Alaska Department of Environmental Conservation
Air Quality Minor Permit Application

STATIONARY SOURCE IDENTIFICATION FORM

Section 1 Stationary Source Information

Name: ASRC Consulting and Environmental Services, LLC (ACES) Mobile Remediation System 1 (MRS-1)			SIC: 4959
Project Name (if different): ACES MRS-1	Contact: Liam Zsolt		
Physical Address: Mobile Facility	City: Anchorage	State: AK	Zip: 99503
	Telephone (907)334-1509		
	E-Mail Address: lzsolt@asrcenergy.com		
UTM Coordinates (m) or Latitude/Longitude: Mobile Facility	Northing:	Easting:	Zone:
	Latitude:	Longitude:	

Section 2 Legal Owner

Name:ASRC Consulting and Environmental Services, LLC		
Mailing Address: 3900 C Street, Suite 701		
City: Anchorage	State: AK	Zip: 99503
Telephone #: (907)339-6200		
E-Mail Address: lzsolt@asrcenergy.com		

Section 3 Operator *(if different from owner)*

Name: Same as Owner		
Mailing Address:		
City:	State:	Zip:
Telephone #:		
E-Mail Address:		

Section 4 Designated Agent *(for service of process)*

Name: Liam Zsolt		
Mailing Address: 3900 C Street, Suite 701		
City Anchorage	State: AK	Zip: 99503
Telephone #: (907)334-1509		
E-Mail Address: lzsolt@asrcenergy.com		

Section 5 Billing Contact Person *(if different from owner)*

Name: Liam Zsolt		
Mailing Address: 3900 C Street, Suite 701		
City: Anchorage	State: AK	Zip: 99503
Telephone #: (907)334-1509		
E-Mail Address: lzsolt@asrcenergy.com		

Section 6 Application Contact

Name: Liam Zsolt			
Mailing Address: 3900 C Street , Suite 701	City: Anchorage	State: AK	Zip: 99503
	Telephone: (907)334-1509		
	E-Mail Address: lzsolt@asrcenergy.com		

Section 7 Desired Process Method *(Check only one – see 18 AAC 50.542(a) for process descriptions and restrictions)*

☐ Fast track for a permit classification under 18 AAC 50.502 [18 AAC 50.542(b)]

☒ Public comment [18 AAC 50.542(d)]

Section 8 Source Classification(s) *(Check all that apply)*

[18 AAC 50.502(b)]

- ☐ Asphalt Plant [≥ 5 ton per hour]
- ☒ Thermal Soil Remediation Unit [≥ 5 ton per hour]
- ☐ Rock Crusher [≥ 5 ton per hour]
- ☐ Incinerator(s) [total rated capacity ≥ 1000 lb/hour]
- ☐ Coal Preparation Plant
- ☐ Port of Anchorage Facility

If you checked any of the above, is (are) the emission unit(s) ☒ new, ☐ relocated*, or ☐ existing?

[18 AAC 50.502(c)(1)]

New or relocated* stationary source with potential emissions greater than:

- ☐ 40 tons per year (tpy) NOx
- ☐ 40 tpy SO_2
- ☐ 15 tpy PM-10
- ☐ 10 tpy PM-2.5
- ☐ 0.6 tpy lead
- ☐ 100 tpy CO in a nonattainment area

[18 AAC 50.502(c)(2)]

Construction or relocation* of a:

- ☐ Portable oil and gas operation
- ☐ ≥ 10 MMBtu/hr fuel burning equipment in a SO_2 special protection area

* *Relocation does NOT include moving equipment from one place to another within your current stationary source boundary.*

Section 9 Modification Classification(s) (*Check all that apply)*

[18 AAC 50.502(c)(3)]

- ☐ NOx Increase > 10 tpy [and existing PTE > 40 tpy]
- ☐ SO_2 Increase > 10 tpy [and existing PTE > 40 tpy]
- ☐ PM-10 Increase > 10 tpy [and existing PTE > 15 tpy]
- ☐ PM-2.5 Increase > 10 tpy [and existing PTE > 10 tpy]
- ☐ CO Increase > 100 tpy [and existing PTE > 100 tpy in a nonattainment area]

[18 AAC 50.502(c)(4)]

- ☐ NOx Increase > 40 tpy [and existing PTE ≤ 40 tpy]
- ☐ SO_2 Increase > 40 tpy [and existing PTE ≤ 40 tpy]
- ☐ PM-10 Increase > 15 tpy [and existing PTE ≤ 15 tpy]
- ☐ PM-2.5 Increase > 10 tpy [and existing PTE ≤ 10 tpy]
- ☐ CO Increase > 100 tpy [and Existing PTE ≤ 100 tpy in a nonattainment area]

Basis for calculating modification:

- ☐ Projected actual emissions minus baseline actual emissions
- ☐ New potential emissions minus existing potential emissions

Section 10 Permit Action Request (*Check all that apply)*

[18 AAC 50.508]

- ☐ Establish Plant-wide Applicability Limitation (PAL)
- ☐ Establish emission reductions to offset nonattainment pollutant
- ☒ Owner Requested Limit* (ORL)
- ☐ Revise or Rescind Title I Permit Conditions *

Permit Number: Condition No.
Date:

**Which to use? See* http://www.dec.state.ak.us/air/ap/docs/orlrtc.pdf

Section 11 Existing Permits and Limits

For an existing stationary source, do you have an existing:
(Check all that apply)

- ☐ Air quality permit Number(s)*:
- ☐ Owner Requested Limit(s) Permit Number(s):
- ☐ Pre-Approved Emission Limit (PAEL) Number(s)**:

** All active construction, Title V, and minor permit numbers.*
***Optional. Please provide this number if possible.*
http://dec.alaska.gov/Applications/Air/airtoolsweb/

Section 12 Project Description

Provide a short narrative describing the project. Discuss the purpose for conducting this project, what emission units/activities will be added/modified under this project (i.e., project scope), and the project timeline. If the project is a modification to an existing stationary source, describe how this project will affect the existing process. Include any other discussion that may assist the Department in understanding your project or processing your application. Include a schedule of construction.

Please use additional copies of this sheet if necessary.

Arctic Slope Regional Corporation (ASRC) through its subsidiary company ASCR Consulting and Environmental Services, LLC (ACES) has developed a portable soil remediation unit, identified as Mobile Remediation System 1 or MRS-1, capable of destroying a variety of organic contaminants found in liquid, semisolid, and solid media. Manufacture of MRS-1 is in process and the plant is scheduled to be deployed to treat contaminated material in June of 2021.

MRS-1 comprises a soil treatment and air emissions control system that is housed within multiple shipping containers that can be deployed, erected, and operated on or near any source of contaminated material. The MRS-1 is intended to be modular system, allowing the removal or inclusion of components as needed to meet the requirements of specific sites or contaminated material. For the purposes of this permit application the MRS-1 will be configured and operated with the following operating components and as additional components are specified, they will be included in future regulatory approval.

- Contaminated material will be fed through a hopper into a rotary drum that is heated indirectly by an electrically driven induction coil system capable of producing internal temperatures of 1800°F.
- Exhaust gasses are drawn under negative pressure into a dry cyclone that is intended to knockout large particulate. This particulate will be collected a returned to the contaminated material stockpile. When additional particulate removal is not required, the dry cyclone will be bypassed and particulate will be collected downstream from the thermal oxidizer (TO).
- The exhaust gas then enters a 5 MMBTU direct-fired TO where it will be exposed to temperatures of up to 2000°F for 2 seconds. The TO is capable of being fired on fuel oil and natural gas.
- The hot exhaust gas enters a quench tower where it is exposed to an atomized water spray where the temperature is reduced to approximately 350°F.
- The cooled exhaust gas enters a pyramid hopper design baghouse containing 60 bags and approximately 1000 square feet of cloth surface. Particulate matter is reduced to less than 0.05 grains per cubic foot.
- An induced draft (ID) fan will be located downstream from the baghouse and operated to maintain continuous negative pressure in the treatment system.
- A packed tower wet scrubber will be placed upstream of the ID fan. The scrubber will contain approximately 60 inches of packing and will reduce acid gasses using a suitable liquid solution. The control efficiency of the scrubber is 95 percent for hydrogen fluoride (HF) and hydrogen chloride (HCl). The scrubber will also effectively reduce remaining particulate.
- Fully treated exhaust gas will enter an exhaust stack that emits to atmosphere.

MRS-1 will be operated to thermally treat contaminated material containing hydrocarbons, chlorinated compounds, and fluorinated compounds. MRS-1 will treat contaminated material to levels below State of Alaska cleanup limits and will not accept or treat contaminated material that is classified as RCRA hazardous waste.

Section 12 Project Description Continued

For **PALs under Section 10** of this application, include the information listed in 40 C.F.R. 52.21(aa)(3), adopted by reference in 18 AAC 50.040 [18 AAC 50.540(h)].

For a **limit to establish offsetting emissions under Section 10** of this application, specify the physical or operational limitations necessary to provide actual emission reductions of the nonattainment air pollutant; including [18 AAC 50.540(i)]:

- A calculation of the expected reduction in actual emissions; and

- The emission limitation representing that quantity of emission reduction.

Section 12 Project Description Continued

For **ORLs under Section 10** of this application [18 AAC 50.540(j)], include:

A description of each proposed limit, including for each air pollutant a calculation of the effect the limit will have on the stationary source's potential to emit and the allowable emissions [18 AAC 50.225(b)(4)];

ACES will assume an emissions limit for Hydrogen Fluoride (HF) of 2.26 pounds/hour on an annual average. At 8,760 hours of operations per year. This will result in maximum annual emissions of HF of 9.9 tons/year. By limiting emissions to 9.9 tons/year HF, the MRS-1 plant will not exceed the 10 ton/year limit for any individual Hazardous Air Pollutant (HAP) and will not be regulated as a Major Source of HAPs. It should be notd that the actual emissions anticipated for the MRS-1, as calculated from the contamination levels in untreated material and source test data from comparable technology, are only a fraction of this proposed emissions limit.

ACES has prepared a Potential To Emit (PTE) formula for HF generated from the treatment of PFAS-contaminated material. This calculation is based on a worst-case scenario from the contaminated material identified in Alaska and assumes a 100-percent conversion of fluorine from PFAS contamination to HF. The HF calculating spreadsheet is included with this permit application submittal along with a Technical Memorandum providing a detailed explanation of the development and application of this spreadsheet. The PTE calculator demonstrates that the worst-case HF emissions from remediation of PFAS-contaminated material is 0.26 tons/year. Source test data from thermal remediation (from a comparable treatment source) of that same material is 0.35 tons/year HF, which corroborates the PTE calculation. Based on these quantifications of potential emissions, operation of the MRS-1 while remediating material with a 28 times greater PFAS concentration will not exceed the 9.9 ton/year HF ORL.

A description of a verifiable method to attain and maintain each limit, including monitoring and recordkeeping requirements [18 AAC 50.225(b)(5)];

ACES will complete a source test using EPA test method 26A as confirmation that the HF produced from operations is protective of the 9.9 ton/year ORL. This source test will be completed during the first PFAS remediation project completed by the MRS-1 plant. A Source Test Plan and a Source Test Report will be provided to ADEC demonstrating that the source test and results comply with ADEC criteria for this test. The HF emission rate produced from this source test will be used to calculate the total HF produced from facility operations on a rolling 12-month basis.

After every 30,000 tons of treated material, ACES will complete a source emission test of the MRS-1 exhaust for HF to ascertain the concentration and emission rate of HF. The source test will be completed using material containing PFAS at a representative level of contamination and at the maximum anticipated operating rate for PFAS-contaminated material. The information from the source test will be provided to ADEC in a Source Test Report. For the purpose of monitoring and reporting, records will be maintained demonstrating the quantity of material treated and the corresponding quantity of HF generated in a rolling 12-month calculation. The calculation will be completed by multiplying the total volume of contaminated material treated each month by the HF emission rate (on a per/ton basis) and maintaining a cumulative total for HF over the most recent 12 month period. If the total emissions for the previous 12 months approaches the 9.9 ton/year ORL, treatment of additional material will be curtailed to ensure the ORL will not be exceeded.

As a precautionary measure to ensure MRS-1 air emissions are controlled to the greatest extent practicable, a packed tower wet scrubber will be installed and operated when the facility is treating materials with regulable levels of fluorinated (and chlorinated) compounds. The scrubber has been sized to accommodate the maximum air flow for the air emissions control system and contains 60 inches of stainless steel packing. A caustic solution (sodium hydroxide, lime, or other appropriate agent) will be continuously circulated at a rate of 80 gpm. Caustic will be added to the scrubber fluid at a rate to maintain a pH nominally of 7. Inlet temperature will not exceed 350°F and TDS will not exceed 6 percent. By maintaining these operating parameters the scrubber will provide an effective reduction of HF (and HCl) of 95 percent.

Citation to each requirement that the person seeks to avoid, including an explanation of why the requirement would apply in the absence of the limit and how the limit allows the person to avoid the requirement [18 AAC 50.225(b)(6)];

ACES is submitting this application for a minor permit to establish an ORL to avoid a permit classification under AS 46.14.130. ACES is requesting a limit for the emission of HF to prevent the MRS-1 from being classified as a Major Source of HAPs and to avoid the air quality permiting requirments applicable to a Major Source as referenced in 18 AAC 50.040. ACES has prepared a PTE calculation for HF for the MRS-1 that demonstrates facility operations will not exceed the threshold of 10 tons/year of any individual HAP. Establishing a limit for HF for the MRS-1 of less that 10 tons/year and monitoring HF emissions through quantification of HF on a rolling 12-month basis using facility-specific source test results will ensure the MRS-1 is not classified as a Major Source for this pollutant and wil not be subject to the permitting requirments applicable to a Major Source.

A statement that the owner or operator of the stationary source will be able to comply with each limit [18 AAC 50.225(b)(8)];

ACES has prepared a PTE formula for HF generated from the treatment of PFAS-contaminated material. This calculation is based on a worst-case scenario from the contaminated material identified in Alaska and assumes a 100-percent conversion of fluorine from PFAS contamination to HF. The HF calculating spreadsheet is included with this permit application submittal along with a Technical Memorandum providing a detailed explanation of the development and application of this spreadsheet. The PTE calculator demonstrates that the worst-case HF emissions from remediation of PFAS-contaminated material is 0.26 tons/year. Source test data from thermal remediation (from a comparable treatment source) of that same material is 0.35 tons/year HF, which corroborates the PTE calculation. Based on these quantifications of potential emissions, operation of the MRS-1 while remediating material with a 28 times greater PFAS concentration will not exceed the 9.9 ton/year ORL. Operation of the scrubber will further reduce these emission by 95 percent for a total PTE of 0.0175 tons per year or a margin of safety of 565 times less than the requested limit.

Section 12 Project Description Continued

For **revising or rescinding Title I permit conditions under Section 10** of this application [18 AAC 50.540(k)], include:

An explanation of why the permit term or condition should be revised or rescinded [18 AAC 50.540(k)(2)];

The effect of revising or revoking the permit term or condition on [18 AAC 50. 540 (k)(3)]:

- Emissions;

- Other permit terms;

- The underlying ambient demonstration, if any;

- Compliance monitoring; and

For revising a condition that allows avoidance of a permit classification, the information required for that type of permit, unless the revised condition would also allow the owner or operator to avoid the classification. [18 AAC 50.540(k)(4)]

Section 13 Other Application Material

The information listed below must be included in your air quality control minor permit application. *Note: These must be attached in order for your application to be complete.*

If required to submit an analysis of ambient air quality under 18 AAC 50.540(c)(2), or if otherwise requested by the Department:

☐ Attached are maps, plans, and/or aerial photographs as necessary to show the locations and distances of
- emissions units, buildings, emitting activities and boundaries of the associated with the stationary source, and
- nearby or adjacent residences, roads, other occupied structures and general topography within 15 kilometers.

(Indicate compass direction and scale on each.)

☐ Attached is a document (e.g., spreadsheet) showing coordinates and elevations of each modeled unit, along with parameters necessary to characterize each unit for dispersion modeling.

☐ Attached is an electronic copy of all modeling files.

Section 14 Certification

This certification applies to the Air Quality Control Minor Permit Application for the ACES MRS-1 (Stationary Source Name) submitted to the Department on: May 11, 2021

Type of Application

☒ Initial Application

☐ Change to Initial Application

The application is **NOT** complete unless the certification of truth, accuracy, and completeness on this form bears the signature of a **Responsible Official**. Responsible Official is defined in 18 AAC 50.990. (18 AAC 50.205)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

"Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete."

Signature: 	Date: May 11, 2021 (revised June 10, 2021)
Printed Name: Liam Zsolt	Title: Director of Technology

Section 15 Attachments

☒ Attachments Included. List attachments:

- ACES MRS1 ADEC Form Emission Unit Information v2f2 210611
- ACES MRS1 ADEC Form New Source v2f 210511
- ACES MRS1 ADEC Form Supplementary Special Equipment v2f 210511
- ACES MRS1 Figure 1 Facility Layout v2f 210511
- ACES MRS1 Fugitive Emissions Control Strategy v2f 210511
- ACES MRS1 PTE EU 1 Emissions Calculation v2f 210511
- ACES MRS1 PTE Fugitive Emissions Calculation v2f 210511
- ACES MRS1 PTE HAP Annual HF Emissions v4f 210511

ACES MRS1 PTE HAP Tracking Spreadsheet HCL v3f 210511
ACES MRS1 PTE HAP Tracking Spreadsheet HF v3f 210511
ACES MRS1 PTE TechMemo v2f 210511

Section 16 Mailing Address

Submit the minor permit application to the Permit Intake Clerk in the Department's Anchorage office. Submitting to a different office will delay processing. The mailing address and phone number for the Anchorage office is:

Permit Intake Clerk
Alaska Department of Environmental Conservation
Air Permit Program
555 Cordova Street
Anchorage, Alaska 99501
(907) 269-6881