			
Organic Nutrient Export (OE)	3.80	6.67	5.50	Moderate	6.71	Moderate	6.10	6.10	6.10	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	5.11	6.80	6.67	Moderate	6.80	Higher	6.73	6.73	6.73	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	6.69	6.80	9.26	Higher	6.80	Moderate	8.03	9.26	9.26	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.59	10.00	5.66	Higher	10.00	Higher	7.83	7.83	7.83	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	7.02	6.25	6.83	Higher	7.72	Higher	7.27	7.27	6.92	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	6.80	4.22	9.37	Higher	5.48	Higher	7.42	9.37	10.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	7.01	8.60	10.12	Higher	8.60	Moderate	9.36	10.12	10.00	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	4.77	10.00	5.88	Moderate	10.00	Higher	7.94	7.94	7.84	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	6.10	7.15	8.84	Higher	9.58	Higher	9.21	9.21	9.15	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.19	9.53	7.74	Higher	9.44	Higher	8.59	8.59	8.73	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.12			2.41	Moderate	2.41	2.41	2.41				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.21			2.40	Lower	2.40	2.40	0.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.58			5.88	Higher	5.88	5.88	6.19				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.66			6.77	Higher	6.77	6.77	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								0.00	0.00	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								4.51	2.45	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.60	8.15	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								8.63	8.63	Higher	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								9.49	9.56	Higher	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								8.86	8.49	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			
			AVG w/o Socia	with Socia	selected higher	normalized									
Overall Score (see Manual for explanation of how the spreadsheet	8.09		7.89	8.38	8.38	8.09									
Overall Rating:	**Higher**														

Group 8

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.13**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):										**FUNCTION**			**VALUE**		
										Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)*		Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)*	
Specific Functions or Values:	Function Score raw	Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**		Low is < or =	High is >		Low is < or =	High is >
Surface Water Storage (WS)	10.00	9.17	10.00	Higher	9.17	Higher	9.58	10.00	10.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	2.06	0.00	2.06	Lower	0.00	Lower	1.03	2.06	1.49	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.27	0.00	6.27	Moderate	0.00	Lower	3.13	6.27	5.55	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	10.00	1.66	10.00	Higher	3.41	Moderate	6.71	10.00	10.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	10.00	7.78	10.00	Higher	10.00	Higher	10.00	10.00	10.00	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	10.00	3.58	10.00	Higher	3.85	Moderate	6.92	10.00	10.00	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.46		4.65	Moderate			4.65	4.65	4.65	6.53	3.66	6.43			
Organic Nutrient Export (OE)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	3.92	10.00	2.26	Lower	10.00	Higher	6.13	6.13	6.13	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.04	6.67	3.22	Lower	8.48	Higher	5.85	5.85	5.30	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.10	0.00	4.48	Moderate	0.00	Lower	2.24	4.48	4.48	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.31	8.89	6.56	Moderate	8.89	Higher	7.72	7.72	7.61	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	4.67	7.15	6.53	Higher	9.58	Higher	8.06	8.06	7.92	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.67	9.53	2.99	Lower	9.44	Higher	6.21	6.21	5.65	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		3.39			4.69	Moderate	4.69	4.69	4.69				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.54			6.98	Moderate	6.98	6.98	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		3.22			3.39	Moderate	3.39	3.39	3.57				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		8.93			10.00	Higher	10.00	10.00	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								10.00	10.00	Higher	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								9.33	10.00	Higher	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								4.38	0.00	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.28	3.07	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								7.49	6.66	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

		AVG w/o Socia	with Socia	selected higher	normalized
Overall Score (see Manual for explanation of how the spreadsheet	7.45	7.48	7.84	7.84	7.45
Overall Rating:	**Higher**				

Group 9

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**6.90**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month &	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):										**FUNCTION**			**VALUE**		
											Thresholds for Function Rating (normalized score)			*Thresholds for Value Rating (normalized score)*	
Specific Functions or Values:	Function Score raw	Value Score raw	**Function Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**FV Index (normalized)**	Median of Normalized F Scores	Low is < or =	High is >	Median of Normalized V Scores	Low is < or =	High is >
Surface Water Storage (WS)	10.00	1.67	10.00	Higher	1.67	Lower	5.83	10.00	10.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.67	0.00	7.67	Higher	0.00	Lower	3.83	7.67	7.50	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	3.93	0.00	3.93	Moderate	0.00	Lower	1.97	3.93	2.76	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization	10.00	0.30	10.00	Higher	0.31	Lower	5.15	10.00	10.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	10.00	6.67	10.00	Higher	10.00	Higher	10.00	10.00	10.00	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	10.00	3.25	10.00	Higher	3.44	Moderate	6.72	10.00	10.00	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	7.35		6.38	Moderate			6.38	6.38	6.38	6.53	3.66	6.43			
Organic Nutrient Export (OE)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.12	10.00	4.70	Moderate	10.00	Higher	7.35	7.35	7.35	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.75	6.25	4.52	Moderate	7.72	Higher	6.12	6.12	5.61	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	2.92	0.00	4.21	Moderate	0.00	Lower	2.11	4.21	4.21	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	6.59	10.00	8.13	Higher	10.00	Higher	9.07	9.07	9.02	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.73	7.15	11.47	Higher	9.58	Higher	10.52	11.47	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	5.82	9.53	6.59	Higher	9.44	Higher	8.01	8.01	7.98	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.22			2.59	Moderate	2.59	2.59	2.59				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.59			7.14	Moderate	7.14	7.14	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		8.92			9.39	Higher	9.39	9.39	9.88				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		5.11			7.77	Higher	7.77	7.77	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								10.00	10.00	Higher	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								9.55	10.00	Higher	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								5.51	1.22	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.44	3.27	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.50	9.33	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

		AVG w/o Socia	with Socia	selected higher	normalized
Overall Score (see Manual for explanation of how the spreadsheet	7.79	7.82	8.13	8.13	7.79
Overall Rating:	**Higher**				

Appendix B

WESPAK-SE Workbooks for each Wetland Group Assessed in the Proposed Angoon Airport Project Area; Presented in the Order They Appear in Table 2 and Table 3

ESA

GROUP 1

WESPAK SE TIDAL REPORT

Wetlands A1, A2, A3, A4, A5, A6, A7, A8, A9, A10

Scores for TIDAL Wetland Functions and Values: WESPAK-SE version 2	
Site Name or Site ID#:	Angoon Airport
Investigator Name:	Environmental Science Associates (ESA)
Date of Field Assessment:	13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018
Nearest Town:	Angoon, Alaska
Latitude (decimal degrees):	57.475520°
Longitude (decimal degrees):	-134.553167°
HUC12 Watershed #:	19010204
Approximate size of the Assessment Area (AA, in acres)	8 acres, including area of open water (2.15 acres of fringe wetland)
AA as percent of entire wetland (approx.)	100
Tidal phase during most of visit:	Low
What percent (approx.) of the **wetland** were you able to visit?	100
What percent (approx.) of the **AA** were you able to visit?	100
Have you attended a training session for this protocol? If so, indicate approximate month & year.	No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM
How many wetlands have you assessed previously using this protocol (approx.)?	6

Scores will appear below after data are entered in worksheets OF, T, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this Tidal Wetland Assessment Area (AA):

Functions and Their Values:	Score Raw	Score Raw	Score (normalized)	Function Rating	(normalized)	Value Rating	FV	FV Index	(normalized)	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized) Low is < or =	VALUE: Thresholds for Value Rating (normalized) High is > or =
Sediment Retention & Stabilization (SR)	7.25	10.00	6.33	High	10.00	High	8.17	8.17	7.90	4.11	3.56	5.96	5.22	5.22	10.00
Carbon Sequestration (CS)	6.64		3.85	Moderate			3.85	3.85	2.93	3.40	2.65	5.62			
Organic Nutrient Export (OE)	6.21		7.33	High			7.33	7.33	7.33	5.72	3.81	6.80			
Anadromous Fish Habitat (FA)	5.12	10.00	9.20	High	10.00	High	9.60	9.60	9.60	6.95	6.12	7.64	5.00	3.56	6.67
Waterbird Feeding Habitat (WBF)	6.94	10.00	8.92	High	10.00	High	9.46	9.46	9.46	4.12	3.34	5.88	0.00	0.00	0.67
Songbird, Raptor, & Mammal Habitat (SBM)	2.36	10.00	1.13	Low	10.00	High	5.57	5.57	5.18	5.79	2.98	6.41	0.00	0.00	10.00
Native Plant Habitat (PH)	3.60	1.00	1.71	Low	0.00	Low	0.86	1.71	1.43	5.14	2.93	6.42	2.59	2.59	6.30
Other Values or Attributes:															
Public Use (PU)		2.29			0.73	Low	0.73	0.73	0.00				4.40	3.30	6.24
Subsistence & Provisioning Services (Subsis)		4.35			6.53	Moderate	6.53	6.53	6.53				4.17	4.72	7.22
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.35			2.51	Moderate	2.51	2.51	0.68				3.20	2.48	4.42
Stress Potential (STR) - *not used in subsequent calculations*		3.30			2.22	Moderate	2.22	2.22	0.96				2.89	1.72	4.13
						AVG w/o Social	with Social	selected Higher	normalized						
						6.39	7.60	7.60	5.36						

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	**5.36**
Overall Rating:	Moderate

A B C D E

Office (OF) Data Form. Tidal WESPAK-SE version 2.0

DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in last column below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: SR= Sediment Retention, CS= Carbon Sequestration, OE= Organic Export, FA= Anadromous Fish, WBF= Feeding Waterbirds, SBM= Songbirds, Mammals, & Raptors, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, Sens= Sensitivity, STR= Stressors.

#	Indicator	Condition Choices	Data	Explanations, Definitions
OF1	Geography	Enter 1 for ALL that are true. The AA is located:		[CS, OE, FA, WBF, SBM]
		in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or estuaries	0	
		in another mainland area or inner coast	1	
		on or close to the outer coast	0	
OF2	Geomorphic Setting	As viewed at a coarse (e.g., 1:24000) scale, the AA is (select one):		***Major river** = channel >150 ft wide at mean annual flow. **Head of tide** = the farthest point upriver where no daily fluctuations in water levels due to tides are noticeable, even during river base-flow conditions. [CS, OE, FA, WBF, SBM, PH]
		Adjoined by a major* river, and is closer to the upriver head-of-tide than to marine bays or ocean; if known, the water salinity is <5 ppt at low tide nearly all the year.	0	
		Adjoined by a major* river, and is closer to marine bays or ocean than to upriver head-of-tide; may be in a river delta; if known, the water salinity is >5 ppt at low tide nearly all the year.	0	
		In a sheltered fish-accessible lagoon, embayment, pocket beach, or tidal slough with a relatively narrow connection to other marine waters and no direct river inputs (a small tributary may be present).	1	
		On a marine fjord, canal, or strait with no major river adjoining the AA itself.	0	
		Other setting	0	
OF3	Distance to Nearest Population Center	From the center of the AA, the distance to the nearest population center, via the nearest maintained road, is:		"Population center" means a settled area with more than 50 year-round residents per square mile. The road distance can be measured automatically by going online and entering the coordinates in **maps.google.com** [FAv, WBFv, SBM, PH, PU, Subsis]
		<0.5 mile	0	
		0.5 - 2 miles	1	
		2-5 miles	0	
		5-10 miles	0	
		>10 miles	0	
OF4	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark 1= yes can move, or 0= no.	1	The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. Presence of culverts or bridges along the route is irrelevant. [SBM]
OF5	Distance to Nearest Road	The distance from the **center** of the AA to the nearest maintained road (dirt or paved) is:		In the online WESPAK-SE Wetlands Module, Table of Contents, mark Transportation and ADOT road layers to show road networks. [PH]
		<100 ft	0	
		100-500 ft	1	
		500-1000 ft	0	
		1000-2600 ft	0	
		0.5- 1 mile	0	
		>1 mile	0	
OF6	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest tract or corridor of **natural** (not necessarily native) land cover **larger than 100 acres**, is:		**Natural cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas. It **does not include water,** glaciers, annual crops,

A	B	C	D	E
		<150 ft, or >100 acres of natural land cover is connected to the AA (not separated by roads, stretches of open water, bare ground, lawn, or impervious surface of any width), or the AA contains >100 acres of vegetation.	1	residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. **It can include areas with invasive plants.** Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [SBM, PH]
		<150 ft, but separated from the 100-acre natural land patch by roads, stretches of open water, bare ground, lawn, or impervious surface of any width, and the AA does not contain >100 acres of vegetation.	0	
		150-300 ft, with or without interrupting features	0	
		300-1000 ft, with or without interrupting features	0	
		none of the above	0	
OF7	Natural Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has *natural land cover* (**see definition on right**) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [SBM, PH]
		<5% of the land (excluding ocean and bay)	0	
		5 to 20% of the land	0	
		20 to 60% of the land	0	
		60 to 90% of the land	0	
		>90% of the land. **SKIP to OF9.**	1	
OF8	Type of Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is not "natural cover" or water is mostly:		[SBM, PH]
		impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
		bare or semi-bare pervious surface, e.g., recent clearcut, dirt or gravel road, lawn, plowed fields, landslide.	0	
OF9	Size of Largest Nearby Tract or Corridor of Natural Land Cover	The largest patch or corridor that is natural land cover **and is contiguous with** vegetation in the AA (i.e., not separated by roads or channels that create gaps wider than 150 ft), and includes the AA's vegetated area itself, occupies:		Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and use its measure tool to determine acreage. [SBM, PH]
		<1 acre, or larger but with average width <150 ft	0	
		1-10 acres	0	
		10-100 acres	0	
		100-1000 acres	0	
		>1000 acres	1	
OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. The number of separate ponds and lakes (excluding ones associated with this AA, but including other non-tidal wetlands if they have >1 acre of ponded open water in one patch) is:		Ponded water = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [WBF]
		0	0	
		1 or 2	1	
		3 to 6	0	
		7 to 9	0	
		10 to 12	0	
		>12	0	
OF11	Distance to Lake	The distance from the AA edge to the closest **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [WBF]
		<1 mile	0	
		1-5 miles	1	
		>5 miles and on the mainland or the same island	0	
		>5 miles and on a different island	0	
OF12	ShoreZone Habitat Diversity	The number of **"Coastal Classes"** (colors) mapped within 1 water mile of the AA, including the AA itself, is (*see directions in column E*):		1) In the WESPAK Module's Table of Contents menu, click on ShoreZone. 2) Expand the menu (click on +) and check Derived ShoreZone Attributes. Web site may take up to 20 seconds to respond to each click. 3) Expand (+) that menu, then check BC Class. 4) Count the number of colors within 1 water-mile of the AA, not necessarily on the same shoreline. Include only fish-accessible areas. [FA, WBF]
		1 or 2	1	
		3 or 4	0	
		5 to 7	0	
		8 to 11	0	
		>11	0	
		not mapped	0	

A	B	C	D	E
OF13	Biological Wave Exposure	The **Biological Wave Exposure** of most of the AA is shown as: (see directions in column E)		1) In the Module's Table of Contents menu, click on ShoreZone. 2) Expand the menu (click on +) and check Derived ShoreZone Attributes. 3) Expand (+) that menu, then check BC Class. Web site may take up to 20 seconds to respond. [SR, CS, OE, WBF, SBM, Sens]
		very protected	0	
		protected	1	
		semi-protected	0	
		semi-exposed	0	
		exposed or very exposed	0	
		not mapped	0	
OF14	Distance to Separate Tidal Marsh	The distance by water to the closest tidal marsh **that is distinct from the AA** (>150 ft away and separated by subtidal water, permanent channel, or upland) is:		1) In the Module's Table of Contents menu, click on ShoreZone. 2) Expand the menu (click on +) and check Biological Attributes, expand (+) that menu, then check Salt Marsh Vegetation and Sedges. Uncheck all others. Web site may take up to 20 seconds to respond. 4) Alternatively, check Response Attributes, expand that menu, then Environmental Sensitivity Index and look for Salt & Brackish Water Marsh. 5) Additionally, verify with aerial imagery and/or do field survey. Measure the inter-marsh distances from their edges. [FA, WBF, PHv, PU, Sens]
		150-1000 ft	1	
		1000 ft - 1 mile	0	
		1-5 miles	0	
		>5 miles	0	
OF15	Distance to Eelgrass or Kelp	The distance by water to the closest patch of **eelgrass or kelp** is [*see directions in column E*]:		Follow steps 1 and 2 above, then check Seagrass Biobands and Canopy Kelp Biobands. Additionally, verify with aerial imagery and/or do field survey. [SRv, FA, WBF]
		<150 ft, or present within the AA	1	
		150-1000 ft	0	
		>1000 ft	0	
OF16	Adjoining Mudflat Width	The **width of mudflat,** measured at its **widest point** along a transect between the vegetated wetland and adjoining water that remains during mean daily low tide, is [*see directions in column E*]:		"Mudflat" does not include areas that are mainly sand, cobble, or gravel. Base the determination on field observations during mean low tide, or by viewing aerial images at low tide, or by viewing the online Wetlands Module. In the online Wetlands Module, select Best Available from the basemap menu to show aerial imagery and determine if a mudflat is present. If it is, click on Intertidal Areas- SEAK Hydro and increase the layer's transparency. Measure distance (mudflat width) from upland to Subtidal (or an adjoining permanent channel, if closer) on a line passing through the AA, and exclude the vegetated part of the AA from the measured width. [SR, WBF]
		none (no adjoining mud flat is apparent at low tide)	0	
		<10 ft	0	
		10-100 ft	1	
		100-1000 ft	0	
		>1000 ft	0	
OF17	Input Tributary	The AA is intersected by a freshwater stream (tributary) that flows during most of the growing season and originates in the upland directly adjoining this wetland. Or the AA is a fringe wetland along a river. If yes, enter 1 and continue. If no, enter 0 and **SKIP to OF19.**	1	Interpret from aerial imagery or ground observations. [OE, FA, WBF, SBM, Subsis]
OF18	Fish Access or Use	The stream identified above: (select ONE – mark only the first applicable choice)		In the online Wetlands Module, select **SEAK Hydro Process Groups > Stream Class** and be sure to UNcheck Process Groups (below it) and SEAK Hydro Streams (above it) to avoid confusing colors. Simultaneously, check **Habitat Layers > Anadromous Waters Catalog**. If stream not shown or condition unknown, contact ADFG to be sure not Anadromous, and ask about other fish use. [FA, Subsis]
		a) is accessible to anadromous fish at 1 mile above tidewater (some Class I streams). **SKIP to OF20.**	0	
		b) is not accessible to anadromous fish 1 mile above tidewater, but closer portions above tidewater are accessible to anadromous fish (some Class I streams). **SKIP to OF20.**	0	
		c) stream areas above tidewater support resident fish **only;** anadromous fish access is blocked at tidewater (Class 2 streams).	1	
		d) stream areas above tidewater are not accessible to any fish (Class 3 and 4 streams).	0	
		e) unknown and undeterminable	0	
OF19	Distance to Anadromous Stream or River	If AA is not intersected by an anadromous (Class 1) stream or river, the water distance from the AA to the tidewater outlet of the nearest such stream or river that supports anadromous fish is:		Follow instructions in OF18 to find other mapped anadromous fish waters. [SRv, FA]
		<150 ft	0	
		150-1000 ft	0	
		1000 ft - 1 mile	0	
		1-5 miles	1	
		>5 miles	0	
OF20	Input Stream Gradient	The gradient of the largest intersecting stream (or if none, then the closest fish-bearing stream) averaged up to 1000 ft above tidewater, is:		Measure as vertical rise divided by 300 ft horizontal. [SRv, OE]
		<1%	0	
		1-5%	1	

A	B	C	D	E
		5-30%	0	
		>30%	0	
OF21	Bear Habitat Suitability	From the online Wetlands Module> Habitat> Bear Summer Habitat, the suitability surrounding the AA is: 3=Very High, 2= High, 1= Moderate, 0= all other.	1	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, is based on vegetation type, elevation, and the access of both bear species to the most productive salmon waters within the biogeographic provinces of their occurrence. [FAv, PH, SBM]
OF22	Designated IBA	The AA is within or contains part of an **IBA** (Important Bird Area) as officially designated by the American Bird Conservancy or local affiliates. Enter 1= yes, 0= no. See list on right, and online Wetlands Module> Habitat Layers> IBA for maps.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [WBFv,SBMv]
OF23	Glacier Fed	The distance from the AA to the nearest upstream glacier which partially feeds the AA is currently:		[SRv, WBF]
		No upstream glacier feeds the AA.	1	
		0 - 150 ft (i.e., a glacier is essentially contiguous with the tidal marsh AA).	0	
		150-1000 ft	0	
		1000 ft - 1 mile	0	
		1-5 miles	0	
		>5 miles, and densely cloudy or greenish water due to glacier is apparent at least seasonally.	0	
		>5 miles, but no such water conditions are apparent, even seasonally, or conditions unknown.	0	
OF24	Documented Toxicity	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		To see if the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [FA]
		within the AA	0	
		in waters within 1 mile that flow **into** the AA.	0	
		Sampling (not just absence of map symbols) indicates no problems.	0	
		insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
OF25	Upslope Soil Erodibility & Debris Flow Potential	There is documentation of landslides or severe erosion of channels or slopes above the AA: [*See directions, column E*]		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> **Landslides.** Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [SRv]
		yes, and such conditions or classifications intersect the AA.	0	
		yes, but the conditions or classifications stop short of the AA and are within 300 ft upslope	0	
		no, or no information but very unlikely that AA is fed sediment by nearby highly erodible lands or landslides.	1	
		no information	0	
OF26	Marsh Area Trend	Over the past 200 years or since this tidal marsh originated (whichever is less), its size is probably (select one):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available. [SR, CS, Sens]
		expanding outward into formerly subtidal waters due to delta deposition from logging or landslides, or landward due to glacial recession/ uplift, earthquake, or other causes.	0	
		shrinking due to natural processes (excessive sedimentation or uplift causing succession to non-tidal upland, or partial conversion to subtidal due to erosion, sea level rise, excessive retention of nourishing sediments by upriver dams, or tilting of the marsh plain following glacial rebound or earthquake). **SKIP to OF28.**	0	
		mostly unchanged. **SKIP to OF28.**	1	
		(trend indeterminable). **SKIP to OF28.**	0	
OF27	Tidal Wetland Age	The age of the AA since last covered by a glacier or mostly submerged below tidal low water prior to glacial rebound is:		Determine this using historical aerial photography, old maps, soil maps, or permit files as available. [CS, SBM, PH, Sens]
		< 3 years old	0	
		3-20 years ago	0	
		20- 200 years ago	0	
		>200 years ago	0	
		unknown	0	
OF28	Aspect	Most of the contributing area within 1000 ft upslope from the AA faces:		[SBM]

A	B	C	D	E
		Northward (N, NE)	0	
		Southward (S, SW)	0	
		other (E, SE, W, NW), or no detectable uphill slope (flat)	1	
OF29	Unvegetated Surface in the Contributing Area	The percentage of the contributing area (measured to no more than 1000 ft upslope) that drains directly to the AA and is comprised of buildings, roads, parking lots, other pavement, recent (<5 years old) clearcuts, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[SRv]
		<10%	0	
		10 to 25%	1	
		>25%	0	
OF30	Transport From Upslope	A relatively large proportion of the precipitation that falls on the slope adjoining the AA reaches this wetland quickly as runoff (surface water), as indicated by the following:		[SRv]
		Mostly true	0	
		Somewhat true	0	
		Mostly untrue	1	
OF31	Large Estuarine Extent	In Manual, see Appendix B, Table B-1. If the AA is not within any of the units listed, enter 0. Otherwise enter the score indicated (3, 2, or 1, see table heading).	0	The score is based on the size of the estuary relative to others within its biogeographic province. [FA,WBF]
OF33	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). Suitability surrounding the AA is: 3=Very High, 2= High, 1= Moderate, 0= all other.	3	The rating is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability in other waters of their biogeographic province. [FA,WBF,Subsis]
OF34	Subsistence Focal Area	The AA or waters that directly adjoin it:		[FAv, Subsis]
		is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
		is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
		neither of the above	1	
		no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
OF35	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0, no information= change to blank.	0	[PU]
OF36	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0, no information= change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
OF37	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area.	0	[PU]
OF38	Non-breeding (Feeding) Waterbird Species of Conservation Concern	Mark just the first choice below that is true. One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected **semi-annually** under conditions similar to what now occur, by a qualified observer:		These are waterbird species of conservation concern that do not breed in Southeast Alaska, but feed here regularly during migration or winter. [WBFv, Sens]
		in the AA	1	
		outside the AA but within 0.5 mile, in a generally similar wetland.	0	
		outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
		beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	0	
OF39	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Queen Charlotte Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected **nesting** semi-annually along the AA's **upland edge** (within 300 ft) under conditions similar to what now occur, by a qualified observer. Enter "1" if yes, "0" if no or unknown.	1	These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. [SBMv, Sens]

A	B	C	D	E
OF40	Plant Species of Conservation Concern	An uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet below, has been detected **within the AA** under conditions similar to what now occur, by a qualified observer. Enter "1" if yes, "0" if no or unknown.	0	[PHv, Sens]

A	B	C	D
#	**Indicator**	**Condition Choices**	**Data**
T1	Outflow Confinement	Enter "1" for all that are true:	
		Due to impassible culverts, tidegates, or other physical infrastructure barriers (not glacial uplift or other natural factors), anadromous fish cannot access part of the AA that **currently is tidal.**	0
		Due to impassible culverts, tidegates, or other physical infrastructure barriers (not glacial uplift or other natural factors), anadromous fish cannot access a **contiguous non-tidal wetland or stream** which can be assumed to have been tidally connected within the past 100 years.	0
		Neither is true, or uncertain.	1
T2	Tidal Regime	For each condition listed in the rows in the table below, estimate how much of the AA's area (including its internal tidal channels) is likely to be accessible to small fish. Then select one number from each row, and sum the four numbers and enter the sum in the column to the right.	8
T3	Low Marsh	The percent of the vegetated part of the AA that is "low marsh" (covered by tidal water for part of almost every day) is:	
		none, or <1%	0
		1-10%	0
		10-25%	0
		25-50%	0
		50-75%	0
		75-90%	0
		>90%	1
T4	Width of Vegetated Zone at Daily Low Tide	At daily **low** tide, the average width of vegetated area in the AA that separates adjoining uplands from most deepwater (subtidal water) within or adjoining the AA, or from the largest intersecting river or tributary (whichever is less), is:	
		1-5 ft	0
		5-25 ft	0
		25-100 ft	1
		100-300 ft	0
		>300 ft	0

A	B	C	D
T5	Width of Vegetated Zone at Daily High Tide	At daily **high** tide, the average width of vegetated area in the AA that separates adjoining uplands from most deepwater (subtidal water) within or adjoining the AA, or from the largest intersecting river or tributary (whichever is less), is:	
		1-5 ft	0
		5-25 ft	0
		25-100 ft	1
		100-300 ft	0
		>300 ft	0
T6	Aquatic Cover	Within the part of the AA and its internal channels that remain underwater during mean daily low tide, the extent of fish cover provided at that time by partly submerged vegetation, inchannel pools, horizontally incised banks, and pieces of wood (thicker than 6 inches and longer than 4 feet, or smaller pieces in dense accumulations) is:	
		Little or none	0
		Intermediate	1
		Extensive	0
T7	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that are **not inundated by tides** on most days, i.e., high marsh. Viewed **from 6 inches above the soil surface**, the condition in **most** of this area is:	
		little or no (<5%) *bare ground* or plant litter (thatch) is visible between erect stems or under canopy. This can occur if ground surface is extensively blanketed by graminoids with great stem densities, or plants with ground-hugging foliage.	1
		some (5-20%) bare ground or litter is visible. Herbaceous plants have moderate stem densities and do not closely hug the ground.	0
		much (20-50%) bare ground or plant litter is visible. Low stem density and/or tall plants with little near-ground foliage.	0
		mostly (>50%) bare ground or accumulated plant litter.	0
T8	Groundwater Seeps	Select one:	
		Part of the AA contains **strong evidence** of fresh groundwater discharges at the marsh surface: (a) Springs are observed, or (b) measurements from shallow wells indicate groundwater is discharging to the wetland.	1
		Part of the AA has **less definitive evidence** of discharging groundwater during summer. Wetland is on organic, sandy, or gravelly soil AND is at the base of a natural slope of >5% (as averaged over a distance of 1000 ft or until the first opposing break in elevation occurs).	0
		Neither of above is true, although some groundwater may discharge to or flow through the wetland, or groundwater influx is unknown.	0
T9	Forb Cover	In parts of the AA that don't flood daily (i.e., "high marsh"), the areal cover of **forbs** reaches an annual maximum of:	
		<5% of the herbaceous cover, or the AA contains no high marsh	1
		5-25% of the herbaceous cover	0
		25-50% of the herbaceous cover	0

A	B	C	D
		50-95% of the herbaceous cover	0
		>95% of the herbaceous cover.	0
T10	Herbaceous Species Dominance	Of just the herbaceous (non-woody) plant species:	
		One or two species together comprise **>50%** of the areal cover of herbaceous plants at any time during the year, and one or both are **non-native** species (see NonNtvPlants worksheet tab).	0
		One or two species together comprise **>50%** of the areal cover of herbaceous plants at any time during the year, and both are **native** species.	1
		There are **several** herbaceous species, **including some non-natives**, but **no species is dominan**t. That is, no two of the species together comprise >50% of the areal cover of herbaceous plants.	0
		There are **several** herbaceous species but **no species is non-native or dominan**t. No two of the native species together comprise >50% of the areal cover of herbaceous plants.	0
T11	Soil Texture	Excluding subtidal waters and channels that stay flooded throughout the tidal cycle, the texture of soil in the uppermost layer in **most** of the AA is predominantly:	
		Loamy: includes loam, sandy loam.	0
		Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0
		Organic, from surface to within 4 inches of surface only. Exclude live roots.	0
		Organic, from surface to within 16 inches of surface only. Exclude live roots.	0
		Organic, from surface to greater than 16 inch depth. Exclude live roots.	0
		Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	1
T12	Large Woody Debris	Large woody debris that rises at least 3 ft above the marsh terrace or is present in tidal channels is:	
		none or few (<1 per 10 acres)	1
		intermediate	0
		many (>5 pieces per 10 acres or per 10 channel widths)	0
T13	Driftwood	On or near the AA's edge with upland (or the upper edge of tidal influence), the percent of the edge occupied by driftwood is:	
		none	1
		1-25%	0
		25 - 50%	0
		50 - 75%	0
		>75%	0
T14	N Fixers	The cover of nitrogen-fixing plants (e.g., alder, sweetgale, legumes) along the AA's upland edge is:	
		<1% or none, or AA has no upland edge	0
		1-25%	0

A	B	C	D
		25-50%	0
		50-75%	1
		>75%	0
T15	Natural Cover in Buffer	Within **100 ft upslope** of the AA's wetland-upland edge, the percentage of the upland that contains ***natural*** (**not necessarily native**) land cover is:	
		<5%	0
		5 to 30%	0
		30 to 60%	0
		60 to 90%	0
		>90%. **SKIP to T17.**	1
T16	Type of Cover in Buffer	Within **100 ft upslope** of the AA's wetland-upland edge, the upland cover that is NOT natural or water is mostly:	
		impervious surface, e.g., paved road, parking lot, building, exposed rock.	0
		bare or semi-bare pervious surface, e.g., dirt road, dike, dunes, lawn, recent clearcut, landslide.	0
T17	Slope from Disturbed Lands	Along the AA's wetland-upland edge and extending to the most extensive and/or closest **disturbance feature within 100 ft uphill,** the slope of the land averages:	
		<1% (flat – almost no noticeable slope)	0
		2-5%	0
		5-30%	1
		>30%	0
T18	Cliffs or Banks	In the AA or within its wetland or within 100 ft of the AA, there are elevated terrestrial features such as cliffs, stream banks, excavated pits, or pumice walls (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas.	0
T19	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case include only the area occupied by the trail*].	
		<5% and no inhabited building is within 300 ft of the AA	0
		<5% and inhabited building is within 300 ft of the AA	0
		5-50% and no inhabited building is within 300 ft of the AA	0
		5-50% and inhabited building is within 300 ft of the AA	0
		50-95%	1
		>95% of the AA	0

A	B	C	D
T20	Core Area 2	The part of the AA visited by humans **almost daily for several weeks** during an average year probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case include only the area occupied by the trail]*.	
		<5%	0
		5-50%	1
		50-95%	0
		>95% of the AA	0
T21	Visibility	The maximum percent of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 300 ft of the AA (select one) is:	
		<25%	0
		25-50%	1
		>50%	0
T22	Ownership	Most of the AA's upland edge is (select one):	
		publicly owned (federal, state, municipal) and leases are mostly excluded.	0
		other publicly owned or unknown.	0
		owned by non-profit conservation organization or lease holder who allows public access.	0
		other private ownership, including Tribes.	1
T23	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select all statements that are true of this AA as it currently exists:	
		Walking is physically possible in >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1
		Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed most of the year by boat.	0
		Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0
		The AA adjoins or is within 0.5 mile of a **public** boat dock or ramp, ferry terminal, or airstrip -- or public lodge, campsite, snowmobile park, or picnic area.	0
T24	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0
T25	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.	
		subsistence-focused harvesting of native plants, their fruits, or mushrooms	0
		waterfowl hunting or furbearer trapping	0
		fishing (including shellfish harvest)	1
		None of the above	0

Stressor (S) Data Form for Tidal Wetlands. WESPAK-SE version 2

		Data
S1	**Wetter Water Regime - *Internal* Causes**	
	an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
	excavation within the wetland, e.g., artificial pond, dead-end ditch	
	excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	x
	plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
	vegetation removal (e.g., logging) within the wetland	x
	compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	1
Average water level increase	>1 ft	6-12"	<6 inches	1
			sum=	4
			Final Score=	0.33

S2	**Wetter Water Regime - *External* Causes**			
	*In the last column, place a check mark next to any item occuring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [STR]*			
	subsidies from stormwater, wastewater effluent, or septic system leakage			x
	pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland			x
	removal of timber in the CA or along the wetland's tributaries			x
	removal of a water control structure or blockage in tributary upstream from the wetland			
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.			
	Severe (3 points)	**Medium (2 points)**	**Mild (1 point)**	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	1
Average water level increase	>1 ft	6-12"	<6 inches	1
			sum=	4
			Final Score=	0.33

S3	**Drier Water Regime - Internal Causes**			
	In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [STR]			
	ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland			
	lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage			
	accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)			
	placement of fill material			
	withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)			
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.			
	Severe (3 points)	**Medium (2 points)**	**Mild (1 point)**	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			sum=	0
			Final Score=	0.00

S4	**Drier Water Regime - External Causes**			
	In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [STR]			
	a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland			
	relocation of natural tributaries whose water would otherwise reach the wetland			
	instream water withdrawals from tributaries whose water would otherwise reach the wetland			
	groundwater withdrawals that divert water that would otherwise reach the wetland			
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.			
	Severe (3 points)	**Medium (2 pts)**	**Mild (1 point)**	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	1-12"	<1 inch	0
			sum=	0
			Final Score=	0.00

S5	**Altered Timing of Water Inputs**			
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]*			
	flow regulation in tributaries or water level regulation in adjoining water body, or tidegate or other control structure at water entry points that regulates inflow to the wetland			
	snow storage areas that drain directly to the wetland			
	increased pavement and other impervious surface in the CA			x
	straightening, ditching, dredging, and/or lining of tributary channels in the CA			
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.			
	Severe (3 pts)	**Medium (2 points)**	**Mild (1 point)**	
Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	1
When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	1
Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	1
			sum=	4
			Final Score=	0.33

S6	**Accelerated Inputs of Contaminants and/or Salts**			
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv, STR]			
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities			x
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)			x
	oil or chemical spills (not just chronic inputs) from nearby roads			
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA			x
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.			

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed mine, low density residential)	1
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	1
AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	1
			sum=	3
			Final Score=	0.33

S7

Accelerated Inputs of Nutrients

In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [STR]

stormwater or wastewater effluent (including failing septic systems), landfills	x
fertilizers applied to lawns, ag lands, or other areas in the CA	
livestock, dogs	
artificial drainage of upslope lands	x

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	1
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	1
AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	1
			sum=	3
			Final Score=	0.33

S8

Excessive Sediment Loading *from Contributing Area*

In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv, STR]

erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires	
erosion from construction, in-channel machinery in the CA	
erosion from off-road vehicles in the CA	
erosion from livestock or foot traffic in the CA	
stormwater or wastewater effluent	x
sediment from road sanding, gravel mining, other mining, oil/ gas extraction	x
accelerated channel downcutting or headcutting of tributaries due to altered land use	
other human-related disturbances within the CA	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	1
Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	1
Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	1
AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	1
* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			sum=	4
			Final Score=	0.08

S9

Soil or Sediment Alteration *Within the Assessment Area*

In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, STR]

compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods	
leveling or other grading not to the natural contour	
tillage, plowing (but excluding disking for enhancement of native plants)	
fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland	
excavation	
ditch cleaning or dredging in or adjacent to the wetland	
boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments	
artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	0
Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0
Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during a single or scattered events	0
				0
			Final Score=	0.00

GROUP 2

WESPAK SE NON-TIDAL REPORT

Wetlands B, J

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.60**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Function Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**FV Index (normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	6.06	7.78	5.54	Moderate	7.78	Higher	6.66	6.66	5.82	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	1.36	0.81	1.63	Lower	1.22	Lower	1.43	1.63	1.63	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	2.33	1.67	2.33	Lower	2.20	Moderate	2.27	2.33	1.79	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	5.93	0.62	5.93	Moderate	1.16	Lower	3.54	5.93	5.15	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR	5.00	3.60	3.64	Moderate	7.85	Higher	5.74	5.74	5.80	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.00	7.78	1.02	Lower	10.00	Higher	5.51	5.51	5.14	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	4.72	6.50	1.89	Lower	7.39	Higher	4.64	4.64	4.64	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	5.22		2.22	Lower			2.22	2.22	2.22	6.53	3.66	6.43			
Organic Nutrient Export (OE)	4.75	5.70	6.86	Moderate	5.73	Moderate	6.30	6.86	6.86	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	3.24	10.00	0.88	Lower	10.00	Higher	5.44	5.44	5.44	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.09	6.67	3.32	Lower	8.48	Higher	5.90	5.90	5.36	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.88	0.00	5.61	Moderate	0.00	Lower	2.80	5.61	5.61	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.83	8.89	7.20	Moderate	8.89	Higher	8.04	8.04	7.95	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	3.46	7.15	4.59	Moderate	9.58	Higher	7.08	7.08	6.89	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.75	9.53	3.24	Lower	9.44	Higher	6.34	6.34	5.81	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		3.06			4.09	Moderate	4.09	4.09	4.09				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.58			3.68	Lower	3.68	3.68	4.03				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		2.53			2.66	Lower	2.66	2.66	2.80				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		7.31			10.00	Higher	10.00	10.00	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								5.82	5.82	Moderate	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								5.12	3.46	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								5.52	1.23	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.63	3.51	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								7.41	6.56	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	4.99	7.18	7.18	6.68

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	6.68
Overall Rating:	**Moderate**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	1	
6			0.5 - 2 miles	0	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	1	
13			100-500 ft	0	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	1	
35			>90% of the land. **SKIP to OF8.**	0	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	1	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	0	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	1	
64			3 to 6	0	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	0	
82			300-1000 ft	1	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	0	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	1	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	0	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	1	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	0	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	1	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	1	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	0	
36			25-50%	0	
37			50-95%	1	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	0	
41			0.5 - 1 ft	0	
42			1-3 ft	1	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	1	
47			1-2 ft deep	0	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	1	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	0	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	1	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	0	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	1	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	0	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	0	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	1	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	1	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	1	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	1	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	1	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	0	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	1	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	1	
128			leaves through natural exits, not mainly through artificial or temporary features.	0	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	0	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	1	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	1	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	0	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	1	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	0	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	0	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark all the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	0	
154			deciduous 1-4" diameter and >3 ft tall	0	
155			evergreen 4-9" diameter	0	
156			deciduous 4-9" diameter	0	
157			evergreen 9-21" diameter	0	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	0	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	0	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	1	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	1	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	1	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	[illegible] soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	1	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	0	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	1	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	1	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	0	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	0	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	1	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	1	
208			Intermediate	0	
209			Several (extensive micro-topography)	0	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	1	
212			Intermediate (1 - 10% of vegetated part of the AA).	0	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	0	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	1	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	0	
229			1 to 10 acres	1	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	1	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	0	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	0	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	0	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	0	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	0	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	1	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	0	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	1	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	1	
267			30 to 60%	0	
268			60 to 90%	0	
269			>90%. **SKIP to F58.**	0	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	1	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	0	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	1	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	0	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	1	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	0	
288			25-50%	0	
289			>50%	1	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	0	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	1	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	0	
306			>95% of the AA	1	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	0	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	1	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	0	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	1	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	0	
324			>1000 ft away, or none, or no information	1	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1 Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	x
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	x
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	x

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	3
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	2
Average water level increase	>1 ft	6-12"	<6 inches	3
			Sum=	9
			Final Score=	0.75

S2 Wetter Water Regime - *External* Causes

*In the last column, place a check mark next to any item occurring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	x
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	x
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	3
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	2
Average water level increase	>1 ft	6-12"	<6 inches	3
			Sum=	9
			Final Score=	0.75

S3 Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4 Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				x
	increased pavement and other impervious surface in the CA				x
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	3
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	3
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	2
				Sum=	9
				Final Score=	0.75
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				x
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				x
	oil or chemical spills (not just chronic inputs) from nearby roads				
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				x
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	3
				Sum=	7
				Final Score=	0.78
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				x
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	3
				Sum=	7
				Final Score=	0.78
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00
S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				x
	leveling or other grading not to the natural contour				x
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				x
	excavation				x
	ditch cleaning or dredging in or adjacent to the wetland				x
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	3
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	3
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	3
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	3
				Sum=	12
				Final Score=	1.00

GROUP 3

WESPAK SE NON-TIDAL REPORT

Wetland C, K, O, P

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.93**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	3.11	1.81	2.19	Lower	1.81	Lower	2.00	2.19	0.24	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	5.83	1.44	7.00	Higher	2.16	Moderate	4.58	7.00	7.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	6.20	3.17	6.20	Higher	4.18	Moderate	5.19	6.20	5.93	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.25	3.68	6.25	Moderate	6.84	Higher	6.54	6.54	5.88	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR	3.27	0.42	1.43	Lower	0.57	Lower	1.00	1.43	0.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.61	1.15	1.92	Lower	1.16	Lower	1.54	1.92	1.26	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	4.63	3.13	1.74	Lower	3.29	Moderate	2.52	2.52	2.52	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.41		4.53	Moderate			4.53	4.53	4.53	6.53	3.66	6.43			
Organic Nutrient Export (OE)	5.60	6.67	8.09	Higher	6.71	Moderate	7.40	8.09	8.09	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.75	10.00	5.97	Higher	10.00	Higher	7.98	7.98	7.98	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.73	6.25	4.48	Moderate	7.72	Higher	6.10	6.10	5.59	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	2.84	0.00	4.10	Moderate	0.00	Lower	2.05	4.10	4.10	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	6.73	10.00	8.31	Higher	10.00	Higher	9.16	9.16	9.11	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.90	7.15	11.74	Higher	9.58	Higher	10.66	11.74	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.46	9.53	8.58	Higher	9.44	Higher	9.01	9.01	9.27	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.20			2.56	Moderate	2.56	2.56	2.56				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		10.00			10.00	Higher	10.00	10.00	10.00				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		5.05			8.74	Higher	8.74	8.74	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.65			5.95	Higher	5.95	5.95	6.26				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.90			7.30	Higher	7.30	7.30	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								0.24	0.24	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								3.30	0.50	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								7.53	5.76	Moderate	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.41	3.23	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.73	9.64	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								10.00	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	6.43	7.10	7.10	6.58

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	6.58
Overall Rating:	**Moderate**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	1	
6			0.5 - 2 miles	0	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	0	
13			100-500 ft	1	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	1	
82			300-1000 ft	0	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	0	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	1	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	0	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	1	
155			10 to 100% of its CA	0	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	0	
159			10 to 25%	1	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	1	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	0	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	0	
171			2-5%	1	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	1	
176			150-300 ft	0	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	0	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	1	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	0	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	1	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	1	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	0	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	1	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	1	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	1	
41			0.5 - 1 ft	0	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	1	
46			0.5 - 1 ft deep	0	
47			1-2 ft deep	0	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	1	
52			One depth class that comprises 50-90% of the AA's inundated area.	0	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	1	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	0	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	0	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	0	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	0	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	1	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	0	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	0	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	0	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	1	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	0	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	1	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	0	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	1	
144			50-95% of the vegetated AA	0	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	1	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark all the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	1	
154			deciduous 1-4" diameter and >3 ft tall	1	
155			evergreen 4-9" diameter	1	
156			deciduous 4-9" diameter	1	
157			evergreen 9-21" diameter	1	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	0	
163			Several (>2/acre) but above not true.	1	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	1	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	0	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	1	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	1	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	1	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	0	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	1	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	0	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	1	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	1	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	0	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	0	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	1	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	1	
209			Several (extensive micro-topography)	0	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	0	
212			Intermediate (1 - 10% of vegetated part of the AA).	1	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	0	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	1	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	1	
229			1 to 10 acres	0	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	1	
236			25-50% of the vegetated AA	0	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	0	
243			50-95% of the vegetated ground cover	1	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	1	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	1	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	1	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	0	
269			>90%. **SKIP to F58.**	1	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	0	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	0	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	1	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	0	
306			>95% of the AA	1	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	0	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	0	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	1	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	0	
324			>1000 ft away, or none, or no information	1	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1

Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S2

Wetter Water Regime - *External* Causes

In the last column, place a check mark next to any item occurring in the wetland's ***contributing area*** *(CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S3

Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4

Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				
	increased pavement and other impervious surface in the CA				
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
				Sum=	0
				Final Score=	0.00
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				
	oil or chemical spills (not just chronic inputs) from nearby roads				
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00

S9	**Soil or Sediment Alteration *Within the Assessment Area***	
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]	
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods	
	leveling or other grading not to the natural contour	
	tillage, plowing (but excluding disking for enhancement of native plants)	
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland	
	excavation	
	ditch cleaning or dredging in or adjacent to the wetland	
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments	
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments	
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	0
Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0
Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	0
			Sum=	0
			Final Score=	0.00

GROUP 4

WESPAK SE NON-TIDAL REPORT

Wetlands D, E, I

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**2.70**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Function Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**FV Index (normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	3.96	0.00	3.16	Moderate	0.00	Lower	1.58	3.16	1.44	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	6.71	1.40	8.05	Higher	2.10	Moderate	5.08	8.05	8.05	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.25	3.75	7.25	Higher	4.95	Moderate	6.10	7.25	7.05	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	4.43	5.85	4.43	Moderate	10.00	Higher	7.22	7.22	6.68	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	4.94	2.46	3.56	Moderate	5.25	Moderate	4.41	4.41	2.56	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	6.61	3.38	4.92	Moderate	4.74	Moderate	4.83	4.92	4.51	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.35	6.17	2.86	Moderate	6.99	Higher	4.92	4.92	4.92	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.55		4.82	Moderate			4.82	4.82	4.82	6.53	3.66	6.43			
Organic Nutrient Export (OE)	7.05	6.67	10.18	Higher	6.71	Moderate	8.44	10.18	10.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.58	10.00	5.63	Higher	10.00	Higher	7.82	7.82	7.82	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.96	6.25	4.90	Moderate	7.72	Higher	6.31	6.31	5.83	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	4.05	0.00	5.85	Moderate	0.00	Lower	2.93	5.85	5.85	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	7.32	10.00	9.04	Higher	10.00	Higher	9.52	9.52	9.49	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	8.11	7.15	12.07	Higher	9.58	Higher	10.83	12.07	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.66	9.53	9.22	Higher	9.44	Higher	9.33	9.33	9.68	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.54			3.17	Moderate	3.17	3.17	3.17				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.41			6.53	Moderate	6.53	6.53	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		6.83			7.19	Higher	7.19	7.19	7.57				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		5.40			8.42	Higher	8.42	8.42	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								1.44	1.44	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								4.56	2.54	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.96	8.97	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.87	3.81	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.86	9.82	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	7.12	7.61	7.61	7.18

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.18
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	0	
6			0.5 - 2 miles	1	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	0	
13			100-500 ft	0	
14			500-1000 ft	1	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	1	
82			300-1000 ft	0	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	0	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	1	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	0	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	1	
154			1 to 10% of its CA	0	
155			10 to 100% of its CA	0	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	1	
159			10 to 25%	0	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	1	
167			Southward (S, SW). south-facing CA.	0	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	0	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	0	
171			2-5%	1	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	0	
176			150-300 ft	0	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	1	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	1	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	1	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	1	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	1	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	0	
41			0.5 - 1 ft	1	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	1	
47			1-2 ft deep	0	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	1	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	1	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	1	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	1	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	0	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	1	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	1	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	1	
111			1-5%	0	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	1	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	1	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	0	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	1	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	0	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	1	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	1	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark all the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	1	
154			deciduous 1-4" diameter and >3 ft tall	1	
155			evergreen 4-9" diameter	1	
156			deciduous 4-9" diameter	1	
157			evergreen 9-21" diameter	1	
158			deciduous 9-21" diameter	1	
159			evergreen >21" diameter	1	
160			deciduous >21" diameter		
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	1	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	1	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	0	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	1	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	1	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	1	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	[illegible] soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	0	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	1	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	0	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	1	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	0	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	1	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	0	
209			Several (extensive micro-topography)	1	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	0	
212			Intermediate (1 - 10% of vegetated part of the AA).	0	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	1	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	1	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	0	
229			1 to 10 acres	1	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	1	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	1	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	1	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	1	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	1	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	1	
269			>90%. **SKIP to F58.**	0	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	1	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	1	
275			2-5%	0	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	0	
306			>95% of the AA	1	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	1	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	1	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	0	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	1	
324			>1000 ft away, or none, or no information	0	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1 Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	x

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	2
			Final Score=	0.17

S2 Wetter Water Regime - *External* Causes

*In the last column, place a check mark next to any item occurring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	x
removal of timber in the CA or along the wetland's tributaries	x
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	2
			Final Score=	0.17

S3 Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4 Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	x
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	2
				Final Score=	0.17

S5 Altered Timing of Water Inputs

*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*

flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland	
snow storage areas that drain directly to the wetland	
increased pavement and other impervious surface in the CA	
straightening, ditching, dredging, and/or lining of tributary channels in the CA	

If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
			Sum=	0
			Final Score=	0.00

S6 Accelerated Inputs of Contaminants and/or Salts

In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]

stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities	
metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)	x
oil or chemical spills (not just chronic inputs) from nearby roads	x
spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA	

If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	1
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	1
			Sum=	4
			Final Score=	0.44

S7 Accelerated Inputs of Nutrients

In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.

stormwater or wastewater effluent (including failing septic systems), landfills	
fertilizers applied to lawns, ag lands, or other areas in the CA	
livestock, dogs	
artificial drainage of upslope lands	

If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	0
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
			Sum=	0
			Final Score=	0.00

S8 Excessive Sediment Loading *from Contributing Area*

In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]

erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires	
erosion from construction, in-channel machinery in the CA	
erosion from off-road vehicles in the CA	
erosion from livestock or foot traffic in the CA	
stormwater or wastewater effluent	
sediment from road sanding, gravel mining, other mining, oil/ gas extraction	
accelerated channel downcutting or headcutting of tributaries due to altered land use	
other human-related disturbances within the CA	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00
S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				
	leveling or other grading not to the natural contour				
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				
	excavation				
	ditch cleaning or dredging in or adjacent to the wetland				x
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	1
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	1
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	3
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	1
				Sum=	6
				Final Score=	0.50

GROUP 5

WESPAK SE NON-TIDAL REPORT

Wetlands G1, G4, G6, G7, G16, G20, G22

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**131.60**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	6.28	1.11	5.79	Moderate	1.11	Lower	3.45	5.79	4.73	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	8.33	2.80	10.00	Higher	4.21	Moderate	7.11	10.00	10.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	10.00	3.00	10.00	Higher	3.96	Moderate	6.98	10.00	10.00	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	10.00	5.24	10.00	Higher	9.75	Higher	9.88	10.00	10.00	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	6.11	0.28	5.05	Moderate	0.25	Lower	2.65	5.05	4.12	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	7.67	1.54	6.51	Higher	1.79	Lower	4.15	6.51	6.23	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.38	3.17	2.90	Moderate	3.34	Moderate	3.12	3.12	3.12	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	8.12		7.88	Higher			7.88	7.88	7.88	6.53	3.66	6.43			
Organic Nutrient Export (OE)	4.93	5.70	7.12	Moderate	5.73	Moderate	6.43	7.12	7.12	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	5.21	6.67	7.21	Moderate	6.67	Moderate	6.94	7.21	7.21	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.98	10.00	6.45	Higher	10.00	Higher	8.22	8.22	8.22	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	4.79	6.25	2.77	Lower	7.72	Higher	5.25	5.25	4.62	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.14	10.00	6.34	Moderate	10.00	Higher	8.17	8.17	8.08	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	6.67	7.15	9.76	Higher	9.58	Higher	9.67	9.76	9.74	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.93	9.53	3.79	Lower	9.44	Higher	6.61	6.61	6.17	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		1.98			2.16	Lower	2.16	2.16	2.16				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		7.78			7.78	Higher	7.78	7.78	7.78				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		5.14			9.05	Higher	9.05	9.05	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.17			5.44	Higher	5.44	5.44	5.72				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.70			6.84	Higher	6.84	6.84	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								4.73	4.73	Moderate	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								6.61	5.87	Moderate	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								9.53	10.00	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								5.41	5.41	Moderate	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								3.08	1.57	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								8.87	8.50	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								7.78	8.91	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	8.01	8.21	8.21	7.89

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.89
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	0	
6			0.5 - 2 miles	1	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	0	
13			100-500 ft	1	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	0	
82			300-1000 ft	1	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	1	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	0	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	1	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	0	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	1	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	0	
155			10 to 100% of its CA	1	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	1	
159			10 to 25%	0	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	0	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	1	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	0	
171			2-5%	1	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	0	
176			150-300 ft	0	
177			300-800 ft	0	
178			800-2000 ft	1	
179			2000 ft - 1 mile	0	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	0	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	1	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	0	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	1	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	0	
22			25-50% of the AA	1	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	1	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	1	
35			1-25%	0	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	1	
41			0.5 - 1 ft	0	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	0	
47			1-2 ft deep	1	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	0	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	1	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	1	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	0	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	1	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	1	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	1	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	0	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	1	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	0	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	0	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	1	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	0	
136			5-25%.	1	
137			25-50%	0	
138			50-75%	0	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	1	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	0	
145			>95% of the vegetated part of the AA	0	

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146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	1	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	0	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark **all** the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	1	
154			deciduous 1-4" diameter and >3 ft tall	1	
155			evergreen 4-9" diameter	1	
156			deciduous 4-9" diameter	1	
157			evergreen 9-21" diameter	0	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	1	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	1	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	0	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	1	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	1	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	1	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

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183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	1	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	0	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	0	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	1	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	0	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	0	
199			>95% of the vegetated ground cover.	1	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	1	
209			Several (extensive micro-topography)	0	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	1	
212			Intermediate (1 - 10% of vegetated part of the AA).	0	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	0	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	1	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

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221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	1	
228			0.1 - 1 acre	0	
229			1 to 10 acres	0	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	1	
236			25-50% of the vegetated AA	0	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	1	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	0	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	1	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	1	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

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259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	1	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	0	
269			>90%. **SKIP to F58.**	1	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	0	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	0	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

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295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	1	
306			>95% of the AA	0	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	1	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	1	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	0	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	1	
324			>1000 ft away, or none, or no information	0	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1 Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	0

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S2 Wetter Water Regime - *External* Causes

*In the last column, place a check mark next to any item occurring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S3 Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4 Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				
	increased pavement and other impervious surface in the CA				
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
				Sum=	0
				Final Score=	0.00
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				
	oil or chemical spills (not just chronic inputs) from nearby roads				
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00

S9	**Soil or Sediment Alteration *Within the Assessment Area***	
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]	
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods	
	leveling or other grading not to the natural contour	
	tillage, plowing (but excluding disking for enhancement of native plants)	
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland	
	excavation	
	ditch cleaning or dredging in or adjacent to the wetland	
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments	
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments	
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.	

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	0
Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0
Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	0
			Sum=	0
			Final Score=	0.00

GROUP 6

WESPAK SE NON-TIDAL REPORT

Wetlands G2, G3, G5, G9, G10, G11, G12, G13, G14, G15, G17, G18, G19, G21, G23, G24, G25

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**147.70**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	3.96	1.11	3.16	Moderate	1.11	Lower	2.13	3.16	1.44	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	6.50	4.01	7.80	Higher	6.05	Higher	6.92	7.80	7.80	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.53	5.84	7.53	Higher	7.70	Higher	7.62	7.62	7.44	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	4.03	4.63	4.03	Moderate	8.61	Higher	6.32	6.32	5.61	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	5.33	2.85	4.06	Moderate	6.14	Higher	5.10	5.10	4.24	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	6.99	4.68	5.48	Moderate	6.82	Higher	6.15	6.15	5.84	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.39	6.00	2.91	Moderate	6.78	Higher	4.85	4.85	4.85	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.66		5.04	Moderate			5.04	5.04	5.04	6.53	3.66	6.43			
Organic Nutrient Export (OE)	6.86	5.70	9.92	Higher	5.73	Moderate	7.83	9.92	9.92	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	5.01	4.71	6.53	Moderate	4.71	Moderate	5.62	6.53	6.53	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	5.93	6.67	8.20	Higher	6.67	Moderate	7.44	8.20	8.20	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.12	10.00	4.70	Moderate	10.00	Higher	7.35	7.35	7.35	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.72	6.25	4.45	Moderate	7.72	Higher	6.09	6.09	5.57	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.63	0.00	5.24	Moderate	0.00	Lower	2.62	5.24	5.24	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	7.37	10.00	9.10	Higher	10.00	Higher	9.55	9.55	9.53	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.94	7.15	11.81	Higher	9.58	Higher	10.69	11.81	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.48	9.53	8.65	Higher	9.44	Higher	9.04	9.04	9.31	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		1.98			2.16	Lower	2.16	2.16	2.16				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		7.78			7.78	Higher	7.78	7.78	7.78				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.46			6.72	Moderate	6.72	6.72	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		6.42			6.75	Higher	6.75	6.75	7.11				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.90			7.29	Higher	7.29	7.29	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								1.44	1.44	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								5.41	3.93	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.77	8.54	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								7.79	7.79	Higher	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.59	3.45	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.81	9.74	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								7.78	8.91	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	7.78	8.00	8.00	7.64

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.64
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	0	
6			0.5 - 2 miles	1	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	0	
13			100-500 ft	1	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	0	
82			300-1000 ft	1	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	1	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	0	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	1	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	0	
155			10 to 100% of its CA	1	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	1	
159			10 to 25%	0	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	0	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	1	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	0	
171			2-5%	1	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	0	
176			150-300 ft	0	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	1	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	1	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	1	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	1	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	1	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	0	
41			0.5 - 1 ft	1	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	0	
47			1-2 ft deep	1	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	1	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	1	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	1	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	1	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	0	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	1	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	1	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	1	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	1	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	1	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	0	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	1	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	0	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	1	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	1	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark **all** the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	1	
154			deciduous 1-4" diameter and >3 ft tall	1	
155			evergreen 4-9" diameter	1	
156			deciduous 4-9" diameter	1	
157			evergreen 9-21" diameter	1	
158			deciduous 9-21" diameter	1	
159			evergreen >21" diameter	1	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	1	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	1	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	0	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	1	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	1	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	1	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	[illegible] soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	0	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	1	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	0	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	1	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	0	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	1	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	0	
209			Several (extensive micro-topography)	1	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	0	
212			Intermediate (1 - 10% of vegetated part of the AA).	1	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	1	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	0	
229			1 to 10 acres	1	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	1	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	1	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	1	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	0	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	1	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	0	
261			some (but <5%) of the upland edge	1	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	1	
269			>90%. **SKIP to F58.**	0	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	1	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	1	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	1	
306			>95% of the AA	0	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	1	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	1	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	0	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	1	
324			>1000 ft away, or none, or no information	0	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1 Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	x

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	2
			Final Score=	0.17

S2 Wetter Water Regime - *External* Causes

*In the last column, place a check mark next to any item occurring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	x
removal of timber in the CA or along the wetland's tributaries	x
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	2
			Final Score=	0.17

S3 Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4 Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	x
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	2
				Final Score=	0.17
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				
	increased pavement and other impervious surface in the CA				
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
				Sum=	0
				Final Score=	0.00
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				x
	oil or chemical spills (not just chronic inputs) from nearby roads				x
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	1
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	1
				Sum=	4
				Final Score=	0.44
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00
S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				
	leveling or other grading not to the natural contour				
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				
	excavation				
	ditch cleaning or dredging in or adjacent to the wetland				x
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	1
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	1
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	3
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	1
				Sum=	6
				Final Score=	0.50

GROUP 7

WESPAK SE NON-TIDAL REPORT

Wetland G8

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**1.20**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**	FUNCTION: Median of Normalized F Scores	FUNCTION: Thresholds for Function Rating (normalized score) Low is < or =	FUNCTION: Thresholds for Function Rating (normalized score) High is >	VALUE: Median of Normalized V Scores	VALUE: Thresholds for Value Rating (normalized score) Low is < or =	VALUE: Thresholds for Value Rating (normalized score) High is >
Surface Water Storage (WS)	2.13	0.56	1.08	Lower	0.56	Lower	0.82	1.08	0.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	8.06	4.35	9.67	Higher	6.55	Higher	8.11	9.67	9.67	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	4.69	5.89	4.69	Moderate	7.77	Higher	6.23	6.23	5.96	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.90	5.29	6.90	Higher	9.84	Higher	8.37	8.37	8.05	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	4.09	3.75	2.48	Lower	8.20	Higher	5.34	5.34	4.81	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	4.46	5.24	1.71	Lower	7.71	Higher	4.71	4.71	4.27	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	5.62	5.88	3.26	Moderate	6.63	Higher	4.95	4.95	4.95	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	5.23		2.23	Lower			2.23	2.23	2.23	6.53	3.66	6.43			
Organic Nutrient Export (OE)	3.80	6.67	5.50	Moderate	6.71	Moderate	6.10	6.10	6.10	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	5.11	6.80	6.67	Moderate	6.80	Higher	6.73	6.73	6.73	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	6.69	6.80	9.26	Higher	6.80	Moderate	8.03	9.26	9.26	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.59	10.00	5.66	Higher	10.00	Higher	7.83	7.83	7.83	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	7.02	6.25	6.83	Higher	7.72	Higher	7.27	7.27	6.92	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	6.80	4.22	9.37	Higher	5.48	Higher	7.42	9.37	10.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	7.01	8.60	10.12	Higher	8.60	Moderate	9.36	10.12	10.00	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	4.77	10.00	5.88	Moderate	10.00	Higher	7.94	7.94	7.84	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	6.10	7.15	8.84	Higher	9.58	Higher	9.21	9.21	9.15	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	6.19	9.53	7.74	Higher	9.44	Higher	8.59	8.59	8.73	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.12			2.41	Moderate	2.41	2.41	2.41				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		3.21			2.40	Lower	2.40	2.40	0.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		5.58			5.88	Higher	5.88	5.88	6.19				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		4.66			6.77	Higher	6.77	6.77	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								0.00	0.00	Lower	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								4.51	2.45	Lower	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								8.60	8.15	Higher	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								8.63	8.63	Higher	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								9.49	9.56	Higher	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								8.86	8.49	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	7.89	8.38	8.38	8.09

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	8.09
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	0	
6			0.5 - 2 miles	1	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	0	
13			100-500 ft	1	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	1	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	0	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	1	
82			300-1000 ft	0	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	1	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	0	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	1	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	0	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	1	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	1	
155			10 to 100% of its CA	0	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	1	
159			10 to 25%	0	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	0	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	1	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	1	
171			2-5%	0	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	0	
176			150-300 ft	1	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	0	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	0	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	1	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	1	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	0	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	0	
22			25-50% of the AA	0	
23			50-95% of the AA	1	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	1	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	1	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	1	
35			1-25%	0	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	1	
41			0.5 - 1 ft	0	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	0	
47			1-2 ft deep	0	
48			2-6 ft deep	1	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	1	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	1	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	1	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	1	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	0	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	1	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	0	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	1	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	0	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	1	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	0	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	0	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	0	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	1	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	1	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	0	
112			5-30%	1	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

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115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	1	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	1	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	0	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	1	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	0	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	1	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	0	
145			>95% of the vegetated part of the AA	0	

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146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	1	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	0	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark **all** the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	0	
154			deciduous 1-4" diameter and >3 ft tall	0	
155			evergreen 4-9" diameter	0	
156			deciduous 4-9" diameter	0	
157			evergreen 9-21" diameter	0	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	0	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	0	
167			Few or none	1	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	1	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	0	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	1	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

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183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	1	soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned
184			1-25% of the vegetated area	0	beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and
185			25-50% of the vegetated area	0	floodplains. [CS, INV, OE, PH, SBM]
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	0	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	1	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	1	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	0	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	1	
209			Several (extensive micro-topography)	0	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	1	
212			Intermediate (1 - 10% of vegetated part of the AA).	0	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	1	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	0	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	0	
223			100-1000 sq. ft. within the AA.	1	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	0	
229			1 to 10 acres	1	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	0	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	1	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	1	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	0	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	0	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	1	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	1	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	0	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	1	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	1	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	0	
269			>90%. **SKIP to F58.**	1	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	0	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	0	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	1	
306			>95% of the AA	0	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	1	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	1	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	0	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	1	
324			>1000 ft away, or none, or no information	0	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1

Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	0

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S2

Wetter Water Regime - *External* Causes

*In the last column, place a check mark next to any item occurring in the wetland's **contributing area** (CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S3

Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4

Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				
	increased pavement and other impervious surface in the CA				
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
				Sum=	0
				Final Score=	0.00
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				
	oil or chemical spills (not just chronic inputs) from nearby roads				
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	0
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	0
				Sum=	0
				Final Score=	0.00
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00

S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				
	leveling or other grading not to the natural contour				
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				
	excavation				
	ditch cleaning or dredging in or adjacent to the wetland				
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	0
				Sum=	0
				Final Score=	0.00

GROUP 8

WESPAK SE NON-TIDAL REPORT

Wetlands L, M

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**0.13**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protoocl and certified in ORWAP**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**(normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	10.00	9.17	10.00	Higher	9.17	Higher	9.58	10.00	10.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	2.06	0.00	2.06	Lower	0.00	Lower	1.03	2.06	1.49	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	6.27	0.00	6.27	Moderate	0.00	Lower	3.13	6.27	5.55	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	10.00	1.66	10.00	Higher	3.41	Moderate	6.71	10.00	10.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	10.00	7.78	10.00	Higher	10.00	Higher	10.00	10.00	10.00	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	10.00	3.58	10.00	Higher	3.85	Moderate	6.92	10.00	10.00	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	6.46		4.65	Moderate			4.65	4.65	4.65	6.53	3.66	6.43			
Organic Nutrient Export (OE)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	3.92	10.00	2.26	Lower	10.00	Higher	6.13	6.13	6.13	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.04	6.67	3.22	Lower	8.48	Higher	5.85	5.85	5.30	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	3.10	0.00	4.48	Moderate	0.00	Lower	2.24	4.48	4.48	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	5.31	8.89	6.56	Moderate	8.89	Higher	7.72	7.72	7.61	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	4.67	7.15	6.53	Higher	9.58	Higher	8.06	8.06	7.92	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	4.67	9.53	2.99	Lower	9.44	Higher	6.21	6.21	5.65	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		3.39			4.69	Moderate	4.69	4.69	4.69				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.54			6.98	Moderate	6.98	6.98	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		3.22			3.39	Moderate	3.39	3.39	3.57				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		8.93			10.00	Higher	10.00	10.00	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								10.00	10.00	Higher	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								9.33	10.00	Higher	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								4.38	0.00	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.28	3.07	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								7.49	6.66	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	7.48	7.84	7.84	7.45

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.45
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	1	
6			0.5 - 2 miles	0	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	1	
13			100-500 ft	0	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	1	
35			>90% of the land. **SKIP to OF8.**	0	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	1	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	1	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	1	
64			3 to 6	0	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	

	A	B	C	D	E
71			300-1000 ft, and connected with a natural land corridor	0	WBN]
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	0	
82			300-1000 ft	1	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	0	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	1	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	0	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	0	
155			10 to 100% of its CA	1	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	0	
159			10 to 25%	0	
160			>25%	1	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	1	
163			Somewhat true	0	
164			Mostly untrue	0	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	1	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	0	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	1	
171			2-5%	0	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	1	
176			150-300 ft	0	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	0	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	

	A	B	C	D	E
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	0	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	1	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public**. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	1	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	0	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	1	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	1	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	0	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	0	
36			25-50%	0	
37			50-95%	1	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	0	
41			0.5 - 1 ft	1	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	1	
47			1-2 ft deep	0	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	0	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	1	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	0	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	1	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	0	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	0	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	1	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	0	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	0	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	0	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	0	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	1	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	0	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	1	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	1	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	0	
139			>75%	0	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	1	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	0	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	0	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark all the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	0	
154			deciduous 1-4" diameter and >3 ft tall	0	
155			evergreen 4-9" diameter	0	
156			deciduous 4-9" diameter	0	
157			evergreen 9-21" diameter	0	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	0	
163			Several (>2/acre) but above not true.	0	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	0	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	1	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	0	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	they are in the PH for overlying its water. Deciduous shrubs are especially likely to occur on mineral soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	0	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	0	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	1	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	1	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	0	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	0	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	1	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	1	
208			Intermediate	0	
209			Several (extensive micro-topography)	0	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	1	
212			Intermediate (1 - 10% of vegetated part of the AA).	0	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	1	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	0	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	1	
228			0.1 - 1 acre	0	
229			1 to 10 acres	0	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	0	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	0	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	0	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	0	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	1	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	0	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	1	
261			some (but <5%) of the upland edge	0	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	1	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	0	
269			>90%. **SKIP to F58.**	0	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	1	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	1	
275			2-5%	0	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	0	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	1	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	0	
288			25-50%	0	
289			>50%	1	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	0	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	1	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	1	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	0	
306			>95% of the AA	0	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	0	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	1	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	0	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	1	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	0	
324			>1000 ft away, or none, or no information	1	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1

Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	x
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	x
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	x

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	3
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	3
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	2
Average water level increase	>1 ft	6-12"	<6 inches	2
			Sum=	10
			Final Score=	0.83

S2

Wetter Water Regime - *External* Causes

In the last column, place a check mark next to any item occurring in the wetland's ***contributing area*** *(CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	x
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	x
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	3
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	3
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	2
Average water level increase	>1 ft	6-12"	<6 inches	3
			Sum=	11
			Final Score=	0.92

S3

Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4

Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				x
	increased pavement and other impervious surface in the CA				x
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	3
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	3
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	3
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	1
				Sum=	10
				Final Score=	0.83
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				x
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				x
	oil or chemical spills (not just chronic inputs) from nearby roads				
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	3
				Sum=	7
				Final Score=	0.78
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				x
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	3
				Sum=	7
				Final Score=	0.78
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				x
	erosion from construction, in-channel machinery in the CA				x
	erosion from off-road vehicles in the CA				x
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				x
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				x
	accelerated channel downcutting or headcutting of tributaries due to altered land use				x
	other human-related disturbances within the CA				x
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	3
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	3
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	3

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	3
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	12
				Final Score=	1.00
S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				x
	leveling or other grading not to the natural contour				x
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				
	excavation				x
	ditch cleaning or dredging in or adjacent to the wetland				
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	3
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	3
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	3
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	3
				Sum=	12
				Final Score=	1.00

GROUP 9

WESPAK SE NON-TIDAL REPORT

Wetlands N, Q, R, S

Site Name or ID #:	**Angoon Airport**
Investigator Name:	**Environmental Science Associates (ESA)**
Date of Field Assessment:	**13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018**
Nearest Town:	**Angoon, Alaska**
Latitude (decimal degrees):	**57.475520°**
Longitude (decimal degrees):	**-134.553167°**
HUC12 Watershed # (from UAS web site):	**19010204.00**
Approximate size of the Assessment Area (AA, in acres)	**6.90**
AA as percent of entire wetland (approx.)	**100.00**
Tidal phase during most of visit:	**Low**
What percent (approx.) of the **wetland** were you able to visit?	**100.00**
What percent (approx.) of the **AA** were you able to visit?	**100.00**
Have you attended a training session for this protocol? If so, indicate approximate month & year.	**No. Familiar with protocol and certified/trained in Oregon ORWAP and SFAM**
How many wetlands have you assessed previously using this protocol (approx.)?	**6.00**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

WESPAK-SE version 2 scores for this NON-tidal Wetland Assessment Area (AA):

Specific Functions or Values:	Function Score raw	Value Score raw	**Function Score (normalized)**	**Function Rating**	**Value Score (normalized)**	**Value Rating**	FV raw	FV Index	**FV Index (normalized)**	**FUNCTION** Median of Normalized F Scores	*Thresholds for Function Rating (normalized score)* Low is < or =	High is >	**VALUE** Median of Normalized V Scores	*Thresholds for Value Rating (normalized score)* Low is < or =	High is >
Surface Water Storage (WS)	10.00	1.67	10.00	Higher	1.67	Lower	5.83	10.00	10.00	2.95	2.89	6.34	3.06	1.85	5.00
Stream Flow Support (SFS)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	3.17	2.67	6.13	3.33	1.45	4.48
Streamwater Cooling (WC)	7.67	0.00	7.67	Higher	0.00	Lower	3.83	7.67	7.50	4.00	3.36	5.87	1.98	2.11	5.49
Streamwater Warming (WW)	3.93	0.00	3.93	Moderate	0.00	Lower	1.97	3.93	2.76	5.42	3.33	6.80	2.78	2.78	6.63
Sediment & Toxicant Retention & Stabilization (SR)	10.00	0.30	10.00	Higher	0.31	Lower	5.15	10.00	10.00	3.13	3.36	6.52	0.84	2.05	5.86
Phosphorus Retention (PR)	10.00	6.67	10.00	Higher	10.00	Higher	10.00	10.00	10.00	3.34	3.06	6.17	1.27	2.45	5.73
Nitrate Removal & Retention (NR)	10.00	3.25	10.00	Higher	3.44	Moderate	6.72	10.00	10.00	2.33	2.19	4.64	3.25	2.17	4.94
Carbon Sequestration (CS)	7.35		6.38	Moderate			6.38	6.38	6.38	6.53	3.66	6.43			
Organic Nutrient Export (OE)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	7.68	0.00	7.59	7.00	0.00	7.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	2.93	7.23	0.00	0.63	6.67
Resident & Other Fish Habitat (FR)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	0.00	0.00	7.43	0.00	1.50	7.76
Aquatic Invertebrate Habitat (INV)	5.12	10.00	4.70	Moderate	10.00	Higher	7.35	7.35	7.35	3.92	2.48	5.04	2.22	2.50	6.43
Amphibian Habitat (AM)	5.75	6.25	4.52	Moderate	7.72	Higher	6.12	6.12	5.61	4.40	3.59	6.74	4.21	2.43	5.19
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	Lower	0.00	Lower	0.00	0.00	0.00	4.60	0.00	5.68	2.53	0.85	4.07
Waterbird Nesting Habitat (WBN)	2.92	0.00	4.21	Moderate	0.00	Lower	2.11	4.21	4.21	4.58	0.00	6.44	6.90	1.67	8.70
Songbird, Raptor, & Mammal Habitat (SBM)	6.59	10.00	8.13	Higher	10.00	Higher	9.07	9.07	9.02	8.05	0.00	7.35	4.22	2.50	5.63
Pollinator Habitat (POL)	7.73	7.15	11.47	Higher	9.58	Higher	10.52	11.47	10.00	4.94	2.45	5.38	4.15	2.65	5.83
Native Plant Habitat (PH)	5.82	9.53	6.59	Higher	9.44	Higher	8.01	8.01	7.98	5.24	4.52	6.51	3.78	3.78	6.46
Other Values or Attributes:															
Public Use & Recognition (PU)		2.22			2.59	Moderate	2.59	2.59	2.59				2.91	2.32	5.59
Subsistence & Provisioning Services (Subsis)		8.89			8.89	Higher	8.89	8.89	8.89				5.00	0.00	6.67
Wetland Sensitivity (Sens) - *not used in subsequent calculations*		4.59			7.14	Moderate	7.14	7.14	10.00				5.91	5.03	7.46
Wetland Ecological Condition (EC) - *not used in subsequent calculations*		8.92			9.39	Higher	9.39	9.39	9.88				4.15	2.79	5.08
Stress Potential (STR) - *not used in subsequent calculations*		5.11			7.77	Higher	7.77	7.77	10.00				6.43	3.31	5.73
Summary Scores for Groups:								**Group Score Not Normalized**	**Group Score Normalized**	**Group Rating**					
HYDROLOGIC Group (WS)								10.00	10.00	Higher	3.08	5.91			
WATER QUALITY Group (max+avg/2 of SR, PR, NR, CS)								9.55	10.00	Higher	4.23	6.75			
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC, WW)								5.51	1.22	Lower	4.07	6.60			
FISH Group (max+avg/2 of FA, FR)								0.00	0.00	Lower	2.52	5.83			
AQUATIC HABITAT Group (max+avg/2 of AM, WBF, WBN)								4.44	3.27	Lower	4.04	6.82			
TERRESTRIAL HABITAT Group (max+avg/2 of SBM, PH, POL)								9.50	9.33	Higher	3.61	6.32			
SOCIAL GROUP (max+avg/2 of PU, Subsis)								8.89	10.00	Higher	3.66	6.58			

	AVG w/o Social	with Social	selected higher	normalized
	7.82	8.13	8.13	7.79

Overall Score (see Manual for explanation of how the spreadsheet calculates it):	7.79
Overall Rating:	**Higher**

	A	B	C	D	E
1	**Data Form OF (Office) for Non-tidal Wetlands. WESPAK-SE version 2.0.** Funded in part with qualified Outer Continental Shelf oil and gas revenues by the Coastal Impact Assistance Program, U.S. Fish & Wildlife Service.				**Site Name:** Angoon Airport
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. Except where instructed otherwise, in the Data column change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this office data form requires 1-2 hours per site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds, Mammals, & Raptors, POL= Pollinators, PH= Plant Habitat, PU= Public Use & Recognition, Subsis= Subsistence, EC=				**Site Location:** Angoon Alaska **Investigator:** ESA Staff **Date:** 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018 **Site Notes:** The site was delineated in three intervals spanning 2013, 2017, and 2018. Field observations for the wetland assessment were taken durring the 2018 survey.
3	**#**	**Indicator**	**Condition Choices**		**Explanations, Definitions**
4	OF1	Distance by Road to Nearest Population Center	Measured along the maintained road or boat landing that is nearest the AA, the distance to the nearest **population center** is:		"Population center" means a settled area with more than about 50 year-round residents per square mile. [FAv, FRv, NRv, WBFv, PH, PU, SBM, Subsis]
5			<0.5 mile	1	
6			0.5 - 2 miles	0	
7			2-5 miles	0	
8			5-10 miles	0	
9			>10 miles	0	
10	OF2	Wildlife Access	Draw a circle of **radius of 0.5 mile** from the center of the AA. If mammals and amphibians can move from the center of the AA to all other separate wetlands located within the circle without being forced to cross maintained roads (any width), lawns, bare ground, marine waters, and/or steep (>30%) slopes, mark **1**= yes can move, or no other wetlands within that distance, or 0= no.	0	Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ The route to other wetlands need not be direct – it may be circuitous to avoid the barrier, as long as the travel route remains entirely within the circle. [AM, SBM]
11	OF3	Distance to Nearest Maintained Road	From the **center** of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Many roads are mapped in the online WESPAK-SE Wetlands Module: http://seakgis.alaska.edu/flex/wetlands/ [FAv, FRv, AM, PH, PU, SBM, WBN]
12			<100 ft	1	
13			100-500 ft	0	
14			500-1000 ft	0	
15			1000 ft - 0.5 mile	0	
16			0.5- 1 mile	0	
17			>1 mile	0	
18	OF4	Distance to Natural Land Cover	The minimum distance from the AA **edge** to the edge of the closest patch or corridor of ***natural*** (but not necessarily native– see definition on right) land cover **larger than 100 acres**, is:		Natural land cover includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial cover. It includes low-intensity timber harvest areas and clearcuts harvested more than 10 years ago. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas dominated by non-native plants if they provide perennial cover. Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this, and preferably should be verified during a site visit. Do not include parts of the natural cover patch or corridor that are narrower than 150 ft. [AM, SBM, Sens]
19			<150 ft. Or the AA itself contains >100 acres of vegetation.	1	
20			<150 ft, but completely separated from the 100-acre natural area **by any width** of roads, stretches of open water, bare ground, lawn, or impervious surface, AND the AA does not contain >100 acres of vegetation.	0	
21			150-300 ft, with or without interrupting features	0	
22			300-1000 ft, with or without interrupting features	0	
23			none of the above	0	
24	OF5	Size of Largest Nearby Tract or Corridor of Natural Land Cover	**Including the AA's vegetated area**, the largest patch or corridor that is **natural land cover** and is **contiguous with** vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 150 ft), occupies:		View aerial imagery. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a linear gap of >150 ft, if the gap is comprised of impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft. Land cover maps contained in the online WESPAK-SE Wetlands Module may be examined to answer this, and to use its measure tool to determine acreage. [AM, SBM, Sens, WBN]
25			<1 acre, or larger but with average width <150 ft	0	
26			1-10 acres	0	
27			10-100 acres	0	
28			100-1000 acres	0	
29			>1000 acres	1	
30	OF6	Natural Land Cover Extent	Within a **2-mile** radius measured from the **center** of the AA, the percent of the **land** that has natural land cover (see definition above) is:		Aerial imagery and land cover maps contained in the online WESPAK-SE Wetlands Module should be examined to answer this. [AM, SBM]

	A	B	C	D	E
31			<5% of the land (excluding ocean and bay)	0	
32			5 to 20% of the land	0	
33			20 to 60% of the land	0	
34			60 to 90% of the land	0	
35			>90% of the land. **SKIP to OF8.**	1	
36	OF7	Type of Land Cover Alteration	Within a **2-mile** radius measured from the **center** of the AA, the area that is **not** natural land cover or water is mostly:		[AM, SBM]
37			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
38			bare pervious surface, e.g., recent (5 yrs ago) clearcut, dirt or gravel road, plowed fields, landslide.	0	
39	OF8	Wetland Local Uniqueness	Refer to the online Wetlands Module> Land Classification Level 3. In the list below, enter a "1" next to all land cover types that are mapped as being intersected by the AA, **or** a "2" next to ones which (a) are present in the AA and (b) ALSO comprise **less than 10%** of the landscape outside of the AA but within 2 miles.		Aerial imagery should be examined to help answer this, and land cover maps contained in the online WESPAK-SE Wetlands Module may also be helpful, but should be verified during a site visit: [AMv, INVv, PHv, SBMv, POL, Sens]
40			Fresh Water	2	
41			Wetland	1	
42			Muskeg	0	
43			Herbaceous	2	
44			Shrubland (Low)	0	
45			Shrubland (Tall)	1	
46			Deciduous/Mixed Forest	2	
47			Conifer Forest - Young or Small	1	
48			Conifer Forest - Medium	1	
49			Conifer Forest - Large	2	
50			Wetland Shrub Forest	1	
51			other	0	
52			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA contains a cover type (list above) that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "2" in the next column.	0	
53			no Level 3 cover type maps available for this area, but from aerial imagery it appears that the AA does NOT contain a cover type that is absent from 90% of the landscape outside of the AA and within 2 miles. Enter "1" in the next column.	0	
54	OF9	Distance to Locally Uncommon Cover Type	If any of the above were marked "2", the distance from the AA edge to the closest one that was so marked is:		[INVv, AMv, SBMv, POLv, PHv, Sens]
55			<150 ft	1	
56			150 - 500 ft	0	
57			500 - 1000 ft	0	
58			1000 ft - 1 mile	0	
59			1-2 miles	0	
60			none of the above land cover classes were marked "2"	0	
61	OF10	Ponded Water in Landscape	Draw a circle of radius of **2 miles** centered on the AA. **Including** water ponded in the AA itself or in a fringing non-marine water body, the amount of water that is ponded (standing) during most of the year is:		**Ponded water** = any surface water greater than 1 acre that is not obviously part of a river, stream, or tidal system. In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. Also include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. [AM, PH, SBM, Sens, WBF, WBN]
62			0	0	
63			1 or 2	0	
64			3 to 6	1	
65			7 to 9	0	
66			10 to 12	0	
67			>12	0	
68	OF11	Ponded Water Proximity	The distance from the AA **edge** to the closest pond or lake that is **larger than 1 acre** and is **not** part of the same wetland, pond, or lake to which the AA is contiguous is:		"Uninterrupted" means no roads, other unvegetated lands, or lawns – regardless of their width. "Natural" land corridor means a corridor comprised of natural land cover as defined in OF4 above. To locate ponded waters, in the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [AM, PH, SBM, Sens, WBF, WBN]
69			<300 ft, and connected with a natural land corridor	0	
70			<300 ft, but no uninterrupted natural land corridor	0	
71			300-1000 ft, and connected with a natural land corridor	0	

	A	B	C	D	E
72			300-1000 ft, but no uninterrupted natural land corridor	0	
73			>1000 ft, and connected with a natural land corridor	1	
74			>1000 ft, but no uninterrupted natural land corridor	0	
75	OF12	Distance to Lake	The distance from the AA edge to the closest (but separate) **lake** (a non-tidal body of water that is ponded during most of the year and is **larger than 20 acres** or about 1000 ft on a side) during most of a normal year is:		In the online WESPAK-SE Wetlands Module, enable the Land Classification Level 1 layer and look for blue polygons larger than 20 acres. If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. [Sens, WBF, WBN]
76			<1 mile	0	
77			1-5 miles	1	
78			>5 miles and on the mainland or the same island	0	
79			>5 miles and on a different island	0	
80	OF13	Tidal Proximity	The distance from the AA edge to the closest **tidal water** body is:		[AM, FA, FR, INV, NR, OEv, PH, PR, PU, SBM, Sens, SR, Subsis, WBF, WBN, WS, WWv]
81			<300 ft	0	
82			300-1000 ft	1	
83			1000 ft - 1 mile	0	
84			1-5 miles	0	
85			>5 miles	0	
86	OF14	Upland Edge Contact	Select one:		"other wetland" could be contiguous wetland that is classified differently by NWI, or the same wetland but will be unaffected by proposed alteration. [NR, SBM, Sens]
87			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by other wetland or water.	0	
88			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
91			More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA.	1	
92	OF15	Floodable Property	From floodplain maps, topographic maps, aerial imagery, and/or contacts with FEMA and public works departments, determine IF: downslope from the AA and within 2 miles, structures are within a mapped 100-year floodplain or flood damage to structures has been documented, and BOTH the following are true: (a) The downslope flood damages were (or would be) caused mainly by rising river levels associated with precipitation and snow or glacier melt, not by high tides, hillslope runoff, or sudden icefalls AND (b) Between the AA and the downslope damage area, peak flow in a connecting channel (if any) is NOT regulated by dams. If true, enter "1" in next column. If false, enter "0".	0	Ketchikan and perhaps a few other communities have maps showing the 100-year probability floodplain. Although not comprehensive, see also the online WESPAK-SE Wetlands Module: **SEAK Hydro Process** classified as "Flood Plain" channel. [WSv]
93	OF16	Glacier Fed	Refer to the Glaciers map in the online WESPAK-SE Wetlands Module. Select the first applicable choice:		[AM, FA, FR, INV, OEv, PRv, SFSv, SRv, WCv, WSv, WWv]
94			No upstream glacier feeds **surface** water to the AA, not even seasonally.	1	
95			A glacier feeds streamflow or other surface water to the AA and it obviously reduces water clarity. If that is unknown, assume it to be true if a glacier within 1 mile feeds a tributary to this wetland, or if glaciers cover >30% of the area that drains to this AA.	0	
96			A glacier feeds streamflow or other surface water to the AA, but there is little or no resultant reduction in water clarity.	0	
97	OF17	Fish Access or Use	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Anadromous Waters Catalog**, and preferably verify by contacting a local ADFG biologist. Mark just the first choice that is true. The AA:		Streams with average gradients (measured over about a dozen feet) of more than 12%, can be assumed to be inaccessible to most fish unless data show otherwise. [AM, FA, FR, INV, NRv, PRv, Subsis, WBF, WBN]
98			a) is known to support **anadromous fish** feeding and/or spawning (some ADFG Class 1 streams).	0	
99			b) is probably accessible to anadromous and other fish (at least seasonally, at least for feeding, partially or entirely), but anadromous fish have not been **documented** (some Class 1 streams).	0	
100			c) is not accessible to anadromous fish, but other resident fish are known (or can be assumed) present (Class 2).	0	
101			d) is fishless (i.e., not accessible to anadromous fish and is known or can be assumed to have no resident fish). (Class 3, 4)	1	
102			e) fish presence and potential fish access are unknown and undeterminable.	0	
103	OF18	Designated IBA	See list in last column. Then if necessary refer to the map in the online WESPAK-SE Wetlands Module: Habitat Layers > **Important Bird Areas** (IBAs). The AA is within or contains part of an IBA. Enter 1= yes, 0= no.	0	Mendenhall Wetlands (Juneau), Berners Bay (Juneau), Port Snettisham (Juneau), Blacksand Spit (Yakutat), Icy Bay (Yakutat), Chilkat Bald Eagle Preserve (Haines), St. Lazaria Island (Sitka), Forrester Island (Prince of Wales-Outer Ketchikan), Stikine River Delta (Wrangell-Petersburg). [SBMv, WBFv, WBNv]

	A	B	C	D	E
104	OF19	Deer Winter Habitat Capability	Refer to the map in the online WESPAK-SE Wetlands Module: **Habitat Layers > Deer Winter Habitat Suitability Value.** Enter 3 if Very High; 2 if High; 1 if Moderate; 0= Lower or all other.	0	The rating, assigned by the 2007 Southeast Alaska Conservation Assessment, assumes areas at lower elevations with more southerly exposures, and with a forest canopy that provides snow interception and thermal cover, constitute good habitat for deer during potentially limiting periods of severe winter weather. [SBM, Subsis]
105	OF20	Precipitation, Mean Annual	Refer to the Precipitation layer in the online WESPAK-SE Wetlands Module. The mean annual precipitation in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [SFSv, OE]
106			<67 inches	0	
107			67-87 inches	1	
108			88-112 inches	0	
109			113-139 inches	0	
110			140-165 inches	0	
111			>165 inches	0	
112			no information available	0	
113	OF21	Temperature, Mean Annual	Refer to the Temperature layer in the online WESPAK-SE Wetlands Module. The mean annual temperature in the vicinity of the AA was modeled as (rounded to the nearest whole number):		The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of modeled data for grid cells covering Southeast Alaska. The modeled data are from the Oregon State University PRISM Climate Group and are based on the climate normals for the period 1981-2010, as well as elevation and latitude. [AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS, WWv]
114			<38 degrees F	0	
115			38-40 degrees F	0	
116			41-42 degrees F	1	
117			43-44 degrees F	0	
118			> 44 degrees F	0	
119			no information available	0	
120	OF22	Basic pH or Karst	The AA (a) is in a **karst** area as shown in the in the online WESPAK-SE Wetlands Module, or (b) has surface water that during most of the growing season has pH measured at >7.5 or CaCO3 alkalinity >100 mg/L, or (c) is known to be underlain by limestone bedrock with a very high (>70%) calcium carbonate content. Enter 1= yes, 0= no.	1	In karst landscapes, the bedrock is likely to have many subsurface cracks, channels, caves, and sinkholes, and presence of karst is suggested by prevalence of certain plants (e.g., maidenhair and holly ferns (*Adiantum pedatum, Polystichum braunii*), purple mountain saxifrage (*Saxifraga oppositifolia*), columbine (*Aquilegia formosa*). [AM, FA, FR, INV, OE, PH]
121	OF23	Granitic Soils	Refer to the map in the online WESPAK-SE Wetlands Module: Geology> **Granitic Geology**. The AA is underlain primarily by granitic formations or glacial till that is known to be granitic, as indicated by maps or preferably from direct observation. Enter 1= yes, 0= no.	0	If deep glacial till overlays the granitic bedrock it can obscure its effects. [FR, INV, OE, PH]
122	OF24	Upslope Soil Erodibility & Debris Flow Potential	A stream channel or upland within 200 ft upslope from the AA has been classified by the Forest Service, USDA, or other specialists as highly erodible, unstable, or a landslide hazard. Or, there is documentation of landslides, debris flows, or severe erosion above the AA within the past 20 years.		Base this on observations or (for most of the Tongass N.F. and adjoining private lands) consult the online WESPAK-SE Wetlands Module: Geology> Landslides. Consider steep upslope areas with shallow depth to bedrock and/or dominated by alder to be likely zones of past and possibly future erosion. [PH, PRv, Sens, SRv]
123			yes, and such conditions or classifications intersect the AA.	0	
124			yes, but the conditions or classifications do not reach or intersect the AA.	0	
125			no, or no information but very unlikely that AA is intersected by highly erodible lands or landslides	0	
126			no information	1	
127	OF25	Toxicity Documented Upstream	In the online WESPAK-SE Wetlands Module, see **Impaired Waters (DEC)** and **Contaminated Sites (Active)**. Do those maps show a problem within the AA or in waters flowing **into** it, and the problem is that **metals, hydrocarbons**, or other substances in the sediment, water, or tissues are at levels known to be harmful to aquatic life or humans? Or, other sampling has identified such a problem? Select the **first** true statement. These conditions are present:		Check to be sure the problem is related to metals, hydrocarbons, other toxic substances – NOT to sediment, turbidity, TSS, bacteria, oxygen, or temperature: in the Wetlands Module, use the Identify tool to click on the line segment or area and scroll through all the text in the pop-up window to see the type of problem. If no quality-controlled sampling has been done, then a statement or rating documenting the problem and published in a recent agency report or official correspondence may be counted. Also, if time allows, query and retrieve water quality data from: http://www.waterqualitydata.us/ Do not speculate or infer toxic conditions from presence of potential pollution sources. The water quality problem must be ongoing, not only historical. [AM, FA, FR, SRv, STR, WBF, WBN]
128			within the AA	0	
129			in waters within 1 mile that flow **into** the AA.	0	
130			Sampling (not just absence of map symbols) indicates no problems.	0	
131			insufficient data (no map symbols & no sampling, or >1 mile upstream).	1	
132	OF26	Toxicity Documented Downstream	The Impaired Waters (DEC) and Contaminated Sites (Active) maps show such a problem within the AA or in waters **downslope from** the AA. Or, other sampling has identified such a problem downslope. Select the **first** true statement. These conditions are present:		See above. [SRv]
133			within 1 mile downslope, and connected to the AA by a channel	0	

	A	B	C	D	E
134			within 1 mile downslope, but not connected to the AA by a channel	0	
135			sampling (not just absence of map symbols) indicates no problems	0	
136			insufficient data (no map symbols & no sampling, or >1 mile downslope)	1	
137	OF27	Drinking Water Source	Refer to the **Drinking Water Protection Areas** layer of the online WESPAK-SE Wetlands Module. Mark all that are true for the AA:		[NRv]
138			Zone A Ground Water	0	
139			Zone B Ground Water	0	
140			Zone A Surface Water	0	
141			Zone B Surface Water	0	
142			Zone C Surface Water	0	
143			Zone E Ground Water Surface Water Influence	0	
144			Zone F Ground Water Surface Water Influence	0	
145			Zone G Ground Water Surface Water Influence	0	
146			None of above	1	
147	OF28	Elevation in Multi-scale Watersheds	In the CoverPg worksheet, write down the specific 12-digit HUC watershed in which the AA is located and the AA's elevation (obtained from GPS or a topographic map). Get this by referring to the map in the online WESPAK-SE Wetlands Module: **National Hydrography Dataset> Watershed Boundary Dataset.** Then in the **ShedData worksheet** (tab below) look up the AA's HUC codes and their cut-offs for upper, middle, and lower one-third elevations, and determine to which one-third the AA belongs, in each row below:		[AM, CS, FA, FR, NR, OEv, PH, PR, PU, SBM, Sens, SFSv, SR, Subsis, WBF, WC, WS, WWv]
148			In its HUC8 (the watershed with a 12-digit code), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data.	1	
149			In its HUC7 (the 10-digit* watershed), the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 10-digit HUC is obtained by deleting the last 2 digits of the 12-digit HUC code]	1	
150			In its HUC6 (the 8-digit* watershed) the AA's elevation puts it in (enter one of the following): 3= upper one-third, 2= middle one-third, 1= lower one-third, 0= no data. [The 8-digit HUC is obtained by deleting the last 4 digits of the 12-digit HUC code]	1	
151	OF29	Wetland Class Scarcity in HUC6	From your observations, note if the AA would be classified as predominantly Forest/Shrub, Moss/Emergent, or Water. Then, find your 12-digit HUC in column M of the **ShedData worksheet**. Select column N, O, or P of that worksheet (whichever represents the cover type you decided predominates in your AA) and enter its value in the cell to the right. If your HUC is not listed in the ShedData table, change the cell on the right to **blank –>**	0.86	Wetlands that are of a type that is scarcer within their HUC12 watershed (indicated by a higher score here) are considered to be of greater value (not necessarily function) for several biological groups. [AMv, PHv, POLv, SBMv, Sens, WBFv, WBNv]
152	OF30	Contributing Area (CA) Percent	On a topographic map, draw the approximate bounds of this AA's **contributing area** (*see Manual*). Relative to the extent of this contributing area (CA), the AA comprises:		The CA is basically the upslope area that has the potential to deliver water to the wetland, and is a subset of the watershed. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as little as once every 2 years by river flow, the CA includes all upriver lands that feed that flooding river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area – not the area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones containing tributaries, the first choice will be the most appropriate. [NR, PR, Sens, SR, WSv]
153			<1% of its CA (including but not limited to most wetlands flooded annually by a major river, many in karst landscapes, and most that have multiple tributaries).	0	
154			1 to 10% of its CA	0	
155			10 to 100% of its CA	1	
156			Wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated. **SKIP TO OF34.**	0	
157	OF31	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 ft upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, debris flows, and other mostly-bare (but unfrozen) surface is about :		[FA, INV, NRv, PRv, SRv, WC, WSv, WWv]
158			<10%	1	
159			10 to 25%	0	
160			>25%	0	

	A	B	C	D	E
161	OF32	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow and/or have high runoff coefficients. **This statement is:**		[NRv, PRv, SRv, WSv]
162			Mostly true	0	
163			Somewhat true	0	
164			Mostly untrue	1	
165	OF33	Aspect	The overland flow direction of most surface water (in streams or runoff) that enters the AA is:		If there are no inflowing streams: In what direction does most runoff or groundwater flow as it moves through this AA? If necessary consider the Aspect 20m map in the online WESPAK-SE Wetlands Module. [AM, NR, PH, POL, SFS, WC, WS, WWv]
166			Northward (N, NE). north-facing CA.	0	
167			Southward (S, SW). south-facing CA.	0	
168			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat)	1	
169	OF34	Internal Gradient	The gradient along most of the flow path within the AA is:		For larger wetlands, go to the online Wetlands Module, click on Topographic for Basemap, zoom in closely until you see numbers on the contour lines. Measure a line drawn from highest to lowest elevation along the part of the wetland polygon having the greatest width measured perpendicular to contour lines. Then estimate elevational difference from the numbered contours and divide by the line length. For small wetlands, use a clinometer or iPhone app to measure gradient or estimate by eye. [AM, CS, NR, OE, PR, SR, WBF, WBN, WS]
170			<2%, **or,** no slope is ever apparent (i.e., flat). Includes most depressional sites and ponds.	0	
171			2-5%	1	
172			6-10%	0	
173			>10%	0	
174	OF35	Internal Flow Distance (Path Length)	From measurement of wetland polygon width or intersected stream length in the online WESPAK-SE Wetlands Module: The straight-line horizontal distance from the wetland's inlet to outlet is: *[Note: If inlet and/or outlet are lacking, see guidance in last column]*		If wetland is on a slope, measure from the highest- to lowest-elevation point in the wetland polygon. If wetland is flat or a pond, use the maximum width measured perpendicular to topographic lines uphill from the wetland. Straight-line rather than channel distance is used here only for simplicity of measurement. The category breaks are based on the 10, 25, 50, 75, and 90th percentiles of intersected stream length of all Southeast Alaska non-tidal wetlands. [NR, OE, PR, SR, WS]
175			<150 ft	0	
176			150-300 ft	1	
177			300-800 ft	0	
178			800-2000 ft	0	
179			2000 ft - 1 mile	0	
180			>1 mile	0	
181	OF36	Relative Hydrologic Distance to Anadromous Stream	Determine the AA's Wetland_ID using the Identify tool in the online WESPAK-SE Wetlands Module (see Manual). From column B of the HydroDist worksheet (tab below), enter its score in the next column. If Wetland_ID or HydroDist is lacking, use the value from the closest non-tidal wetland.	0.57	[OEv]
182	OF37	Salmonid Watershed	Refer to map in the Manual (Appendix A, Fig. A-1). This AA's watershed is rated: 3=Very High (100%), 2= High (50-99%), 1= Moderate (10-49%), 0= all other.	0	The rating (from TNC) is based on number of salmonid species present in the watershed and habitat suitability (based on stream type and floodplain extent) relative to suitability of other waters in the same biogeographic province. [FAv, Subsis]
183	OF38	Subsistence Focal Areas	The AA or waters that directly adjoin it:		Subsistence uses are allowed even in communities designated as Non-subsistence if the use is by persons with subsistence permits. [FAv, FRv, Subsis]
184			is in Juneau or Ketchikan, and thus is a designated **Non**-subsistence Use Area (see WESPAK-SE Wetlands Module> ADFG Nonsubsistence Use Areas for exact boundaries)	0	
185			is accessible to salmon AND is a major salmon subsistence harvest area according to (a) Table B-6 of the manual, OR (b) Figures A2a-c of the manual (shown as a point on the maps)	0	
186			neither of the above	1	
187			no data (outside of the regions shown on the maps, and not listed in Table B-6)	0	
188	OF39	Geography	Mark ALL that are true. The AA is located:		[AMv, SBM, WBF, Sens]
189			in the Stikine, Alsek, Taiya-Chilkat-Skagway, or Taku deltas or floodplains.	0	
190			in another mainland area or on an island larger than 20 square miles.	1	
191			on an island smaller than 20 sq. mi. and separated completely from other lands by a gap wider than 150 feet created by tidal or marine waters.	0	

	A	B	C	D	E
192	OF40	Unbrowsed Vegetation	The AA is on an island known to **lack** deer, elk, and moose. Enter 1 if yes, 0 if no.	0	[PH, SBM]
193	OF41	Amphibian Use	A native amphibian (Wood Frog, Western Toad, Columbia Spotted Frog, Northwestern Salamander, Long-toed Salamander, Rough-skinned Newt) has been detected under conditions similar to what now occur, by a qualified observer, or as indicated in the online Wetlands Module: Habitat Layers > Amphibian Sites. **Mark just the first choice that is true.**		Although not complete, additional records of amphibians and some species of vertebrates can be obtained by contacting the Alaska Natural Heritage Program or visiting their web site at: http://aknhp.uaa.alaska.edu/maps/biotics/ [AM, Sens]
194			in the AA	0	
195			outside the AA only, but within 0.5 mile and at nearly the same elevation (+ or - 500 ft).	1	
196			outside the AA only, and 0.5 to 2 miles away and at nearly the same elevation.	0	
197			other conditions, or no data	0	
198	OF42	Nesting Waterbird Species of Conservation Concern	A waterbird species of conservation concern in Southeast Alaska (Common Loon, Red-throated Loon, Red-necked Grebe, Trumpeter Swan, Lesser Yellowlegs, Solitary Sandpiper) has been detected nesting semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		"generally similar" means same type, where "type" is defined based on duration of ponded water [Sens, WBNv]
199			in the AA	0	
200			outside the AA but within 0.5 mile, in a generally similar wetland	0	
201			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
202			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data. **However**: at least one of the following have been confirmed **nesting** in the AA: Greater Yellowlegs, Wilson's Snipe, American Bittern, Sora, Sandhill Crane, any duck species.	0	
203			none of above, or no data	1	
204	OF43	Non-breeding (Feeding) Waterbird Species of Conservation Concern	One or more of these species – Pacific Loon, Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Trumpeter Swan – has been detected feeding semi-annually under conditions similar to what now occur, by a qualified observer. **Mark just the first choice that is true:**		These are waterbird species of conservation concern that, in most cases, do not breed in Southeast Alaska, but feed here regularly. [Sens, WBFv]
205			in the AA	0	
206			outside the AA but within 0.5 mile, in a generally similar wetland	0	
207			outside the AA and 0.5 to 2 miles away, in a generally similar wetland	0	
208			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur, or no data.	1	
209	OF44	Songbird or Raptor Species of Conservation Concern	One or more of these species – Osprey, Peregrine Falcon, Northern (Queen Charlotte) Goshawk, Olive-sided Flycatcher, Rusty Blackbird – has been detected nesting semi-annually in the AA or along the AA's upland edge (within 300 ft) under conditions similar to what now occur, by a qualified observer. Mark just the first choice that is true:		These are wetland-associated songbird or raptor species of conservation concern that nest in Southeast Alaska. List is from Alaska Landbird Conservation Plan (Andres 1999), Alaska Natural Heritage Program, and other sources. [SBMv, Sens]
210			in the AA	1	
211			outside the AA but within 0.5 mile, in a generally similar wetland.	0	
212			outside the AA and 0.5 to 2 miles away, in a generally similar wetland.	0	
213			beyond 2 miles, or no recent observation of these species by a qualified observer under conditions similar to what now occur. **However**: at least one of the following have been confirmed nesting in the AA: Short-eared Owl, Alder Flycatcher, Warbling Vireo, Red-eyed Vireo, Northern Waterthrush, Common Yellowthroat, Red-winged Blackbird.	0	
214			none of above, or no data	0	
215	OF45	Plants of Conservation Concern	The AA contains an uncommon or imperiled wetland indicator plant that is (a) listed in Table C-6 of the Manual, or (b) is a native species that is not listed as occurring in Southeast Alaska in the PlantList worksheet, has been detected within the AA under conditions similar to what now occur, by a qualified observer, and:		Although not complete, records of plant species locations can be obtained online from the Consortium of Pacific Northwest Herbaria at: http://www.pnwherbaria.org/data/search.php [PHv, POLv, Sens]
216			more than 1 such feature or species is present in the AA	0	
217			only one such species or feature is present in the AA	0	
218			there are no recent observations of these in the AA by a qualified observer under conditions similar to what now occur, or no data.	1	
219	OF46	Cedar	The AA contains (a) more than1 acre of a mature (>24" dbh) living stand of cedar or (b) is in an area documented as Yellow Cedar Decline (see layer in online WESPAK-SE Wetlands Module).	0	[PHv, SBM]
220	OF47	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
221	OF48	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, enhance, the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ [PU]

	A	B	C	D	E
222	OF49	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, **unrelated to any regulatory requirements, and data are available to the public.** Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]

	A	B	C	D	E
1	**Data Form F (Field) for Non-tidal Wetlands. WESPAK-SE version 2.0.**				**Site Name: Angoon Airport**
2	DIRECTIONS: Conduct an assessment only after reading the accompanying Manual and explanations in column E below. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. For most wetlands, completing this field data form requires 1-2 hours on a site. For a listing of functions to which each question pertains, see bracketed codes in column E. For detailed descriptions of each WESPAK-SE model, see Appendix F of the accompanying Manual. Codes for functions and values are: WS= Water Storage, SFS= Stream Flow Support, WC= Water Cooling, WW= Water Warming, SR= Sediment Retention, PR= Phosphorus Retention, NR= Nitrate Removal, CS= Carbon Sequestration, OE= Organic Export, INV= Invertebrates, FA= Anadromous Fish, FR= Resident Fish, AM= Amphibians, WBF= Feeding Waterbirds, WBN= Nesting Waterbirds, SBM= Songbirds,				**Site Location: Angoon, Alaska** **Investigator: Environmental Science Associates (ESA)** **Date: 13-22 Aug, 2013; 15-22 June, 2017; 6-14 June, 2018** **Site Notes:**
3	**#**	**Indicator**	**Condition Choices**	**Data**	**Explanations, Definitions**
4	F1	Wetland Type	Most of the vegetated part of the AA (wetland Assessment Area) is a (select ONE):		[AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]
5	F1.1		Forested Peatland	1	Nearly all the AA is moss-covered and/or the soils to a depth of at least 4 inches are organic (sometimes deeper if not rocky). More tall (>3 ft) woody cover than herbaceous. Trees often hemlock or cedar. Often with skunk cabbage (at least in seasonal channels), blueberries. Little or no open water. Includes shrubby fringes of open peatlands and fens. Not in active floodplain.
6	F1.2		Open Peatland	0	Nearly all the AA is moss-covered. Peat depth usually > 16 inches except where bedrock near surface. Tree cover is <5% and cover of tall (>3 ft) shrubs is <30%. Shore pine, Labrador tea, crowberry often occur. Often with small (<25 sq ft) scattered stair-step pools with acidic, stained water. Some examples are flat bogs, floating bogs, and sloping muskeg.
7	F1.3		Fen/ Marsh	0	Surface water is more extensive, at least seasonally. More emergent than tall (>3 ft) woody plant cover. Often sedges, deer cabbage, marsh marigold, horsetail, burreed, pond lily. If ground is moss-covered, it is largely obscured by sedges or other herbaceous plants. Soils often muck or peat, seldom coarse unless created by excavation. Often beaver-created, or at base of steep slopes, or in depressions or adjoining larger water bodies.
8	F1.4		Floodplain Wetland	0	At least once annually, surface water in a channel that flows through or adjoins the AA causes the width of surface water in the AA (perpendicular to the channel) to more than double. The increased width is due mainly to that channel inflow, not to hillslope seepage or runoff. Soils are silt or coarser (little or no organic soil or peat). Vegetation can be woody or herbaceous: often alder, willow, devil's club. Includes some (not all) wetlands in mapped floodplains. Consult municipal maps of floodplains if available, and the online WESPAK-SE Wetlands Module: SEAK Hydro Stream.
9	F1.5		Uplift Meadow	0	Within a few miles of tidewatter or a glacier, but nontidal, and mostly within 100 miles of Glacier Bay National Park. Little or no persistent surface water except in channels, which may be strongly downcut. Mostly sweetgale and/or herbaceous vegetation, e.g., silverweed, iris, Lyngbye's sedge. Tree cover usually <30%. Peat depth usually <16 inches. Resulted from uplift following isostatic rebound as a glacier receded within recent centuries.
10	F1.6		Tidal Marsh or Tidal Swamp. Do not continue. Use other spreadsheet.	0	Inundated by tide at least once annually and dominated by emergent herbaceous or woody plants. The level of surface water fluctuates every ~6 hours on a daily basis in response to tides. Do not include areas of beachgrass (*Leymus* or *Elymus mollis,* also called ryegrass) unless they are inundated at that frequency. Do not include areas that are entirely eelgrass or seaweeds.
11	F2	% Saturated **Only**	The percentage of the AA that **lacks** surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		This is the cumulative acreage of all areas lacking surface water in the AA. [AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC, WW]
12			less than 1%, or <0.01 acre (about 20 ft on a side) never has surface water. In other words, **all or nearly all of the AA is inundated permanently or at least seasonally.**	0	
13			1-25% of the AA never contains surface water.	0	
14			25-50% of the AA never contains surface water.	0	

	A	B	C	D	E
15			50-99% of the AA never contains surface water.	1	
16			>99% of the AA never contains surface water, except for water flowing in channels and/or in pools that occupy <1% of the AA. **SKIP to F30.**	0	
17			>99% of the AA never contains surface water, and AA is not intersected by channels that have flow, not even for a few days per year. **SKIP to F30.**	0	
18	F3	% with **Persistent** Surface Water	The percentage of the AA that has **surface** water (either ponded or flowing, either open or obscured by vegetation) during **all** of the growing season during most years is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas that have surface water. Sites fed by glaciers, or by unregulated streams that descend on north-facing slopes, tend to remain wet longer into the summer. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. In the local soil survey, the NRCS descriptions of the predominant soil types may include information on saturation persistence. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
19			less than 1%, or <0.01 acre (whichever is less). **SKIP to F7.**	0	
20			1-25% of the AA, and mostly in narrow channels and/or small scattered pools.	0	
21			1-25% of the AA, and mostly in a single large pool, pond, and/or channel.	1	
22			25-50% of the AA	0	
23			50-95% of the AA	0	
24			>95% of the AA	0	
25	F4	Summertime Shading of Water	At mid-day during the warmest time when surface water is present, the area of water within the AA that is shaded by vegetation, incised channels, streambanks, or other features also present within the AA is:		Consider the aspect and surrounding topographic relief as well as vegetation height and density. [FA, WC, WW]
26			<5% of the water is shaded	0	
27			5-25% of the water is shaded	0	
28			25-50% of the water is shaded	0	
29			50-75% of the water is shaded	0	
30			>75% of the water is shaded	1	
31	F5	Fringe Wetland	The AA adjoins a lake, stream, or river whose wetted width (not counting the AA's wetland) during mean annual conditions is greater than 50 ft and also more than 5 times the vegetated wetland's average width (measured perpendicular to upland). If true, enter "1" and continue. If false, leave the 0 and continue.	0	[WBF, WBN, WC, WWv]
32	F6	Lacustrine Wetland	The AA borders a body of ponded open water whose size (not counting the AA's wetland) exceeds 20 acres during most of the growing season. Enter "1" if true, "0" if false.	0	The "vegetated areas" should not include submersed or floating-leaved aquatics. [FA, FR, PR, WBF, WBN]
33	F7	% Flooded **Only** Seasonally	The percentage of the AA soil that is covered by surface water **only** during the wettest time of year, and for >2 continuous weeks during that time, is:		0.01 acre is about 20 ft on a side if square. This is the cumulative acreage of all areas in the AA that flood ONLY seasonally. Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualizing where that would intercept the land along the river. Although useful only as a general guide, the NWI's water regime modifier code and NRCS soil survey descriptions of the predominant soil types usually include information on flooding frequency and saturation persistence. The wettest times in Southeast Alaska typically occur during late fall, during rain events after the ground is frozen, and/or during spring snowmelt. Near melting glaciers, surface water may be present mainly in summer. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
34			<1% or <0.01 acre, whichever is less. **SKIP to F9.**	0	
35			1-25%	1	
36			25-50%	0	
37			50-95%	0	
38			>95%	0	
39	F8	Annual Water Fluctuation Range	The maximum annual fluctuation in surface water within the AA is:		[AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
40			<0.5 ft	1	
41			0.5 - 1 ft	0	
42			1-3 ft	0	
43			> 3 ft	0	
44	F9	Predominant Depth Class	During most of the growing season, surface water depth in **most** of the area where it is present is: [*Note: This is not asking for the maximum depth.*]		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice.This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded areas. [CS, FA, FR, INV, OE, PH, PR, Sens, SFS, SR, WBF, WBN, WC, WW]
45			<0.5 ft deep (but >0)	0	
46			0.5 - 1 ft deep	1	
47			1-2 ft deep	0	
48			2-6 ft deep	0	
49			>6 ft deep. True for many fringe wetlands.	0	

	A	B	C	D	E
50	F10	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in the manual. [FR, INV, WBF, WBN]
51			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
52			One depth class that comprises 50-90% of the AA's inundated area.	1	
53			Neither of above. Multiple depth classes; none occupy more than 50% of the AA.	0	
54	F11	Open Water - Extent	During most of the growing season, the largest patch of **open** water that is in or bordering the AA is **>1 acre and mostly deeper than 1 ft.** If true enter "1" and continue, If false, enter "0" and **SKIP to F15.**	0	**Open water** is water that is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath it. It may be flowing or ponded.
55	F12	Flat Shoreline Extent	The length of the AA's shoreline (along its ponded open water) that is bordered by areas that are **nearly flat** (a slope less than about 5%) is:		See diagram in the manual. If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
56			<1% of the shore length	0	
57			1-25%	0	
58			25-50%	0	
59			50-75%	0	
60			>75%	0	
61	F13	Width of AA's Vegetated Zone	At the driest time of year (or lowest water level), the width of vegetated area in the AA that separates adjoining uplands from **most of** the open water within or adjoining the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. For most sites larger than 10 acres and with persistent water, measure the width using aerial imagery rather than estimate in the field. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
62			1-5 ft	0	
63			5-25 ft	0	
64			25-100 ft	0	
65			100-300 ft	0	
66			>300 ft	0	
67	F14	Non-vegetated Aquatic Cover	The cover for fish, aquatic invertebrates, and/or amphibians that is provided by horizontally incised banks, water deeper than 2 ft, and/or partly-submerged accumulations of wood thicker than 4 inches (NOT by living vegetation) is:		For this question, **do not consider herbaceous plants**. Consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
68			Little or none, or all water is shallower than 2 ft most of the year.	0	
69			Intermediate, e.g., 500 - 2500 cu. ft of instream wood per 1000 ft of channel.	0	
70			Extensive: >8 pieces of wood per stream reach (reach= 10x channel width), or >2700 cu.ft of instream wood per 1000 ft of channel, or >10% of bank length is incised.	0	
71	F15	All Ponded Water - Extent	During most of the growing season, the percentage of the AA that has **ponded** surface water (stagnant, or flows so slowly that fine sediment is not held in suspension) which is **either open or shaded by emergent vegetation** is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, FA, FR, INV, NR, OE, Sens, SR, SBM, WBF, WBN, WC, WS, WW]
72			<1% or none, or occupies <100 sq. ft cumulatively. Enter "1" and **SKIP to F19.**	0	
73			1-25% of the AA, and mainly in small fishless pools. **Enter "1" and SKIP to F19.**	1	
74			1-25% of the AA, and mainly in a single large pool or pond, with or without fish access.	0	
75			5-30% of the AA.	0	
76			30-70% of the AA.	0	
77			70-95% of the AA.	0	
78			>95% of the AA.	0	
79	F16	Open Ponded Water - Extent	The percentage of the ponded water that is **open** (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		**Open water** may have floating aquatic vegetation provided it does not usually extend above the water surface. [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WW]
80			<1% or none, or largest pool occupies <100 sq. ft. Enter "1" and **SKIP to F19.**	1	
81			1-5% of the ponded water. Enter "1" and **SKIP to F19.**	0	
82			5-30% of the ponded water.	0	
83			30-70% of the ponded water.	0	
84			70-99% of the ponded water.	0	
85			100% of the ponded water. **SKIP to F18.**	0	
86	F17	Emergent Vegetation - Distribution	During most of the growing season, the spatial pattern of herbaceous vegetation that has **surface** water beneath it (emergent vegetation – NOT floating-leaved plants) is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]

	A	B	C	D	E
87			scattered in small clumps, islands, or patches throughout the surface water area.	1	
88			intermediate	0	
89			clumped along the margin of the surface water area, or mostly surrounds a channel or central area of open water, or such vegetation covers <100 sq ft and <1% of the AA.	0	
90	F18	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed cover most of the AA's otherwise-unshaded water surface or blanket the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
91	F19	Ice Cover	Ice (not just snow) covers nearly all of the AA's water surface for more than 4 continuous weeks during most years, potentially altering the air-water exchange. If true, enter "1" in next column. If untrue, enter "0".	0	Available data suggest this ranking from shortest to longest ice duration based on location: Ketchikan, Annette, Sitka, Little Port Walter, Juneau, Yakutat, Annex Creek. However, local factors such as elevation, water body depth, and flow velocity should be considered. [AM, CS, FR, NR, OE, PR, Sens, SFS, SR, WBF, WS]
92	F20	Stained Surface Water	Most surface water is tea-colored (from tannins, not iron bacteria), and/or its pH is usually <5.5. If surface water not observed, enter "1" if organic soil depth exceeds 6 inches and vegetation is mostly moss and/or evergreens.	1	[FR, OE, PR, WW]
93	F21	Isolated Island	The AA contains (or is part of) an island within a lake, pond, or river, and is isolated from the shore by **water depths >3 ft** on all sides during an average June. The island may be solid, or it may be a floating vegetation mat suitable for nesting waterbirds.	0	[WBN]
94	F22	Beaver	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
95			**evident** from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	0	
96			**likely** based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
97			**unlikely** because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. But beaver occur in the region (i.e., within 10 miles, or on same island).	1	
98			**none**. Beaver are absent from the region and/or the island.	0	
99	F23	Flowing Water - Extent	The percentage of the AA that has **flowing** water (flowing with enough force to keep sediment in suspension, and >1 inch deep and either open or shaded by emergent vegetation) **for >2 continuous weeks at the wettest time** of a typical year is:		
100			None. (Topographic maps also show no intersecting channels or floodplains. However, if the AA is entirely a lake or pond, enter a "1" regardless of whether maps show a channel intersecting it).	1	
101			1-25% of the AA (topo maps show one or more channels). Their wetted width does not expand >2x their width at annual low flow, e.g., many strongly incised or headwater channels.	0	
102			1-25% of the AA, and in (or adjoining) one or more channels whose wetted width expands >2x their width at annual low flow. Typically not in headwaters. SEAK Hydro Process maps may show "Flood Plain" channel.	0	
103			5-30% of the AA.	0	
104			30-70% of the AA.	0	
105			70-95% of the AA.	0	
106			>95% of the AA.	0	
107	F24	Inflow	At least once annually, surface water moves into the AA from a tributary stream or ditch that is at least 300 ft long, or from a lake or river. Often shown as a channel on a topo map (consult the SEAK Hydro Streams layer of the WESPAK-SE web site). If true, enter 1 and continue. If false, enter 0 and **SKIP to F28.**	0	[NRv, PH, PRv, SRv]
108	F25	**Input** Water Temperature	Based on lack of shade upstream or source characteristics, the inflow is likely to be warmer than the AA's surface water during part of most years. Enter 1= yes, 0= no.	0	[WC, WWv]
109	F26	Input Stream Gradient	The gradient of the tributary with the largest inflow, averaged up to 300 ft from the AA (excluding any portion of the distance where water travels through a pipe) is:		Estimate gradient by dividing the elevation difference by horizontal distance over 300 ft. [PRv, SRv]
110			<1%	0	
111			1-5%	0	
112			5-30%	0	
113			>30%	0	
114	F27	Throughflow Complexity	During its travel through the AA at the time of peak annual flow, **most** of the flowing water [select ONE]:		[FA, FR, INV, NR, OE, PR, SR, WS]

	A	B	C	D	E
115			Does not bump into plant stems. Nearly all the water travels in unvegetated (often incised) channels that have little contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
116			bumps into **herbaceous** vegetation and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
117			bumps into **herbaceous** vegetation and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
118			bumps into **tree trunks and/or shrub stems** and follows a fairly **straight** path from entrance to exit (branched channels few or none, meandering slight or none).	0	
119			bumps into tree trunks and/or shrub stems and follows a fairly **indirect** path from entrance to exit (meandering, multi-branched, or braided).	0	
120	F28	Outflow Duration	The **most persistent** surface water connection (outlet channel or pipe, ditch, or overbank water exchange) between the **AA** and the closest off-site downslope water body is:		Path length is the length of a wetland measured in a straight line from inlet to outlet, or from highest to lowest elevation within the wetland (i.e., in the direction of predominant downhill surface flow) – see OF35. Consult the hydrography layer of the WESPAK-SE web site if uncertain if AA is intersected by or near a channel. A channel is defined as an observably incised landform that transports surface water in a downhill direction during some part of a normal year. A larger difference in elevation between the wetland-upland boundary and the bottom of the wetland outlet (if any) indicates shorter outflow duration. The frequencies given are only approximate and are for a "normal" year. The connection need not occur during the growing season. [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WC, WS, WWv]
121			persistent (>9 months/year); almost always shown on stream maps, or determine from your dry-season observation.	0	
122			seasonal (14 days to 9 months/year, not necessarily consecutive); sometimes shown on stream maps.	0	
123			temporary (<14 days, not necessarily consecutive); seldom shown on stream maps.	0	
124			none – but maps show a stream or other water body that is downslope from the AA and within a distance that is less than the AA's *path length* (see definition, OF35). If so, mark "1" here and **SKIP TO F30.**	0	
125			no surface water flows out of the wetland except possibly during extreme events (less than once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. If so, mark "1" here and **SKIP TO F30.**	1	
126	F29	Outflow Confinement	During major runoff events, in the places where surface water in a channel exits the AA or connected waters nearby, it:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, WS]
127			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
128			leaves through natural exits, not mainly through artificial or temporary features.	1	
129			exported more quickly than usual due to ditches or pipes within the AA (or connected to its outlet or within 10 m of the AA's edge) which drain the wetland artificially, or water is pumped out of the AA.	0	
130	F30	Groundwater: Strength of Evidence	Select first applicable choice. In the AA:		Consult topographic maps to detect breaks in slope described here. Localized orange coloration associated with groundwater seeps may be most noticeable in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRv, SFS, WC, WS, WW]
131			(a) springs are observed, OR (b) water is markedly cooler in summer and warmer in winter (e.g., later ice formation) than in other wetlands nearby, OR (c) water level measurements from shallow wells, or high salinity/conductivity in undisturbed wetlands distant from potential marine influence, suggest substantial groundwater discharge to the AA.	1	
132			(a) the upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 300 ft, OR (b) rust deposits ("iron floc"), colored precipitates, or dispersible natural oil sheen are prevalent in the AA, OR (c) AA water is remarkably clear in contrast to naturally stained or glacially-clouded waters typical in nearby wetlands, OR (d) AA is located at a geologic fault.	0	
133			Neither of above is true, although some groundwater may discharge to or flow through the AA, or groundwater influx is unknown.	0	
134	F31	Woody Cover Extent	**Within** the entire vegetated part of the AA, the percentage occupied by **woody plants taller than 3 feet** (shrubs, trees) is:		Do not count trees or shrubs if they merely hang into the wetland. They must be **rooted in soils that are saturated** for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [NR, WBF, WBN]
135			<5% of the vegetated AA, or there is no woody vegetation in the AA. **SKIP to F41.**	0	
136			5-25%.	0	
137			25-50%	0	
138			50-75%	0	
139			>75%	1	
140	F32	Tree & Tall Shrub Canopy Extent	Within the vegetated part of the AA, just the **trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [PH, SBM, Sens]
141			<1% of the vegetated AA, or the AA lacks trees. Enter "1" and **SKIP to F37.**	0	
142			1-25% of the vegetated AA	0	
143			25-50% of the vegetated AA	0	
144			50-95% of the vegetated AA	1	
145			>95% of the vegetated part of the AA	0	

	A	B	C	D	E
146	F33	Deciduous Trees	Within the vegetated part of the AA, just the **deciduous trees** that are taller than 20 ft occupy:		Do not count trees if they merely hang into the wetland. They must be rooted in soils that are saturated for several weeks of the growing season. The "vegetated part" should not include floating-leaved or submersed aquatics. [CS, OE, INV, SBM, PH]
147			<1% of the vegetated AA	0	
148			1-25% of the vegetated AA	0	
149			25-50% of the vegetated AA	0	
150			50-95% of the vegetated AA	1	
151			>95% of the vegetated part of the AA	0	
152	F34	Woody Diameter Classes	Mark all the classes of woody plants within the AA, but only IF they comprise **more than 5%** of the woody canopy within the AA. Do not count trees that adjoin but are not within the AA.		The trees and shrubs need not be wetland species. Measurements are the d.b.h., the diameter of the tree measured at 4.5 ft above the ground. [AM, CS, POL, SBM, Sens, WBN]
153			evergreen 1-4" diameter and >3 ft tall	1	
154			deciduous 1-4" diameter and >3 ft tall	1	
155			evergreen 4-9" diameter	1	
156			deciduous 4-9" diameter	1	
157			evergreen 9-21" diameter	1	
158			deciduous 9-21" diameter	0	
159			evergreen >21" diameter	0	
160			deciduous >21" diameter	0	
161	F35	Snags	The number of large snags (**diameter >8"**) in the AA plus the area within 100 ft uphill of the closest upland to the wetland edge is:		Snags are standing trees at least 10 ft tall that are mainly without bark or foliage. [POL, SBM, WBN]
162			Several (>2/acre) and a pond or lake of at least 1 acre is within 1 mile.	0	
163			Several (>2/acre) but above not true.	1	
164			Few or none	0	
165	F36	Downed Wood	The number of downed wood pieces **longer than 6 ft** and with diameter **>6"**, and **not persistently submerged**, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
166			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	1	
167			Few or none	0	
168	F37	**Exposed** Shrub Canopy	Woody vegetation 3 to 20 ft tall that is not under the drip line of trees is:		The "vegetated part" may include moss, but it should not include floating-leaved or submersed aquatics. [AM, PH, SBM]
169			<5% of the vegetated AA and (if a fringe wetland) <5% of its water edge. Or <0.01 acre. **SKIP to F41.**	1	
170			5-25% of the vegetated AA or (if a fringe wetland) 5-25% of the water edge -- whichever is greater.	0	
171			25-50% of the vegetated AA or the water edge, whichever is greater.	0	
172			50-95% of the vegetated AA or the water edge, whichever is greater.	0	
173			>95% of the vegetated part of the AA or the water edge, whichever is greater.	0	
174	F38	Shrub Species Dominance	Determine which two native shrub species (3 to 20 ft tall) comprise the greatest portion of the native shrub cover. Then choose one:		[EC, PH, SBM, Sens]
175			those species together comprise **> 50%** of the areal cover of native shrub species.	0	
176			those species together do **not** comprise > 50% of the areal cover of native shrub species.	0	
177	F39	Woody-Herbaceous Interspersion	In "ducks-eye view", the distribution pattern of woody vegetation (including low shrubs) VS. unshaded herbaceous/moss vegetation within the AA is:		In larger forested wetlands, patchiness is best interpreted from aerial imagery. Images that show "coarse-grained" forests indicate presence of multiple age classes and/or numerous small openings, whereas those that show "fine-grained" forests suggest more even-aged, even-sized forest with little interspersion. [SBM, Sens]
178			(a) Woody cover and herbaceous/moss cover EACH comprise **30-70%** of the **vegetated part** of the AA, AND (b) There are many patches of woody vegetation scattered widely within herbaceous/moss vegetation, or many patches of herbaceous vegetation scattered widely within woody vegetation.	0	
179			(a) Woody cover and herbaceous/moss EACH comprise 30-70% of the vegetated AA, AND (b) There are few patches ("islands") of woody vegetation scattered widely within herbaceous vegetation, or few patches of herbaceous/moss vegetation ("gaps") scattered widely within woody vegetation.	0	
180			(a) Woody cover **OR** herbaceous/moss comprise **>70%** of the vegetated AA, AND (b) There are several patches of the other scattered within it. (e.g., forested AAs with patches – not limited to corridors – of skunk cabbage, or muskeg with scattered shrubs).	0	
181			(a) Woody over OR herbaceous/moss comprise >70% of the vegetated AA, AND (b) The other is absent or is mostly in a single area or distinct zone with almost no intermixing of woody and unshaded herbaceous/moss vegetation.	0	
182	F40	Deciduous Shrubs	Woody vegetation in the 3 to 20 ft height class which is **deciduous** (e.g., blueberry, menziesia, alder) comprises:		Select only the first true statement. The trees or shrubs do not have to be wetland species, as long as they are in the AA or overhang its water. Deciduous shrubs are especially likely to occur on mineral

	A	B	C	D	E
183			<1% of the AA's vegetated area, or largest patch occupies less than 400 sq. ft	0	they are in the act of overtaking its water. Deciduous shrubs are especially likely to occur on mineral soils with little moss ground cover, such as burns, clearcuts, landslides, avalanche paths, abandoned beaver flowages, areas of recent glacial rebound or deglaciation, heavily grazed or drained lands, and floodplains. [CS, INV, OE, PH, SBM]
184			1-25% of the vegetated area	0	
185			25-50% of the vegetated area	0	
186			50-75% of the vegetated area	0	
187			>75% of the vegetated area	0	
188	F41	N Fixers	The percent of the AA's shrub plus ground cover that is nitrogen-fixing plants (e.g., alder, sweetgale, arctic rush, lupine, clover, other legumes)		"Ground cover" includes both moss and herbaceous vegetation. Do not include N-fixing algae or lichens. Select only the first true statement. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
189			<1% or none	0	
190			1-25% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	1	
191			25-50% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
192			50-75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
193			>75% of the shrub plus ground cover, in the AA or along its water edge (whichever has more).	0	
194	F42	Moss Extent	The cover of peat-forming moss is:		Exclude moss growing on trees or rocks. [CS, PH]
195			<5% of the vegetated ground cover.	0	
196			5-25% of the vegetated ground cover.	0	
197			25-50% of the vegetated ground cover.	0	
198			50-95% of the vegetated ground cover.	1	
199			>95% of the vegetated ground cover.	0	
200	F43	Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that lack surface water at some time of the year. Viewed from 6 inches above the soil surface, the condition in the part of that area that is most likely to be exposed to flowing water, runoff, or wind near the end of the growing season, or is otherwise more likely to erode (e.g., due to slope, land use practices) is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens, SR]
201			little or no (<5%) *bare ground* is visible between erect stems or under canopy and ground surface is extensively blanketed by moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
202			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
203			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise **more than** 5% of the unflooded parts of the AA	0	
204			mostly (>50%) bare ground or ground covered only with thatch.	0	
205			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
206	F44	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. Excluding slash from logging, the number of small pits, raised mounds, hummocks, boulders, upturned trees, animal burrows, gullies, natural levees, wide soil cracks, and microdepressions is:		"Microtopography" refers mainly to the patchiness of vertical relief of >6 inches and is represented only by inorganic features, except where living plants have created depressions or mounds (hummocks) of soil. Do not count incised channels and other "macro" features. If parts of the AA are flat but others have substantial microtopography, base your answer on which condition predominates in the parts of the AA that lack persistent water. [AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
207			Few or none (minimal microtopography; <1% of that area)	0	
208			Intermediate	0	
209			Several (extensive micro-topography)	1	
210	F45	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq. ft. are:		Inclusions are slightly elevated "islands" or "pockets" dominated by upland vegetation and soils. Do not count as inclusions the elevated roots of trees or logs unless supported by a mound of mineral soil meeting the size threshold. Upland inclusions may sometimes be created by fill. [AM, NR, SBM]
211			Few or none	0	
212			Intermediate (1 - 10% of vegetated part of the AA).	1	
213			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
214	F46	Soil Texture	In **most** parts of the AA that lack persistent water, the texture of soil in the uppermost layer is: [*To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key in Appendix C of the Manual. If organic, use shovel to dig down to 16" depth or until hitting mineral soil, whichever is first, then measure.]*		"Organic" includes muck, mucky peat, peat, and mucky mineral soils that comprise the "Oi" horizon. These soils are much less common in floodplains. Do not include duff (loose organic surface material, e.g., dead plant leaves and stems). If texture varies greatly, base your answer on which texture predominates in the parts of the AA that lack persistent water. [CS, NR, OE, PH, PR, Sens, SFS, WS]
215			Loamy: includes loam, sandy loam	0	
216			Fines: includes silt, glacial flour, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	0	
217			Organic, from surface to within 4 inches of surface only. Exclude live roots unless from moss.	0	
218			Organic, from surface to within 16 inches of surface only. Exclude live roots unless from moss.	1	
219			Organic, from surface to greater than 16 inch depth. Exclude live roots unless from moss.	0	
220			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	

	A	B	C	D	E
221	F47	Shorebird Feeding Habitats	Within the AA, the extent of mudflats, and/or non-acidic ponded areas shallower than 2 inches, and/or unwooded shortgrass areas that meet the definition of shorebird habitat (column E) is usually:		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
222			none, or <100 sq. ft within the AA.	1	
223			100-1000 sq. ft. within the AA.	0	
224			1000 – 10,000 sq. ft. within the AA.	0	
225			>10,000 sq. ft within the AA.	0	
226	F48	Largest Herbaceous Patch	The **area** of the largest patch of herbaceous vegetation (e.g., sedges, grasses, skunk cabbage, other forbs **– excluding mosses** and submerged and floating aquatics) **within** the AA is: [*Note: Do not include areas where the herbaceous canopy is so thin that moss is visible beneath it during the height of the growing season*].		0.1 acre is about 66 ft on a side if square. If the AA is smaller than the wetland within which it is located, extend the patch to include contiguous herbaceous vegetation in the same wetland (but a different AA) and revise the area estimate. Include herbaceous patches that are under a forest canopy as well as those visible in aerial imagery. [PH, SBM, Sens, WBF, WBN]
227			<0.1 acre. **SKIP to F54.**	0	
228			0.1 - 1 acre	0	
229			1 to 10 acres	1	
230			10 to 100 acres	0	
231			100 to 1000 acres	0	
232			>1000 acres	0	
233	F49	Unshaded Herbaceous Extent	As **visible in birds-eye view**, herbaceous vegetation (**excluding** mosses and submerged and floating aquatics) comprises:		"Birds-eye view" means vertical view from about 500 ft above the wetland surface, and thus excludes herbaceous vegetation hidden beneath a tree or shrub canopy. [WBF, WBN, POL]
234			<5% of the vegetated part of the AA. Mark "1" here and **SKIP to F54.**	0	
235			5-25% of the vegetated AA	0	
236			25-50% of the vegetated AA	1	
237			50-95% of the vegetated AA	0	
238			>95% of the vegetated AA	0	
239	F50	Forb Cover	The percent of the vegetated ground cover that is **forbs** (e.g., skunk cabbage, buckbean, wildflowers) reaches an annual maximum of:		**forbs** = flowering non-woody vascular plants (excludes grasses, sedges, ferns, mosses). Exclude horsetail (*Equisetum*) even though technically it is a forb. [POL]
240			<5% of the vegetated ground cover	0	
241			5-25% of the vegetated ground cover	0	
242			25-50% of the vegetated ground cover	1	
243			50-95% of the vegetated ground cover	0	
244			>95% of the vegetated ground cover. **SKIP to F52.**	0	
245	F51	Sedge Cover	Sedges (*Carex* spp.) and/or cottongrass (*Eriophorum angustifolium)* occupy:		[CS]
246			<5% of the vegetated ground cover, or <0.01 acre	1	
247			5-50% of the vegetated ground cover	0	
248			50-95% of the vegetated ground cover	0	
249			>95% of the vegetated ground cover	0	
250	F52	Herbaceous Species Dominance	Determine which two native herbaceous (forb, graminoid, fern) species comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one:		[EC, INV, PH, POL, Sens]
251			those species together comprise **> 50%** of the areal cover of **native** herbaceous plants at any time during the year.	0	
252			those species together do **not** comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
253	F53	Invasive & Non-native Cover	Invasive plants in this region may include (for example): creeping buttercup, reed canary grass, orange hawkweed, annual blue grass, timothy grass, Canadian thistle, field sow-thistle, Japanese knotweed, European mountain ash, white clover, alsike clover, others noted in PlantList worksheet (also in Table B-3 of the manual). The condition in the AA is:		[EC, PH, POL, Sens]
254			apparently no invasive species are present **in** the AA.	0	
255			Invasive species are present but comprise <5% of the herbaceous and <5% of the shrub cover.	1	
256			Invasive species comprise 5-20% of the herb or shrub cover.	0	
257			Invasive species comprise 20-50% of the herb or shrub cover.	0	
258			Invasive species comprise >50% of the herb or shrub cover.	0	

	A	B	C	D	E
259	F54	Weed Source Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 10 ft of wetland) that is occupied by plant species that are considered invasive is: (see list in above question, plus others in PlantList worksheet or Table B-3 of the manual)		If the wetland has no upland edge, or upland edge is <10% of wetland's perimeter, then answer for the portion of the upland closest to the wetland. If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the unidentified plant to also be invasive. If vegetation is so senesced that invasive species cannot be identified, answer "none". [PH]
260			none of the upland edge (invasives apparently absent)	0	
261			some (but <5%) of the upland edge	1	
262			5-50% of the upland edge	0	
263			most (>50%) of the upland edge	0	
264	F55	Natural Cover in Buffer	Along the wetland-upland edge and extending 100 ft upslope, the percentage of the upland that contains **natural** (not necessarily native – see column E) land cover taller than 6 inches is:		**Natural land cover** includes wooded areas, peatlands, vegetated wetlands, and most other areas of perennial vegetation. It does not include water, glaciers, annual crops, residential areas, golf courses, recreational fields, fields mowed >1x per year, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the same as native vegetation. It can include areas with invasive plants. If the AA does not adjoin upland, base your answer on the closest upland. [AM, FA, FR, INV, NRv, PH, PRv, SBM, Sens, SRv, WBN]
265			<5%	0	
266			5 to 30%	0	
267			30 to 60%	0	
268			60 to 90%	1	
269			>90%. **SKIP to F58.**	0	
270	F56	Type of Cover in Buffer	Within 100 ft upslope of the wetland-upland edge closest to the AA, the upland land cover that is NOT unmanaged vegetation or water is mostly (mark ONE):		[AM, FA, INV, NRv, PH, SBM, WBN]
271			impervious surface, e.g., paved road, parking lot, building, exposed rock.	0	
272			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, mostly-unvegetated clearcut, landslide, unpaved road, dike.	1	
273	F57	Slope from Disturbed Lands	The average percent slope of the land, measured from the AA's wetland-upland edge and extending uphill to the most extensive and/or closest **disturbance feature within 100 ft,** is:		**Disturbance feature** = building, paved area, recently cleared area, dirt road, lawn, annually-harvested row crops. Use judgment to decide if extent or proximity is more influential for a noted disturbance. If the AA is only part of a wetland and does not have an upland edge, evaluate this along the upland edge closest to the AA. Estimate slope by dividing the elevation difference (between the wetland and disturbed area) by their horizontal distance apart. [NRv, PRv, Sens, SRv]
274			<1% (flat – almost no noticeable slope)	0	
275			2-5%	1	
276			5-30%	0	
277			>30%	0	
278	F58	Cliffs, Banks, Beaver, Muskrat	In the AA or within 300 ft, there are (a) muskrat houses or beaver lodges, or (b) mineral licks, or (c) elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 6 ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	0	Do not include upturned trees as potential den sites. [POL, SBM]
279	F59	New Wetland	The AA is (or is within, or contains) a "new" wetland resulting from human actions (e.g., excavation, impoundment) or debris or lava flows, receding glacier, sea level rise, or other factors affecting what once was **upland (non-hydric) soil.**		Do not include wetlands created by beaver dams except for the part where flooding affected uplands (not just existing wetlands and streams). Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, PRv, Sens, SRv]
280			No	1	
281			yes, and most recently created, deglaciated, or uplifted 20 - 100 years ago	0	
282			yes, and most recently created, deglaciated, or uplifted 3-20 years ago	0	
283			yes, and most recently created, deglaciated, or uplifted within last 3 years	0	
284			yes, but time of origin unknown	0	
285			unknown if new within 20 years or not	0	
286	F60	Visibility	The maximum percent of the AA that is visible from the best vantage point on public roads, public parking lots, public buildings, or well-defined public trails that intersect, adjoin, or are within 300 ft of the wetland (select one) is:		[PU, WBFv]
287			<25%	1	
288			25-50%	0	
289			>50%	0	
290	F61	Ownership	Most of the AA is (select one):		In the online WESPAK Wetlands Module, generalized ownership category can be viewed but consult local tax maps if possible. [PU]
291			publicly owned **conservation** lands that exclude new timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles).	1	
292			publicly owned **resource use** lands (allowed activities such as timber harvest, mining, or intensive recreation), or unknown.	0	
293			owned by non-profit conservation organization or lease holder who allows public access.	0	
294			other private ownership, including Tribes.	0	

	A	B	C	D	E
295	F62	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select **ALL** statements that are true of the AA as it currently exists:		Some trails, roads, and Interpretive centers are shown in the online WESPAK Wetlands Module. Enable the Recreation layer > Recreation Facilities. [PU]
296			Walking is physically possible in (not just near) >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets.	1	
297			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	0	
298			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
299			The AA contains or adjoins a **public** boat dock or ramp, or is within 0.5 mile of a ferry terminal, airstrip, public lodge, campsite, snowmobile park, or picnic area.	0	
300	F63	Core Area 1	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add* ***only*** *the area occupied by the trail.*]		Include visits by foot, canoe, kayak, or any non-motorized mode. Judge this based on proximity to population centers, roads, trails, accessibility of the wetland to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, FAv, FRv, PH, PU, SBM, WBF, WBN]
301			<5% and no inhabited building is within 300 ft of the AA	0	
302			<5% and inhabited building is within 300 ft of the AA	0	
303			5-50% and no inhabited building is within 300 ft of the AA	0	
304			5-50% and inhabited building is within 300 ft of the AA	0	
305			50-95%	0	
306			>95% of the AA	1	
307	F64	Core Area 2	The percentage of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [*Note: Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 100 ft of the wetland edge. In that case add only the area occupied by the trail*].		Include visits by foot, canoe, kayak, or any non-motorized mode. Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. [AM, PH, PU, SBM, WBF, WBN]
308			<5%. If F63 was answered ">95%", **SKIP to F67.**	0	
309			5-50%	0	
310			50-95%	0	
311			>95% of the AA	0	
312	F65	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on unfrozen soils within nearly all of the AA. Enter "1" if true.	0	[PH, PU]
313	F66	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorized boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
314	F67	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select all that apply.		"Low impact" means adherence to Best Management Practices such as those defined by certification groups. Evidence of these consumptive uses may consist of direct observation, or presence of physical evidence (e.g., recently cut stumps, fishing lures, shell cases), or might be obtained from communication with the land owner or manager. [FAv, FRv, PHv, Subsis, WBFv]
315			Low-impact commercial timber harvest (e.g., selective thinning)	0	
316			Commercial or subsistence-based harvesting of native plants or mushrooms	0	
317			Hunting	0	
318			Furbearer trapping	0	
319			Fishing	0	
320			None of the above	1	
321	F68	Domestic Wells	Wells or water bodies that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside a densely settled area). [NRv]
322			Within 500 ft	0	
323			500-1000 ft	0	
324			>1000 ft away, or none, or no information	1	

Stressor (S) Data Form for Non-Tidal Wetlands. WESPAK-SE version 2

Investigator:
Date:
Site Name:
Site Location:

S1

Wetter Water Regime - *Internal* Causes

In the last column, place a check mark next to any item that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). (The items you check are not used automatically in subsequent calculations. They are included simply so they may be considered when evaluating the factors in the table beneath them). [CS]

an impounding dam, dike, levee, weir, berm, road fill, or tidegate -- within or downgradient from the wetland, or raising of outlet culvert elevation.	
excavation within the wetland, e.g., artificial pond, dead-end ditch	
excavation or reflooding of upland soils that adjoined the wetland, thus expanding the area of the wetland	
plugging of ditches or drain tile that otherwise would drain the wetland (as part of intentional restoration, or due to lack of maintenance, sedimentation, etc.)	
vegetation removal (e.g., logging) within the wetland	
compaction (e.g., ruts) and/or subsidence of the wetland's substrate as a result of machinery, livestock, or off road vehicles	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present. The sum and final score will compute automatically.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	0
Average water level increase	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S2

Wetter Water Regime - *External* Causes

In the last column, place a check mark next to any item occurring in the wetland's ***contributing area*** *(CA) that is likely to have caused a part of the wetland to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).*

subsidies from stormwater, wastewater effluent, or septic system leakage	
pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into the wetland	x
removal of timber in the CA or along the wetland's tributaries	
removal of a water control structure or blockage in tributary upstream from the wetland	

If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA wetter, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of resulting wetter condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	1
When most of wetland's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the wetland that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	1
Average water level increase	>1 ft	6-12"	<6 inches	1
			Sum=	4
			Final Score=	0.33

S3

Drier Water Regime - Internal Causes

In the last column, place a check mark next to any item located within or immediately adjacent to the wetland, that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without that item. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

ditches or drain tile in the wetland or along its edge that accelerate outflow from the wetland	
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water level control structure, resulting in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)	
placement of fill material	
withdrawals (e.g., pumping) of natural surface or ground water directly out of the wetland (not its tributaries)	

If any items were checked above, then for each row of the table below, you may assign points in the last column. However, if you believe the checked items had no measurable effect in making any part of the AA drier, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
Water level decrease	>1 ft	6-12"	<6 inches	0
			Sum=	0
			Final Score=	0.00

S4

Drier Water Regime - External Causes

In the last column, place a check mark next to any item within the wetland's CA (including channels flowing into the wetland) that is likely to have caused a part of the wetland to be inundated less extensively, less deeply, less frequently, and/or for shorter duration that it would be without those. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less).

a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the wetland	
relocation of natural tributaries whose water would otherwise reach the wetland	
instream water withdrawals from tributaries whose water would otherwise reach the wetland	
groundwater withdrawals that divert water that would otherwise reach the wetland	

If any items were checked above, then for each row of the table below assign points that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows.

	Severe (3 points)	Medium (2 points)	Mild (1 point)	
Spatial extent of wetland's resulting drier condition	>20% of the wetland	5-20% of the wetland	<5% of the wetland	0
When most of wetland's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0

	Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the wetland that got drier.				
	Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0
	Water level decrease	>1 ft	1-12"	<1 inch	0
				Sum=	0
				Final Score=	0.00
S5	**Altered Timing of Water Inputs**				
	*In the last column, place a check mark next to any item that is likely to have caused the **timing** of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either **more muted** (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) **or more flashy** (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH]*				
	flow regulation in tributaries or water level regulation in adjoining water body, or control structure at water entry points that regulates inflow to the wetland				
	snow storage areas that drain directly to the wetland				
	increased pavement and other impervious surface in the CA				
	straightening, ditching, dredging, and/or lining of tributary channels in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent within the wetland of timing shift	>95% of wetland	5-95% of wetland	<5% of wetland	0
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	0
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.				
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
				Sum=	0
				Final Score=	0.00
S6	**Accelerated Inputs of Contaminants and/or Salts**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [FA, NRv, PRv]				
	stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				x
	metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (see: http://map.dec.state.ak.us/apps/)				x
	oil or chemical spills (not just chronic inputs) from nearby roads				x
	spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	active mine, mid-sized town, cropland	mildly impacting (reclaimed minie, low density residential)	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	2
				Sum=	6
				Final Score=	0.67
S7	**Accelerated Inputs of Nutrients**				
	In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland.				
	stormwater or wastewater effluent (including failing septic systems), landfills				x
	fertilizers applied to lawns, ag lands, or other areas in the CA				
	livestock, dogs				
	artificial drainage of upslope lands				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	2
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	2
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of the CA	2
				Sum=	6
				Final Score=	0.67
S8	**Excessive Sediment Loading *from Contributing Area***				
	In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, INV, SRv]				
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				
	erosion from livestock or foot traffic in the CA				
	stormwater or wastewater effluent				
	sediment from road sanding, gravel mining, other mining, oil/ gas extraction				
	accelerated channel downcutting or headcutting of tributaries due to altered land use				
	other human-related disturbances within the CA				
	If any items were checked above, then for each row of the table below, you may assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	0
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0

	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of the CA	0
	* **high**-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; **low**-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=	0
				Final Score=	0.00

S9	**Soil or Sediment Alteration *Within the Assessment Area***				
	In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH]				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter periods				
	leveling or other grading not to the natural contour				
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland				
	excavation				
	ditch cleaning or dredging in or adjacent to the wetland				
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments				
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	If any items were checked above, then for each row of the table below, you may assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.				
		Severe (3 points)	Medium (2 points)	Mild (1 point)	
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	0
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	0
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	0
				Sum=	0
				Final Score=	0.00