

**Alaska Department of Environmental Conservation  
Air Permits Program**

**TECHNICAL ANALYSIS REPORT**

for

**Air Quality Control  
Minor General Permit 3**

for

**Asphalt Plants**

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## INTRODUCTION

This permit is intended for asphalt plants that are required to have a permit because they are classified as needing a minor permit under 18 AAC 50.502(b)(1) (i.e. they have a rated capacity of at least five tons per hour of product).

Asphalt plants often include rock crushers to break down the oversize material to be fed into the process, or to recycle asphalt pavement. An applicant must apply for Minor General Permit 9 for Rock Crushers to operate the rock crusher.

The Department deleted the Coastal Management provisions in condition 36 in the prior GP3 because it is solely ACMP related and cites Aleutians West CRSA enforceable polices that are no longer in effect. The Department added ACMP condition 23 to this MG3 permit as a response to a public comment from the same coastal district. This response was part of the ACMP final consistency determination.

The Department deleted condition 38c since this is not applicable to this permit. Unlike the prior GP3 and the new GP3 permits, this MG3 permit does not allow rock crushers to be located with the asphalt plant.

The Department deleted the 40 C.F.R. 60, Subpart I, Subpart OOO, and Subpart Kb provisions in conditions 20 and 27 – 30 in the prior GP3 because the Department does not have authority under 18 AAC 50 to include federal standards in minor permits. Likewise, the Department deleted Operation and Maintenance Plan provisions in condition 33 in the prior GP3 since the purpose of this condition was to support the deleted 40 C.F.R. 60 requirements. Also, the Good Air Pollution Control Practice condition in Section 4 of the new MG3 permit provides operation and maintenance requirements specific to minor permits than condition 33 of the prior GP3.

The Department deleted the Annual Compliance Certification Requirements in the prior GP3 since GP3 was issued as a Title V permit, which includes this requirement while the new MG3 is issued as a minor permit, which does not include this requirement. The Department deleted the used-oil provisions in conditions 24 and 25.5 of the prior GP3 since these are general conditions in Title V, but not in minor permits; the Department retained these conditions in the renewed Title V GP3. The Department included all other conditions in the prior GP3 in this minor permit.

The Department included a public comment period from 2 June – 2 July 2008 for this permit, as required by 18 AAC 50.542(d). The Department received one comment for this permit from Charles Wilkes, Wilder Construction Company. The Department's response to this comment is in the Response to Comments document. The discussion for the Alaska Coastal Management Program (ACMP) public comment period is in Condition 23 of this TAR.

## Excluded Facilities

A stationary source is excluded from using this general minor permit if the following applies.

- ▶ The stationary source is subject to a fuel consumption limit or other stationary source-specific requirement established in a construction permit, or air quality control permit under the 18 AAC 50.400 (effective prior to 1/18/97). (This does not include a limit established because a source test was conducted at less than full rated capacity.) This exclusion is not applicable if the owner or operator obtains an owner requested limit under 18 AAC 50.225, or another general or source-specific permit that covers these requirements.
  
- ▶ The stationary source contains
  - a boiler subject to any New Source Performance Standard (NSPS) 40 C.F.R. 60, Subpart D, Da, Db or Dc;
  - a fuel storage tank subject to NSPS 40 C.F.R. 60, subparts K, Ka, or Kb;
  - a source other than an asphalt plant, crushing and grinding equipment, fuel storage tank, or boiler subject to NSPS 40 C.F.R. 60, 61, or 63;
  - a gas turbine;
  - an incinerator;
  - a source subject to any standard in 18 AAC 50.055(a) – (f) other than standards for fuel burning equipment in (a)(1), (a)(4), (b)(1), (b)(5) and (c);
  - open burning at the source any time during the permit term;
  - renovation and demolition activities at the source that would need to comply with the provision of 40 C.F.R., Part 61, Subpart M, Section 145, National Emission Standard for Asbestos, Standard for Demolition and Renovation; or
  - recycling and emissions reduction of Class I and Class II refrigerants at the stationary source (these activities are subject to 40 C.F.R. 82, Subpart F, Section 82.150).
  
- ▶ The stationary source emits more than 100 tons per year of a regulated air pollutant (i.e. is subject to Title V permitting requirements).

However, if there is a general permit for the activities listed above, the stationary source may operate under both permits.

## TECHNICAL ANALYSIS FOR THE PERMIT CONDITIONS

### Conditions 1 - 7 - Visible Emissions Standard Requirements

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 502(b), the Department will include terms and conditions as necessary

to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;
- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;
- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

An asphalt plant<sup>17</sup> constructed or modified after June 11, 1973, may not reduce visibility through the exhaust effluent by 20 percent or greater averaged over any six consecutive minutes, as specified in 18 AAC 50.055(a)(4). All other industrial processes and fuel burning equipment at this source may not reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes, as specified in 18 AAC 50.055(a)(1). Asphalt plants are industrial processes while the asphalt drum/dryer and diesel engines are fuel-burning equipment. Therefore the same standard applies to the diesel engines used for power generation for an asphalt plant and to asphalt plants built on or before June 11, 1973.

Condition 1 requires the Permittee to comply with the visible emission standard for asphalt plants and diesel engines, including fugitive emissions from asphalt plants. Conditions 2 – 4 and 5 – 7 address the visible emissions (VE) monitoring, recordkeeping, and reporting (MR&R) for asphalt plants and (liquid-fired) diesel engines, respectively. The dust control plan, condition 28.2, also addresses VE MR&R for fugitive emissions.

**Factual basis:** The visible emission monitoring, recordkeeping and reporting (MR&R) requirements for the Asphalt Plant are different from those for diesel engines because asphalt plants may produce visible emissions without smoke, which is typically associated with incomplete combustion. In the case of asphalt plants, visible emissions may also result from loose particulate from the aggregate fed into the mixing drum.

Thus, the MR&R requirements for diesel engines includes the Method 9 and the Smoke/no Smoke plans which are standard permit conditions required under 18 AAC 50 346(c). MR&R requirements for the asphalt plant deviate from those under 18 AAC 50.346(c) by excluding the possibility to monitor visible emissions using the Smoke/no Smoke plan because particulate matter emissions from the aggregate are not considered “smoke.”

The visible emissions standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a

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<sup>17</sup> In this permit, “asphalt plant” means all asphalt plant equipment (including the aggregate dryer and drum mixer), except the diesel engine and vehicles.

location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

**Conditions 2 – 4** were adopted from Standard Permit Condition IX – Visible Emissions and Particulate Matter Monitoring Plan for Liquid-Fired Sources. The conditions were modified to reflect the mobility of asphalt plants and the seasonal nature of their operations. The condition requires VE readings after startup from periods of shut down and after relocating the plant. The conditions were further modified to exclude the Smoke/No Smoke plan since the emissions from the asphalt plant include particulate matter from the aggregate during the drying process and not a product of combustion. Condition 3.1b(ii) was added to provide a reference to the operating level during the Method 9 observations.

**Conditions 5 - 7** MR&R conditions for diesel engines are standard conditions adopted into regulation pursuant to AS 46.14.010(e).

The frequency of monitoring of visible emissions in condition 5.1 was changed from the Standard Operating Condition to reflect the seasonal nature of asphalt plant operation. Not requiring the first VE reading for six months could allow the diesel engine to operate without a VE reading for the year. The condition was also changed to reflect that a diesel generator at an asphalt plant does not operate on a continuous basis. The new requirement to conduct the first VE reading for the diesel engine within 15 days attempts to ensure the engine's visible emissions are recorded during the operational period of asphalt production. The Department realizes that there is a potential for the asphalt plant to operate less than 15 days, but believes this requirement will protect the public.

Reoccurring monitoring for the diesel engine is kept at once per month as asphalt plants generally do not operate long enough to warrant the need for reduced monitoring. This also helps to alleviate missing VE readings by keeping the monitoring requirement simple.

The Smoke/No Smoke requirement in condition 5.2 was revised from the Standard Permit Condition to clarify the requirement that **anytime** smoke is observed they are to begin Method 9 observations or take corrective action to alleviate the smoke.

**Liquid-Fired Fuel Burning Equipment:**

Monitoring – The visible emissions may be observed by either Method-9 or the Smoke/No Smoke plans as detailed in condition 5.2. Corrective actions such as maintenance procedures and either more frequent or less frequent testing may be required depending on the results of the observations.

Recordkeeping - The Permittee is required to record the results of all visible emission observations and record any actions taken to reduce visible emissions.

Reporting - The Permittee is required to report: 1) emissions in excess of the State visible emissions standards and 2) deviations from permit conditions. The Permittee is required to include copies of the results of all visible emission observations with the stationary source operating report.

**Gas-Fired Fuel Burning Equipment:**

Monitoring, Recordkeeping, and Reporting – The monitoring of gas fired sources for visible emissions is waived, i.e. no source testing will be required. The Department has found that natural gas fired equipment inherently has negligible PM emissions. However, the Department can request a source test for PM emissions from any smoking equipment.

**Conditions 8 – 12 - Particulate Matter (PM) Standard**

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 502(b), the Department will include terms and conditions as necessary to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;
- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;
- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

Under 18 AAC 50.990(12), an "Asphalt Plant" means a stationary source that manufactures asphalt concrete by heating and drying aggregate and mixing asphalt cements; "Asphalt Plant" includes any combination of dryers, systems for screening, handling, storing, and weighing dried aggregate, systems for loading, transferring, and storing mineral filler, systems for mixing, transferring, and storing asphalt concrete, and emission control systems within the stationary source.

Under 18 AAC 50.055(b)(5), an asphalt plant constructed or modified after June 11, 1973 may not emit PM in excess of 0.04 grains per dry standard cubic foot of exhaust gas (gr/dscf). Under 18 AAC 50.055(b)(1), all other industrial processes and fuel burning equipment at the asphalt plant may not emit PM in excess of 0.05 gr/dscf. Asphalt plants are both industrial processes and fuel-burning equipment while diesel engines are fuel-burning equipment. Therefore the same standard applies to the diesel engines used for power generation for an asphalt plant and to asphalt plants built on or before June 11, 1973.

Asphalt plants are industrial processes while the asphalt drum/dryers are fuel-burning equipment. Conditions 8.1a and 8.1b establish the applicable PM standard for asphalt plants, depending on the date it was constructed, reconstructed, or modified. This permit does not include MR&R to demonstrate compliance with this particulate matter standard for fugitive emissions since Reference Method 5 of 40 C.F.R. 60, which is used to determine compliance with this standard, is not applicable to fugitive emissions.

Conditions 8.2 – 8.6 are the monitoring, recordkeeping, and reporting requirements to demonstrate compliance with the applicable PM standard for the asphalt drum/dryer. The Department recognizes that some asphalt plants operate less than thirty days in a year, which makes it difficult to schedule and complete a source test. Condition 8.2d

and allows the asphalt plants that operate for few days and hours to defer this thirty-day, automatic PM source test requirement if the Permittee complies with operating time restrictions. The Department added condition 8.2f to clarify that the one-year PM source test requirement is delayed one year for each calendar year that the Permittee did not operate. (For example, if a Permittee triggered the PM source test requirement on July 1, 2009, then the PM source test would be due by July 1, 2010. However, if the Permittee did not operate in calendar years 2010 and 2011, and operated in 2012, then the PM source test will be due by July 1, 2012.) Condition 8.2f does not add any extra years to the five-year trigger in condition 8.2c if the calendar year that the Permittee did not operate was before the due date. (For example, if the Permittee did not operate in the third and fourth calendar years after getting the permit, but does operate more than thirty days per year thereafter, then the PM source test requirement within five years is not changed. However, if the Permittee does not operate during the calendar year that the PM source test is due, then the source test due date is delayed one year.) This avoidance does not change the Department's authority to request a source test under condition 31—e.g., a response to complaints or high opacity from the asphalt plant.

Diesel engines are fuel burning equipment. Condition 9 requires the Permittee to comply with the applicable PM standard(s) for diesel engines, including fugitive emissions from asphalt plants. Conditions 10 - 12 establish MR&R requirements to demonstrate compliance with the PM standard for (liquid-fired) diesel engines.

**Factual basis:** The particulate matter standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

**Liquid-Fired Fuel Burning Equipment:**

For liquid-fired units the MR&R conditions are Standard Operating Permit Condition IX under 18 AAC 50.346(c), adopted into regulation pursuant to AS 46.14.010(e).

**Gas-Fired Fuel Burning Equipment:**

Although periodic PM monitoring of gas-fired units is waived, the Department has the discretion to request a source test for PM emissions from any fuel burning equipment under 18 AAC 50.220(a) and 18 AAC 50.345(k).

**Conditions 13 – 17 - Sulfur Compound Emissions Standard Requirements**

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 50.502(b), the Department will include terms and conditions as necessary to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;
- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;

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- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

Under 18 AAC 50.055(c) industrial processes and fuel burning equipment may not emit sulfur-compound emissions exceeding 500 parts per million (ppm) averaged over a period of three hours. Asphalt plants are industrial processes while the asphalt drum/dryer and diesel engines are fuel-burning equipment. Condition 13 requires the Permittee to comply with this standard for the asphalt drum/dryer and diesel engines. This does not apply to the other, nonfuel-burning parts of asphalt plants since they don't produce sulfur-compound emissions. Conditions 14 – 17 establish MR&R requirements to demonstrate compliance with this standard for (liquid and gas-fired) diesel engines.

**Factual Basis:** The sulfur-compound emissions standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

### **Liquid-Fired Fuel Burning Equipment:**

For liquid-fired fuel burning equipment the MR&R conditions are Standard Operating Permit Conditions XI and XII under 18 AAC 50.346(c), adopted into regulation pursuant to AS 46.14.010(e).

### **Gas-Fired Fuel Burning Equipment:**

Fuel gas sulfur is measured as hydrogen sulfide (H<sub>2</sub>S) concentration in ppm by volume (ppmv). The Department performed calculations<sup>18</sup> that show that fuel gas containing no more than 4,000 ppm of H<sub>2</sub>S will comply with this emission standard at stoichiometric (or zero excess air) combustion conditions. Given the case that excess air is normally greater than zero, the value of 4,000 ppm is conservative.

Equations to calculate the exhaust gas SO<sub>2</sub> concentrations resulting from the combustion of fuel gas were not included in this permit. Fuel gas with an H<sub>2</sub>S concentration of even 10 percent of 4,000 ppm is currently not available in Alaska and is not projected to be available in the foreseeable future.

In any case, the Permittee is required to record the fuel gas H<sub>2</sub>S concentration of the fuel gas. The Permittee is required to report as excess emissions whenever the fuel combusted causes sulfur compound emissions to exceed the standards in this condition. The Permittee is required to include copies of the records mentioned in the previous paragraph with the stationary source operating report.

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<sup>18</sup> See ADEC Air Permits Web Site at <http://www.dec.state.ak.us/air/ap/docs/sulfgas.pdf>, under "Stoichiometric Mass Balance Calculations of Exhaust Gas SO<sub>2</sub> Concentration."

### **Condition 18 - Ambient Air Quality Protection – General Requirements**

**Applicability:** This condition applies to all asphalt plants unless a stricter condition exists in this permit, State Statutes, or Federal Guidelines. 18 AAC 50.010 establishes the ambient air quality standards in the State of Alaska. The Permittee is required to comply with these requirements.

**Factual Basis:** The Department incorporated the same setback distance requirements as previously established in the 2003 General Permit for Asphalt Plants (GP3). The Department established the distances based on a generic air quality modeling (see Attachment 2) analysis it conducted to address public complaints regarding alleged impacts.<sup>19</sup> The Department used the U.S. Environmental Protection Agency's (EPA's) ISCST3 dispersion modeling software to conduct the air dispersion modeling in 2003. The Department also created a screening meteorological data set, in order to make the analysis applicable for the entire State.

The Department established the setback distance requirement in condition 18.1 in order to protect the three hour SO<sub>2</sub> ambient air quality standard. The requirement for a dust control plan in condition 28.2 for operations within one mile of the nearest off site inhabited structure is based on predicted 24 hour impacts of the ambient standard for PM-10.

As previously noted in the 2003 GP3, the setback distance requirements are based on the best information available to the Department. They do not guarantee that an operation cannot violate the ambient air quality standards or increments, or create a public air quality nuisance. Therefore, the Department included a note that if the operation results in complaints, the complaints are subject to investigation. The note lists some of the possible outcomes of the investigation.

### **Condition 19 – Ambient Air Quality Protection – Additional Restrictions for SO<sub>2</sub> Special Protection Areas**

**Applicability:** This condition only applies to asphalt plants located in the SO<sub>2</sub> Special Protection Areas (Unalaska and Saint Paul Island areas) established in 18 AAC 50.025(c).

**Factual Basis:** The Department established the SO<sub>2</sub> Special Protection Areas due to past demonstrations that the ambient SO<sub>2</sub> air quality standards and increments are threatened. While developing the 2003 GP3, the Department conducted a modeling analysis to determine whether additional restrictions were needed to protect the standards and increments in these special protection areas. The analysis showed that the Asphalt Plant would need to operate with a fuel-sulfur content not greater than 0.075 percent sulfur by weight and that the plant would need to operate on highline power rather than from its own diesel-generator. It also showed that if diesel engines are used for another purpose other than electrical power generation then they could not burn fuel with a sulfur content greater than 0.075 percent, by weight. The Department incorporated these restrictions into the 2003 GP3, and is now incorporating them into this Minor General Permit. If a Permittee would like less

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<sup>19</sup> It is important to note that most asphalt plants operating under the general permits did so without public complaints to the department.

stringent restrictions when operating in an SO<sub>2</sub> Special Protection Area, they will need to obtain a source-specific permit. The application for a source-specific permit would need to include a case-specific ambient air quality modeling demonstration.

**Condition 20 - Ambient Air Quality Protection – Additional Restrictions for Bells Flats (Kodiak)**

**Applicability:** 18 AAC 50.010 establishes the ambient air quality standards in the State of Alaska. This condition only applies to Asphalt Plants that operate at the Bells Flats area of Kodiak Island.

**Factual Basis:** In response to complaints received from the Bells Flat area of Kodiak in circa-2003, the Department conducted a modeling analysis under 18 AAC 50.201 of Asphalt Plant operations in this area. The analysis showed that Asphalt Plant emissions should not violate the State's air quality standards/increments as long as the sulfur content of the liquid fuel did not exceed 0.4 percent (by weight) and the plant operated no more than 13 hours per day. The Department incorporated these limits in the 2003 GP3, and is now incorporating these same limits into this minor general permit. MR&R requirements are established under this condition.

**Condition 21 – Pollution Control Equipment Breakdown Reporting**

**Applicability:** This condition applies to all emission units at the stationary source to help ensure compliance with 18 AAC 50.544(b)(2), for a minor permit classified under 18 AAC 502(b). This carries over condition 39 of the prior 2003 GP3.

**Factual Basis:** Because of public complaints, the Department included these conditions to better insure compliance with the conditions of this permit. Permittees will better assure compliance and minimize noncompliance by ensuring that the emission units are well maintained and pollution control equipment, if used, functions properly. This is an extension of Good Air Pollution Control Practices, condition 27.

**Condition 22 – Relocation and Reporting Site Selection**

**Applicability:** This relocation condition applies to all Asphalts Plants because Alaska Statute (AS) 46.14.210 authorizes the Department to issue a General Permit that is applicable to more than one stationary source similar in emission unit structure. The permit also contains siting requirements that limit the Asphalt Plant from operating within specified distances to occupied structures, and has monitoring requirements based upon startups at new locations.

This site selection condition applies to all Asphalts Plants because 18 AAC 50.110 prohibits pollution that is injurious to human health or welfare, animal or plant life or property, or which would unreasonably interferes with the enjoyment of life or property. This condition applies unless a stricter condition exists in this permit, State Statutes, or Federal Guidelines.

**Factual Basis:** Because of public complaints, the Department conducted air dispersion modeling to predict the impacts of Asphalt Plants on ambient air. Sources modeled were the stack emissions and fugitive dust emissions modeled as volume sources. Sources modeled were the stack emissions (as horizontal or vertical point sources), and fugitive dust emissions, modeled as volume sources. See Attachment 2 for a description of modeling performed. The new locations must comply with the distance requirements in conditions 18.1 – 18.2, give adequate consideration to the siting issues described in condition 18.3, comply with Coastal District Plan Designated Area Enforceable Policies in condition 23, and provide a dust control plan per condition 28.2 if within one mile of the nearest off site inhabited structure.

This location requirement is based on the best information available to the Department. It does not guarantee that an operation cannot violate ambient standards or cause violations against the prohibition of air pollution if the equipment is not properly run, or fugitive emissions are not controlled. Therefore, the condition also advises the Permittee that if the operation results in complaints, the complaints will be investigated. The condition lists some of the possible outcomes of the investigation.

### **Condition 23 – Alaska Coastal Management Program (ACMP)**

**Applicability:** This condition applies to all Asphalt Plants because AS 46.14.120(d) requires permits comply with all applicable federal, state, and local requirements. The ACMP District Enforceable Policies are state requirements. The authority for ACMP is in 11 AAC 110, 11 AAC 112, and 11 AAC 114.

**Factual Basis:** The Department followed protocol for ACMP reviews and received one comment. This condition requires the Permittee to comply with local coastal policies and to report compliance with any policies that affect the stationary source. This condition only applies to stationary sources that are operating within an Alaska Coastal District. Conditions 22 and 45 address the reporting for this condition 23.

The milestones for the ACMP review are listed below.

On April 25 through May 5, 2008, the Department conducted a 10-day ACMP project scope request to solicit applicable enforceable policies from all Coastal District Coordinators in Alaska with enforceable policies for ACMP Consistency Review.

On May 5, 2008, the Department received responses from two coastal districts: the Aleutians West Coastal District and the City of Bethel. The Title-I Supervisor sent these to the Department's Deputy Commissioner on the same day.

On May 6, 2008, the Deputy Commissioner determined that the scope of the project potentially includes activities subject to the following local district enforceable policies: Bethel (CD-1 and CA-1); and Aleutians West CRSA (D, G-1, H (including H-1 and H-2), I (including I-1 and I-2)).

On June 9 through July 8, 2008, the Department conducted a 30-day ACMP public comment review for ACMP Consistency Review Packet (simultaneously with the public comment period for the minor permit under 18 AAC 50.542(d)).

On July 8, 2008, the Department received comments from Karol Kolehmainen, Program Director for Aleutians West Coastal Resource Service Area (AWCRSA)

Board of Directors. The Department's responses to these comments are in the Response to Comments document.

On July 18, 2008, the Department issued a proposed consistency determination.

On July 24, 2008, the Department issued the final ACMP consistency determination.

#### **Conditions 24 - Administration Fees**

**Applicability:** This condition requires the Permittee, owner, or operator to pay administration fees as set out in regulation. Paying administration fees is required as part of obtaining and holding a permit with the department or as a fee for a department action.

**Factual Basis:** The owner or operator of a stationary source who is required to apply for a permit under AS 46.14.130 shall pay to the department all assessed permit administration fees. The regulations in 18 AAC 50.400-405 specify the amount, payment period, and the frequency of fees applicable to a permit action.

#### **Conditions 25 and 26 - Emission Fees**

**Applicability:** The regulations require all permits to include due dates for the payment of fees and any method the Permittee may use to re-compute assessable emissions. This is Standard Permit Condition I under 18 AAC 50.346(b)(1), adopted into regulation pursuant to AS 46.14.010(e).

**Factual Basis:** These standard conditions require the Permittee to pay fees in accordance with the Department's billing regulations. The billing regulations set the due dates for payment of fees based on the billing date.

The default assessable emissions are emissions of each air pollutant authorized by the permit (AS 46.14.250(h)(1)(A)). Air pollutant means any regulated air pollutant and any hazardous air pollutant. Therefore, assessable emissions under AS 46.14.250(h)(1)(A) means the **potential** to emit any air pollutant identified in the permit, including those not specifically limited by the permit. For example, hydrogen chloride (HCl) emissions from an incinerator are assessable emissions because they are a hazardous air pollutant, even if there is currently no emission limit on HCl for that class of incinerator.

The conditions also describe how the Permittee may calculate **actual** annual assessable emissions based on previous actual annual emissions. According to AS 46.14.250(h)(1)(B), assessable emissions are based on each air pollutant. Therefore, fees based on actual emissions must also be paid on any pollutant emitted whether or not the permit contains any limitation of that pollutant.

This standard condition specifies that, unless otherwise approved by the department, calculations of assessable emission based on actual emissions use the most recent previous calendar year's emissions. Since each current year's assessable emission are based on the previous year, the department will **not** give refunds or make additional billings at the end of the current year if the estimated emissions and current year actual emissions do not match. The Permittee will normally pay for actual emissions - just with a one-year time lag.

Projected actual emissions may differ from the previous year's actual emissions if there is a change at the stationary source, such as changes in equipment or an emission rate from existing equipment.

The emission factors in the Asphalt Plant Emission Calculation Guide are taken from US EPA publication AP-42 *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition* as adopted by reference in 18 AAC 50.035.

The Permittee may use other emission factors as outlined in Asphalt Plant Emission Calculation Guide and Standard Permit Condition I provided those emission factors have been approved by the Department.

If the Permittee does not choose to annually calculate assessable emissions, emissions fees will be based on “potential to emit” (PTE).

The PTE set forth in the condition is based on liquid fuel with a sulfur content of 0.5 percent by weight or fuel gas with a sulfur content of 60 ppm H<sub>2</sub>S by volume. If the actual sulfur content of the fuel is greater than these assumptions, the assessable emissions calculations provided by the Permittee should reflect the actual sulfur content. The change in these values may result in SO<sub>2</sub> emissions that could trigger PSD.

The address to submit Emission Fee Estimates was changed from the Standard Permit Condition. This address was changed to reflect the processing center for Emission Fee Estimates.

#### **Condition 27 - Good Air Pollution Control Practices**

**Applicability:** This condition ensures compliance with the applicable requirements under 18 AAC 50.346(b)(5) *Standard Operating Permit Condition VI - Good Air Pollution Control Practices* and applies to all emission units, **except** those subject to federal emission standards. This condition replaces condition 33 in the prior GP3 but does not require the Permittee to submit a plan to the Department; the legal basis for condition 33 was based on 40 C.F.R. 60.11, which is not applicable for minor permits. Also, under 18 AAC 50.544(b)(2), for a minor permit classified under 18 AAC 502(b), the Department will include a condition requiring the owner to

- perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
- keep records of any maintenance that would have a significant effect on emissions (the records may be kept in an electronic format); and
- keep a copy of either the manufacturer's or the operator's maintenance procedures.

**Factual basis:** The condition requires the Permittee to comply with good air pollution control practices for all emission units. The permit contains the provision exactly as required by regulation. This is the same as 18 AAC 50.346(b)(5) and requires that all permits issued by the State of Alaska contain the provisions of Standard Operating Permit Condition VI – Good Air Pollution Control Practices

unless more specific requirements adequately meet the requirements. In this case the Department has included in the permit more specific requirements as follows.

**Condition 27.2 - Facilities with a Baghouse**

**Applicability:** This condition expands the requirements under 18 AAC 50.346(b)(5) *Standard Operating Permit Condition VI - Good Air Pollution Control Practices* to provide a condition that more adequately meets the requirements under 18 AAC 50.346(b)(5) when the control device is a baghouse. This condition is the same monitoring as condition 18 of the prior GP3 general permit with added recordkeeping and reporting.

**Factual Basis:** The permit requires the Permittee to demonstrate compliance with the visible emissions and particulate matter standards in 18 AAC 50.055. Some Asphalt Plants may choose to control PM emission using a baghouse. This condition states the minimum frequencies for baghouse inspections, requires that the Permittee monitor the pressure drop across the baghouse, and baghouse outlet temperature, and maintain these parameters within limits recommended by the manufacturer.

After a run is completed, the baghouse temperature will drop through the range where acid gasses will condense. Corrosion will be minimized if the temperature passes through this range as quickly as possible. Therefore this requirement is to maintain fan operation per the manufacturer's recommendation until the baghouse has been purged. Reducing corrosion will lengthen the life of the baghouse and maintain the integrity of the fabric filter clamps and fasteners.

Ongoing monitoring of the parameters mentioned in this condition such as the pressure drop across the baghouse enables the operators to determine how the baghouse is functioning. For example, a baghouse differential pressure (DP) higher than the manufacturer's maximum recommended values may indicate that the cleaning system is not functioning adequately or a blocked hopper. A DP significantly lower than the manufacturer's specifications could indicate holes in the bags.

**Condition 27.3 - Facilities with a Wet Scrubber**

**Applicability:** This condition expands the requirements under 18 AAC 50.346(b)(5) *Standard Operating Permit Condition VI - Good Air Pollution Control Practices* to provide a condition that more adequately meets the requirements under 18 AAC 50.346(b)(5) when the control device used is a wet scrubber. This condition is the same monitoring as condition 19 of the prior GP3 general permit with added recordkeeping and reporting.

**Factual Basis:** The permit requires the Permittee to demonstrate compliance with the visible emissions and particulate matter standards in 18 AAC 50.055. Some Asphalt Plants may choose to control PM emission using a wet scrubber. This condition states the inspection requirements at the beginning of the operating season if the particulate matter control device is a scrubber.

The Permittee must maintain and operate the scrubber in accordance with the manufacturer's recommendations to include pressure drop, inlet and outlet water temperatures, water flow rate, and water pressure. These conditions are intended to

support compliance with opacity and particulate standards by encouraging proper scrubber maintenance and operation. Scrubber efficiency is related to proper operation.

### **Condition 28 – Reasonable Precautions to Prevent Fugitive Dust**

**Applicability:** This condition expands the requirements under 18 AAC 50.346(c) *Standard Operating Permit Condition X – Reasonable Precautions to Prevent Fugitive Dust* to provide a condition that more adequately meets these requirements given the significant sources of fugitive dust that may be generated by the Stationary Source. This condition applies to all Asphalt Plants.

**Factual Basis:** The condition requires the Permittee to comply with 18 AAC 50.045(d), and take reasonable action to prevent particulate matter (PM) from being emitted into the ambient air. 18 AAC 50.045(d) requires an operator to take reasonable precautions to prevent fugitive dust when handling bulk materials. This condition lists examples of reasonable precautions.

This condition requires the Permittee to use reasonable precautions when handling, storing or transporting bulk materials or engineering in an industrial activity in accordance with the applicable requirement in 18 AAC 50.045(d). Bulk material handling requirements apply to the Permittee because the Permittee will engage in bulk material handling, transporting, or storing; or will engage in industrial activity at the stationary source.

If the Asphalt Plant is to be located within one mile of a business, residence or other inhabited structure, the Permittee under this minor general permit must implement the plan under condition 28.2 or get the Department's approval to implement a different plan. The plan must be specific to any location named in the application.

The "one mile" distance requirement came from a circa-2003 dispersion modeling analysis conducted in support of the 2003 previous General Permit (GP3) for Asphalt Plants. Modeling predicted that during dry conditions, if precautions are not taken to control emissions from fugitive sources, the 24-hour PM-10 ambient air quality standard could be violated up to a mile away.

### **Conditions 29 and 30 - Air Pollution Prohibited**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.110. The condition prohibits the Permittee from causing any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. Air Pollution Prohibited requirements apply to the Asphalt Plant because activities at or associated with the stationary source may result in complaints from the public. The Department adopted this Standard Permit Condition II into 18 AAC 50.346(a) pursuant to AS 46.14.010(e).

**Factual Basis:** While the other permit conditions and emissions limitation should ensure compliance with this condition, unforeseen emission impacts can cause violations of this standard. These violations would go undetected except for complaints from affected persons. Therefore, to monitor compliance, the Permittee must monitor and respond to complaints.

Public complaints are normally an indication that a violation of 18 AAC 50.110 occurred. The Permittee is required to investigate and report any complaints. The Permittee must keep records of the date, time, and nature of all complaints received and summary of the investigation and corrective actions undertaken for these complaints and to submit copies of these records upon request of the Department.

**Condition 31 - Requested Source Tests**

**Applicability:** Applies because this is a standard condition to be included in all permits.

**Factual Basis:** This condition ensures compliance with the applicable requirement in 18 AAC 50.220(a) and applies because this is a standard condition to be included in all operating permits under 18 AAC 50.345(k). Monitoring consists of conducting the requested source test.

**Conditions 32 – 34 - Operating Conditions, Reference Test Methods, Excess Air Requirements**

**Applicability:** These conditions apply because the Permittee is required to conduct source tests, and also ensures compliance with 18 AAC 50.220(b) – (c).

**Factual Basis:** These conditions supplement the specific monitoring requirements stated elsewhere in this permit. Compliance monitoring with conditions 32 - 34 consist of the test reports required by condition 39.

**Condition 35 - Test Exemption**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.345(a) and applies when the source exhaust is observed for visible emissions.

**Factual Basis:** As provided in 18 AAC 50.345(a), amended May 3, 2002, the requirements for test plans, notifications and reports do not apply to visible emissions observations by smoke readers, except in connection with required particulate matter testing.

**Conditions 36 – 39 - Test Deadline Extension, Test Plans, Notifications, and Reports**

**Applicability:** These conditions ensure compliance with the applicable requirement in 18 AAC 50.345(l)-(o) and applies because the Permittee is required to conduct source test by this permit.

**Factual Basis:** Standard conditions 18 AAC 50.345(l) - (o) are incorporated through these conditions. These standard conditions supplement specific monitoring requirements stated elsewhere in this permit. The source test itself monitors compliance with these conditions.

**Condition 40 - Recordkeeping Requirements**

**Applicability:** Applies because the Permittee is required by the permit to keep records to demonstrate compliance with the terms and conditions of the permit and regulations.

**Factual Basis:** The condition restates the regulatory requirements for recordkeeping and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide an evidence of compliance with this requirement.

**Condition 41 - Information Requests**

**Applicability:** This condition requires the Permittee to submit requested information to the Department. This is a standard condition from 18 AAC 50.345(i) of the state approved operating permit program effective November 30, 2001.

**Factual Basis:** This condition requires the Permittee to submit information requested by the Department. Monitoring consists of receipt of the requested information.

**Condition 42 - Submittals**

**Applicability:** This condition requires the Permittee to comply with standardized reporting requirement in 18 AAC 50.326(j) and applies because the Permittee is required to send reports to the Department.

**Factual Basis:** This condition lists the Department's appropriate address for reports and written notices. Receipt of the submittal at the correct Department office is sufficient monitoring for this condition. This condition supplements the standard reporting and notification requirements of this permit.

**Condition 43 - Certification**

**Applicability:** This condition requires the Permittee to comply with the certification requirement in 18 AAC 50.205 and applies to all Permittees. This standard condition is required in all operating permits under 18 AAC 50.345(j).

**Factual Basis:** This condition requires the Permittee to certify all reports submitted to the Department. To ease the certification burden on the Permittee, the condition allows the excess emission reports to be **certified** with the stationary source report, even though it must still be **submitted** more frequently than the stationary source operating report. This condition supplements the reporting requirements of this permit.

**Condition 44 - Excess Emission and Permit Deviation Reports**

**Applicability:** This condition requires the Permittee to comply with the applicable requirement in 18 AAC 50.235(a)(2) and 18 AAC 50.240. The Department adopted this condition from Standard Permit Condition III under 18 AAC 50.346(b)(2) pursuant to AS 46.14.010(e). The Department copied **Section 10, ADEC Notification Form** Standard Permit Condition IV under 18 AAC 50.346(b)(3).

**Factual Basis:** This condition satisfies two State regulations related to excess emissions - the technology-based emission standard regulation and the excess emission regulation. Although there are some differences between the regulations,

the condition satisfies the requirements of each regulation. The Permittee is required to notify the Department when emissions or operations deviate from the requirements of the permit.

#### **Condition 45 - Operating Reports**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.346(b)(6) and applies to all permits. The Department copied this condition from Standard Permit Condition VII. No format is specified.

**Factual Basis:** The condition restates the requirements for reports listed in regulation. The condition supplements the specific reporting requirements elsewhere in the permit. The reports themselves provide monitoring for compliance with this condition.

This condition allows the Permittee to submit one of the required two copies of the report electronically in lieu of paper. This meets the requirements of 18 AAC 50 and Department needs provided the electronic version is compatible with ADEC software, as the Department can more efficiently distribute the electronic copy to staff in other locations.

During the transition period from the previous 2003 GP9 General Permit (if applicable), the Permittee may provide one report accounting for each permit term or condition and the effective permit at that time. The Permittee may chose to provide two reports: the first report accounting for reporting elements of permit terms and conditions from the end date of the previous operating report until the date of expiration of the old permit, and a second operating report accounting for reporting elements of terms and conditions in effect from the effective date of the renewal permit until the end of the reporting period.

#### **Condition 46 - Nonroad Engines**

**Applicability:** Nonroad engines are not subject to the standards approved under the State Implementation Plan for the air pollution control for stationary sources. Furthermore, 18 AAC 50.100, states that the potential to emit from nonroad engines do not count towards classification of a stationary source or modification under AS 46.14.130.

**Factual Basis:** This condition requires the Permittee to keep records of location and specifications of nonroad engines at any location where they operate. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

#### **Conditions 47 – 53 – Terms to Make Permit Enforceable**

**Applicability:** These are standard conditions required under 18 AAC 50.345(a) – (c)(2) and (d) – (h) for all minor permits.

**Factual Basis:** These are standard condition for compliance required for all minor permits.

## Attachment 1 Emission Reporting and Emission Fee Estimate

Submit the following information to the Department no later than March 31<sup>st</sup> of each year at:

ADEC Air Permits Program  
 610 University Avenue  
 Fairbanks, AK 99709-3643

Or

FAX to (907) 451-2187

Or

Email to: [DEC.AQ.Airreports@alaska.gov](mailto:DEC.AQ.Airreports@alaska.gov)  
*(If emailed, the report must be signed and certified in accordance with 18 AAC 50.345(j).)*

Or

Submit emissions online at the following website:  
<https://myalaska.state.ak.us/deca/air/airtoolsweb/>

Stationary Source Name \_\_\_\_\_

Permit Number \_\_\_\_\_ Date: \_\_\_\_\_

Emission Fee Estimate for \_\_\_\_\_  
 (State fiscal year)

**Table 1 Total Emissions & Assessable Emission Fee Estimate**

Pollutant	Asphalt Plant	Diesel Generator	Assessable Emissions
NO <sub>x</sub>			
CO			
SO <sub>2</sub>			
PM-10			
VOC			

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 Printed Name Title

## **Attachment 2 Asphalt Plant Dispersion Modeling Summary**

### **Alaska Department of Environmental Conservation Dispersion Modeling Summary For Asphalt Plants**

Prepared by  
Bill Walker  
April 23, 2003

This summary is to support the renewal of general air quality operating permits for Asphalt Plants. The Department specifically requests comment on the assumptions used to characterize these facilities, and on how we should use the information produced by the modeling analysis.

### **Background**

On May 1, 1998 the Department issued permits for transportable or stationary Asphalt Plants. The first round permits were issued under the authority of AS 46.14.215 which requires a demonstration that operations do not cause violations of ambient air quality standards or applicable increments. In support of that permit, the Department did air quality dispersion modeling using SCREEN3<sup>20</sup>.

During the life of that permit, the Department has received a substantial number of complaints about emissions from some of the Asphalt Plants using the General Permit. The complaints involve the potential for adverse impacts on human health and welfare.<sup>21</sup> The complaints were about dust and odors, and specifically questioned whether the Department has evaluated the effects of neighbors being on elevated terrain, and the operation of more than one industrial facility at the same location.

The modeling for the 1998 permits did not look at either elevated terrain or multiple industrial operations at one location. At that time, the Department also did not have a way to estimate emissions from any sources other than the stack emissions from aggregate dryers, drum mixers, or diesel engines used to provide electrical power. Therefore, several important sources of particulate matter were not part of the analysis.

The Department is issuing the renewal permits under the authority of AS 46.14.210, but not AS 46.14.215. However, because of public health concerns that arose during the life of the original permits, I have done additional dispersion modeling as provided by 18 AAC 50.201. This modeling serves as the basis for proposed permit conditions.

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<sup>20</sup> SCREEN3 AND ISCST3 are EPA computer models for predicting concentrations of pollutants in the air to which the public has access. They use data on weather and on the emission sources to make the calculations.

<sup>21</sup> It is important to note that most plants operating under the general permits did so without public complaints to the department.

### **Model and Methods Used**

For this modeling analysis I used ISCST3<sup>1</sup>. This allowed sources to be distributed over a three dimensional space. [SCREEN3 does not.] The modeling is intended to represent Asphalt Plants operating anywhere in the state. To make the modeling as representative as possible, I used emission rates and stack parameters from 28 Asphalt Plant source test reports. I estimated stack heights from photographs or visible emission inspection [Method 9] reports. Source test reports show operation at rates both above and below the standard of 0.04 gr/dscf. Emission rates for all stacks modeled were based on operation at that standard.

Fugitive particulate matter emissions were modeled as volume sources as this best approximates how they are released.

### **Meteorological Data**

The meteorological data set was a screening data set similar to the one used in SCREEN3. It was applied to ISCST3 by Pat Hanrahan of the State of Oregon Department of Environmental Quality. The model predicted one hour ambient concentrations. To get 24 hour concentrations, I multiplied the results by 0.4, and for three hour concentrations multiplied by 0.9. This is consistent with EPA guidelines.

### **Background Concentrations**

The background concentrations selected must be applied statewide. It would be far too unwieldy to develop separate conditions for each area of the state based on different background concentrations. I used the highest concentrations measured at Healy. The location of the Healy monitoring site intended to gather background concentrations, not to measure impacts from the Healy power plants. The background concentration were:

- SO<sub>2</sub> 24 hour – 26 µg/m<sup>3</sup>;
- SO<sub>2</sub> three hour – 44 µg/m<sup>3</sup>;
- PM-10 24 hour – 31 µg/m<sup>3</sup>.

### **Receptors**

Receptors were placed using a polar grid from a few meters from the center of the operation to a maximum of 2000 meters. Receptors were modeled assuming flat terrain, and terrain heights of 10, 15, and 20 meters.

### **Downwash**

Asphalt Plants have several structures that can cause downwash under some circumstances. The modeling used two structures common to any plant. The dryer or drum mixer was represented as a building 30 feet long and 12 feet high. Drum mix plants have a storage silo. Batch plants have a pug mill, and may also have a storage silo. To represent a silo or pug mill, I used a cylindrical structure 40 feet high and 14 feet in diameter.

Earlier modeling done before the public workshops held in January, 2003 relied on only one downwash structure – the drum mixer or dryer. A photograph the Department received of one Asphalt Plant in operation shows apparent downwash from larger

structures. Based on that information adding the silo was more realistic and produced changes in the modeling results.

### **PM-10**

A recent EPA publication<sup>22</sup> provided estimates of fugitive emissions for:

- Dust from vehicle traffic, including dump trucks and loaders;
- Receiving new aggregate;
- RAP crushing;
- Screening;
- Load out; and
- For drum mix plants, silo filling.

I combined all modeled sources in three scenarios – high and low moisture for fugitive emissions, and assuming fugitive emissions from mobile sources was controlled well enough that emissions are negligible. Asphalt plant stack emissions were modeled at the NSPS emission limit of 0.04 gr/dscf for each scenario.

The estimated emissions from vehicle traffic, RAP crushing, and screening depend on whether there are emission controls, such as water sprays, and for vehicle traffic, whether the ground is wet or dry and dusty and the soil silt content. Emissions from these sources also depend on the production rates and other source specific factors. I used the emission factors and assumptions in the following table.

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<sup>22</sup> Hot Mix Asphalt Plant Emission Assessment Report, EPA-454/R-00-019, December, 2000.

<b>Table 1 Fugitive Particulate Matter Emission Factors and Assumptions</b>			
<b>Emission Source</b>	<b>PM-10 Emission Factor</b>	<b>Source of Emission Factor</b>	<b>Assumptions</b>
All Sources			12 hours of operation per day 150 tons of HMA per hour
Loaders	$E = 2.6 (s/12)^{0.8} \times (W/3)^{0.4} \times 1/(M/0.2)^{0.3}$ where s is ground silt content W is vehicle weight M is soil moisture E is pounds of PM-10 /vehicle mile traveled	AP-42 Table 13.2.2	Caterpillar 928g Loader 12 ¼ tons 3 yard bucket capacity 20 feet from aggregate pile to inlet hopper Soil Moisture - uncontrolled operation 0.7% <sup>4</sup> - controlled operation 20% 10% road silt <sup>23</sup>
Trucks	Same as loaders	Same as Loaders	10 ½ tons empty 12 ton capacity 200 meters from gravel source to dryer 50 meters to property boundary Soil Moisture - for uncontrolled operation - 0.7% <sup>4</sup> - no emissions when wet 10% road silt <sup>4</sup>
Screening	Controlled - 0.00084 Uncontrolled – 0.015 lb/ton	AP-42 11.19.2	
RAP Crushing	Controlled – 0.00059 Uncontrolled – 0.0024	AP-42 11.19.2	Factor for tertiary crushing <sup>4</sup>

**Results**

The model predicted ambient air quality standards violations for each terrain height. For each model run I found the distance from the center of the operation to the nearest receptor with predicted compliance with the ambient standards. For conclusions based on particulate matter emissions, I subtracted 50 meters, which was the distance from the center to the outer edge of the volume sources representing fugitive emissions.

<sup>23</sup> Hot Mix Asphalt Plant Emission Assessment Report, EPA-454/R-00-019, December, 2000, page 15

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The distances to compliance were much greater for the model runs with fugitive emission sources uncontrolled. Distances were 1400 - 1600 meters – about one mile.

[Modeling filenames: dwas00su, dwas30su]

For controlled fugitive sources, the model predicts ambient standards violations only at smaller distances from the operation (see Table 2 below). With the same assumptions, the model also predicts violations of PSD increments at distances closer than 800 feet for flat terrain, and 1100 feet for terrain that is elevated 15 meters above the ground level of the stationary equipment.

[Modeling filenames: dwas00mc, dwas20mc]

<b>Table 2 PM-10</b>	
	Distance to Compliance with ambient standard – all asphalt plants modeled comply at rated capacity [distance in meters, measured between an offsite inhabited structure and a stationary source or material piles or borrow source that is being actively worked.
<b>Worst Case</b> All sources – Fugitives uncontrolled, dry conditions 0 meters terrain height	1550 meters
<b>Best Case</b> Fugitive emissions negligible except for RAP crushing and load out emissions 0 meter terrain ht. 10 meter 15 meter 20 meter	26 49 64 84

**SO<sub>2</sub>**

All sulfur emissions are assumed for this modeling to originate from sulfur in the fuel. I used the actual fuel combustion rate during the source test from which I obtained the stack parameters, and assumed the sulfur content of the fuel was 0.5% sulfur (the ASTM specification for number 2 diesel or fuel oil.) I assumed the simultaneous use of a stationary 500 hp diesel engine.

SO<sub>2</sub> standards were predicted to violate the three hour ambient standard close to the facility. The greatest distance for any plant modeled (flat terrain) to a location where compliance with the standard was always predicted was 100 meters, or 110 yards from the combustion sources. [Combustion sources were modeled as point sources emitted at a single location.] Modeling for most other plants predicted distances to compliance between 50 and 100 yards.

[Modeling filename: soadas00]

### **Multiple Industrial Facilities at One Location**

I modeled the combined impacts of an asphalt plant and a crusher located 100 meters apart. I modeled all crusher sources using AP-42 emission factors for controlled sources, and an asphalt plant assuming that all fugitive emission sources except RAP crushing and load out emissions were controlled well enough to be negligible. Impacts did not exceed those when the same sources were modeled separately. Therefore no permit conditions are included in the proposed permit to address emissions from combined sources.

## **Conclusions and Recommendations**

Because the modeling that was performed relies on estimates of what is a “typical” facility, the conditions in the permit based on this modeling of the results are not as rigorous as would be done for modeling which more accurately represents an individual facility. A General Permit is necessary because of the nature of asphalt production operations in Alaska. Asphalt Plants may have to frequently relocate to be near enough to road or runway paving jobs. By the time a contract is awarded and a location identified, there is typically not enough time to obtain a facility specific permit and still be able to satisfy the contract.

Based on results for SO<sub>2</sub> the permit prohibits locating fuel burning equipment at an asphalt plant within 110 yards of a residence.

The worst case modeling for uncontrolled particulate matter sources predicts violations of the 24 hour ambient PM-10 standard up to a mile away. The permit condition to address this possibility relies on a fugitive dust control plan. It would not be possible to write conditions that adequately restrict emissions from all sources without being overly stringent in many cases.

Based on results for PSD increments, the permit allows up to two years of operation at a location that is closer than 800 feet to a residence or other occupied structure, or 1100 feet if the structure is on terrain higher than 10 meters above the ground level of the stationary equipment. Construction activities that are in one location for less than two years are considered temporary, and not subject to PSD increments.

## **Uncertainties**

Each of the assumptions described contributes uncertainty to the results of this analysis. Since there is no one set of assumptions that will fit all operations, the intent was to

describe a reasonable worst case—assumptions that would not unreasonably prevent the operation under this permit of asphalt plants that have been operating under the previous permit without problems or complaints.

Since the General Permits can be used anywhere in the state, there is no one set of meteorological data that would be appropriate for all operations. This is why I chose a “screening” data set that presents a wide variety of conditions to find the reasonable worst case one hour concentration. The predictions would be appropriate to the extent that these screening conditions fit any actual location for an extended number of hours, the wind direction is toward nearby structures such as businesses or residences, and operation occurs during these conditions for about 12 hours per day.

These uncertainties must be considered when applying the modeling results to any applicability criteria or permit conditions for the General Permit.

## **Odor**

The odor from asphalt plants is a common source of concern to nearby residents, especially those with special health problems. However, odor cannot be modeled, so it could not be included in this analysis.