

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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Date: February 2, 2017 – Public Comment

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 hot-mix asphalt 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 (MG9) for rock crushers to operate the rock crusher. The MG3 Rev. 3 permit allows and authorizes rock crusher to be located with the asphalt plant only if the permittee has a separate minor source specific permit or minor general permit (MG9) for the rock crushing activities.

The Alaska Department of Environmental Conservation (Department) has restructured the conditions of this permit, the Minor General Permit 3 Revision 3 (MG3 Rev. 3), from the 2015 Minor General Permit 3 Revision 2 in order to improve user accessibility and reduce the compliance burden for Permittees. Conditions in this permit that are modified from the previous general permit are listed in Table 1.

Activities co-located with a major source of air pollution are not covered by this minor general permit because the underlying analysis to protect ambient air quality did not include impacts from nearby emitting activities not covered by this permit.

The Department included a public comment period from June 2nd through July 2nd, 2008 for the original 2009 MG3 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 Department included a public comment period from April 3 through May 3 2013 for the revision 1 of the MG3 as required by 18 AAC 50.542(d). The comment period was extended to 24 May 2013 after requests were received by the Department from Permittees. The Department received 17 comments from Colaska, Inc., three comments from Brad Quade at Anchorage Sand & Gravel Co., Inc., 14 comments from Shawn Crouse at Granite Construction Company, and 11 comments from Department employees. The Department's response to these comment is available in the Response to Comments document.

The Department issued revision 2 of the MG3 permit effective April 1, 2015 to correct a material mistake in the revision 1 permit. After public comment the Response to Comments document for revision 1 of the MG3 indicated that the schedule of monitoring of asphalt plant PM emissions would not be changed from the original permit. The Department had proposed that the frequency of Method 9 observations required under Condition 5.1 (in revisions 1) be changed from once every 30 operating days to once every 14 operating days to match the schedule of the MG9 rock crushing PM emission monitoring. The Department overlooked this change and made the correction with revision 2, returning the frequency to once every 30 operating days.

The Department conducted workgroup discussions with the Associated General Contractors (AGC) of Alaska from October 2016 through the Public Comment issuance of this revision to simplify conditions of the minor general permit and make compliance with the permit clearer for industry.

New conditions include Condition 4 which moves Condition 17 of the MG3 Rev. 2 incorporating additional requirements to address rental of emission units both to and from the permitted source,

and clarification that source tests may be conducted during any point during the fifth year after the previous source test under Condition 7.1(b). The Department published this current revision 3 for the required public comment period February 2, 2017, ending March 3, 2017 as required by 18 ACC 50.542(d).

Table 1
Condition changes from MG3 Rev. 2 to MG3 Rev. 3

| MG3 Permit Rev. 2 Condition No. | Description | MG3 Permit Rev. 3 Condition No. | Description of Change |
|--|--|--|---|
| 1 | Ambient Air Quality Protection | 1 | Condition 1.6 added to address collocated asphalt plants and rock crushers. |
| None | Collocated Equipment | 1.6 | Collocated asphalt facilities are addressed with provision allowing collocated rock crushing operations with separate MG9 permit added. |
| 2 | Relocation and Reporting of Site Selection | 2 | Revised Condition language and relocation sub-conditions |
| None | Preapproved Locations | 2.1 | Relocation allowed to pre-approved locations with 8-hr notification using Air Online Services (AOS). All other relocations now require five-day notification |
| None | New Locations | 2.2 | 10 Day notice requirement relaxed to 48 hours for new locations using AOS and 5 days using other notification methods |
| None | Unexpected Breakdown and Repair | 2.3 | Condition added authorizing relocation for repair requiring notice within 24-hr after move for repair |
| 3 | General Recordkeeping | 3 | No Change |
| 17 | Equipment Changes | 4 | Permit language moved from Condition 17 to Condition 4. Condition now requires reporting all equipment operated with each FOR. |
| None | Rental Agreements | 4.1 | Requirement to report equipment listed in the EU inventory which is leased, rented or provided to a third party for operation under a business agreement to the Department within seven days of business agreement. |
| 4 | General Reporting | 5 | Changes in sub-conditions |
| 4.1 | Submittals | 5.1 | Reporting methods added allowing reporting to Air Online Services and email to DEC Air Reports |
| 4.2 | Electronic Reporting | Removed | Incorporated into Condition 5.1 |
| 4.3 | Certification | 5.2 | No Change |
| 4.4 | Operating Reports | 5.3 | No Change |
| 4.5 | Information Requests | 5.4 | No Change |
| 5.1 | Visible Emissions Standard Requirements for Asphalt Plants | 6.1 | The PM opacity observation required once every 30-operating days and within two days of a shutdown exceeding five days modified to require Method 9 observations within two days of the production during each calendar month of operations. Additional reporting added |

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| | | | for colocation of asphalt plants. |
| 5.2 – 5.3 | Visible Emissions Standard Requirements for Diesel Engines | 6.2 – 6.3 | No Change |
| 6 | HMA Plant Particulate Matter (PM) Standard Requirements | 7 | No Change |
| 6.1 | Required Testing and Frequency of Testing | 7.1 | Language altered in Condition 7.1(a) to allow Permittee to conduct source test during any time during the entire fifth year after the previous source test |
| 6.2 | HMA plant MR&R Requirements | 7.2 | No Change |
| 7 | Sulfur Compound Emission | 8 | Condition added to accommodate sources which use bulk fuel to fuel equipment tanks |
| 8 | Pollution Control Equipment Breakdown Reporting | 9 | No Change |
| 9 | Excess Emissions and Permit Deviation Reports | 10 | No Change |
| 10 | Air Pollution Prohibited | 11 | No Change |
| 11 | Nonroad Engines | 12 | No Change |
| None | Stored Equipment | 13 | Condition added to address stored emission units collocated at a permitted facility |
| 12 | Change of Ownership | 14 | No Change |
| 13 | Administrative Fees | 15 | No Change |
| 14 | Assessable Emissions & Fees | 16 | No Change |
| 15 | Good Air Pollution Control Practice | 17 | No Change |
| 16 | Reasonable Precautions to Prevent Fugitive Dust | 18 | No Change |
| 17 | Equipment Changes | 4 | Condition moved from condition 17 to Condition 4. Condition 4.1 adds requirements to address rented and leased equipment of emission units operated under this permit. |
| 18 | Terms to Make Permit Enforceable | 19 | No Change |
| 19 | Source Testing Requirements | 20 | No Change |

EXCLUDED FACILITIES

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

1. 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 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 (ORL) under 18 AAC 50.225, or another general or source-specific permit that covers these requirements.

2. The stationary source is 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).
3. The stationary source contains a gas turbine.

Gas turbines were not modeled or included in the assumptions for asphalt plant dispersion modeling. Therefore, the Department cannot provide a factual basis for assessable emissions or the protection of ambient air quality.

4. The stationary source contains open burning or an incinerator.

Open burning and the operation of incinerators have substantive particulate matter (PM) emissions and ambient impacts, which were not included in the modeling analysis for simplicity.

5. The stationary source emits more than 100 tons per year (tpy) of a regulated air pollutant or is collocated at a TV Major source, i.e. is subject to Title V permitting requirements.

If there is a Title V Major Permit (commonly General Permit 3) for the activities listed above, the stationary source may operate under both permits.

If there is a rock crusher permitted under Minor General Permit 9 (MG9) it may operate in conjunction with this MG3 permit.

TECHNICAL ANALYSIS FOR THE PERMIT CONDITIONS

Condition 1 – Ambient Air Quality Protection

Legal Basis: 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.

Condition 1.4 only applies to asphalt plants located in the SO₂ Special Protection Areas (Unalaska and Saint Paul Island areas) established in 18 AAC 50.025(c).

In Condition 1.5, 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: The Department incorporated the same setback distance requirements detailed in the 2014 MG3, which were carried over from the 2009 MG3. The Department established these distances based on a generic air quality modeling analysis (see Attachment 1).

The Department established the setback distances in Condition 1.1 in order to protect the three hour SO₂ ambient air quality standard.

The setback distances are based on the best information available to the Department as noted in the 2003 GP3. 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 previously included a note that all complaints attributed to an operation are subject to investigation. The following note lists some of the possible outcomes of an investigation.

Note: The setback distances in Condition 1 are minimum requirements. You should give adequate consideration to local siting issues which may exist within a given area. Poor siting can lead to public complaints regarding dust impacts and/or impacts from other air pollutants. The Department does investigate these types of public complaints. These investigations could result in:

- 1. Formal enforcement with punitive damages;*
- 2. A formal request under 18 AAC 50.201 that the Permittee demonstrate, by air quality dispersion modeling or other means, that the air quality impacts are not violating State air quality standards or increments; or creating a public nuisance (under 18 AAC 50.110);*
- 3. The requirement to reduce emissions or implement another control strategy to reduce the ambient impact of those emissions as necessary to ensure that the concentration of air pollutants does not exceed the State air quality standards or increments; or the concerns listed in 18 AAC 50.110;*
- 4. A requirement to install and operate air quality monitoring equipment; or*
- 5. The requirement to obtain a site-specific permit with which would contain requirements tailored to that exact operation.*

In Condition 1.4, the Department previously established the SO₂ Special Protection Areas due to past demonstrations that the ambient SO₂ 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 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 sulfur content greater than 0.075 percent, by weight. The Department incorporated these restrictions into the 2009 MG3, and updated the terms in the MG3 Rev. 1 to allow for more flexibility and simplicity. If a Permittee would like less stringent restrictions when operating in an SO₂ Special Protection Area, they would 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 1.5 represents restrictions for the protection of ambient air quality. 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 2009 MG3, and updated terms in the 2014 MG3 Rev. 1 to allow for more flexibility and simplicity. Rev. 1 allows operation of liquid-fired equipment provided that the Permittee certify that only ULSD is used in all engines and in the asphalt plant. MR&R requirements are established under this condition.

Condition 1.6 protects ambient air quality by ensuring only one of any collocated asphalt plants operates on any single day. This limits the impact of PM emissions to the ambient air to the emissions associated with those of the single largest asphalt plant located at the facility.

Condition 2 - Relocation and Reporting Site Selection

Legal Basis: This relocation condition applies to all Asphalts Plants because Alaska Statute (AS) 46.14.211 authorizes the Department to issue a general minor permit that is valid for multiple locations within the state of Alaska. The permit also contains siting requirements that limit the asphalt plant from operating within specified distances to offsite occupied structures, and has monitoring requirements based upon startup 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 interfere 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: Based on the Department's 2003 modeling, new locations must comply with the setback distances in Condition 1. Permittees must provide notification to the Department 48 hours before startup at a new location using Air Online Services (AOS). If the new location is a preapproved location by the Department then notification is required 8 at least hours before startup using AOS. For relocations to a maintenance yard, due to repair or for maintenance, the Permittee

is required to notify the Department within 24 hours of relocation. For new locations not reported using AOS, the Permittee must notify the Department at least five days before relocation using one of the methods of Condition 5.1(ii)-(iii). See Attachment 1 for a description of modeling performed.

Condition 3 - General Recordkeeping

Legal Basis: The Permittee is required to keep records to demonstrate compliance with the terms and conditions of the permit and applicable 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 4 – Equipment Operated

Legal Basis: This condition applies under 18 AAC 50.200 which allows the Department to request information from the Permittee to determine compliance. This condition also applies under 18 AAC 50.546 to revise a minor permit, either at the request of the permittee or on the Department’s own initiative. The request for updated equipment information also applies under AS 46.14 and 18 AAC 50 to determine permit applicability; modification is covered by definition under 18 AAC 50.990(59), provisions not requiring an application are covered under 18 AAC 50.508(6).

Factual Basis: In Condition 4 the Department moved the equipment changes reporting requirement from within the general conditions to the main section of the permit. The Permittee is authorized to operate equipment listed in Table A of the permit. Changes to equipment operated must be reported under Condition 4 within each semiannual operating report. Condition 4.1 requires the Permittee to include language in any business agreement in which equipment authorized under the permit is leased to a third party and that the agreement include language that the lessee will comply with Alaska Statutes and Regulations. The rental or lease of permitted equipment authorized under this permit must be reported to the Department within seven days of signature of the business agreement.

Information on equipment changes will be used to aid in compliance determination and permit applicability. If the new equipment has a different PTE, the Department may request a new MG3 Rev. 3 application to reflect the changes in potential emissions or a Title V permit if PTE is greater than 100 tpy for any one regulated pollutant.

Condition 4 reinforces the obligation of the Permittee to report changes in the emission unit inventory authorized under the permit to the Department when new equipment is rented for use at the facility or authorized units are leased to a third party. This ensures the facility does not operate above the Title V threshold and that unpermitted operators do not rent and operate equipment at unapproved locations without obtaining the appropriate authorization from the Department.

Condition 5 – General Reporting

Legal Basis: The Permittee, in accordance with Condition 5.1, is required to send reports to the Department in accordance with 18 AAC 50.346(b)(6).

Condition 5.2 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).

Condition 5.3 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.

Condition 5.4 requires the Permittee to submit information requested by the Department. This condition allows the Department to request any records that the Permittee is required to keep by other permit conditions to be used for compliance determination or cause to modify, revoke and reissue, or terminate the permit. Monitoring consists of receipt of the requested information.

Factual Basis: The Department added reporting by submittal through Air Online Services and ADEC reporting email to Condition 5.1. This condition lists the appropriate submission methods for report submittals and written notices. Receipt of the submittal provides sufficient monitoring for this condition. This condition supplements the standard reporting and notification requirements for the permit.

Condition 5.2 requires the Permittee to certify all reports submitted to the Department. This condition supplements the reporting requirements of this permit.

Condition 5.3 restates the requirements for reports listed in the regulations. This condition also supplements the specific reporting requirements included elsewhere in the permit. The reports themselves provide monitoring for compliance with this condition. The semi-annual operating period of April 1 through October 31 and November 1 through April 30 was retained from the MG3 Rev. 2 without modification.

Condition 5.4 requires the Permittee to submit information requested by the Department. This condition allows the Department to request any records that the Permittee is required to keep by other permit conditions to be used for compliance determination or cause to modify, revoke and reissue, or terminate the permit. Monitoring consists of receipt of the requested information.

Condition 6: Visible Emissions Requirements

Legal Basis: For a minor permit classified under 18 AAC 502(b), in accordance with 18 AAC 50.544(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 plant¹ 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 6 requires the Permittee to comply with the visible emission standard for asphalt plants and diesel engines, including fugitive emissions from asphalt plants. Condition 6.1 and 6.2 address the visible emissions (VE) monitoring, recordkeeping, and reporting (MR&R) for asphalt plants and (liquid-fired) diesel engines, respectively.

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

Thus, the MR&R requirements for diesel engines includes the EPA Method 9 and the Smoke/No Smoke plans which are standard permit conditions required under 18 AAC 500346(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."

In this MG3 Rev. 3 the Department modified the schedule of monitoring required for asphalt plant emissions under Condition 6.1. Previous versions of the MG3 permit required Method 9 observations once every 30 operating days and within two days of restart after a shutdown of more than five days. In the MG3 Rev. 3 the Department simplified this to require Method 9 observations within the first two days of any calendar month the facility operates. This reduces the burden of tracking operating days, shutdown periods and when Method 9 observation requirements are triggered by Condition 6.1 while ensuring that periodic observations are included within each operating report.

The Department also incorporated provisions to allow multiple rock crushers to be collocated. The Permittee is required to calculate and record emissions of criteria pollutants from all rock crushing operations authorized under the MG3 Rev. 3 any time the facility is collocated with a separately permitted rock crusher monthly. When operating collocated sources the twelve month rolling total for all sources located at the facility are required to be reported in the semiannual operating report.

The VE standard applies to stationary diesel engines and does not apply to non-road engines. A non-road engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a non-

¹ In this permit, "asphalt plant" means all asphalt plant equipment (including the aggregate dryer and drum mixer), except the diesel engine and vehicles.

road engine if it remains, or will remain, at a location for more than 12 consecutive months, i.e. an engine used at a specific location for 12 months or longer ceased to be a non-road engine at the time it was placed. Although the VE standard does not apply to non-road engines, the engines must still be monitored as specified under Condition 6.2 to determine compliance if the engine remains in the same location for more than 12 months, or in case there are public complaints issued about the stationary source. No change was made to Condition 6.2 from the previous regarding Method 9 monitoring in this revision.

Condition 6 was 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.

Condition 6.1 requires the Permittee to monitor the baghouse or scrubber stack and to choose one emission point to monitor that is capable of producing fugitive emissions. Instead of monitoring every possible fugitive emission point, because there may be many, the Permittee should identify all possible fugitive emission points and select the one that appears to have the greatest continuous fugitive emissions, based on initial observation. Example fugitive emissions points are at aggregate handling areas, conveyor drop points, baghouse catch, drum mixer discharge, and hot mix storage silo receiving points. The Permittee should observe each point and determine which point continuously creates the most fugitive dust. This emission point should be monitored in accordance with Condition 6.1.

Condition 6.2 MR&R condition for diesel engines is a standard condition adopted into regulation pursuant to AS 46.14.010(e).

The Smoke/No Smoke provision requires the Permittee to begin Method 9 observations, or take corrective action, to eliminate smoke when observed. Corrective actions remain unchanged from the 2015 MG3 Revision 2 and are listed under Condition 6.3.

Condition 7.1 – Particulate Matter Emissions – Source Testing

Legal Basis: 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. Table C of the permit establishes the applicable PM standard for asphalt plants, depending on the date it was constructed, reconstructed, or modified.

Factual Basis: Condition 7.1 covers the source testing requirements to demonstrate compliance with the applicable PM standard for the asphalt drum/dryer. Condition 7.1 also covers the monitoring, recordkeeping, and reporting required during source tests to demonstrate compliance with the applicable PM standard for the asphalt drum/dryer.

In MG3 Rev. 3 the Department altered permit language to enable the Permittee to conduct the

periodic PM source test at any time during the fifth year of operation. Language to conduct the sourced test “no later than” was changed to “during” the fifth year of operation. This provides the Permittee flexibility to schedule source testing several months after the five year calendar window to coincide with possible larger projects later in the year where the facility can be tested at its maximum capacity. Industry indicated the previous MG3 Rev. 2 often forced Permittees to source test early or at a reduced capacity to maintain compliance. This change allows for scheduling flexibility while ensuring periodic verification the grain loading standard for the asphalt plant is meeting the standard of 18 AAC 50.055(b)(5).

Condition 7.2 - Particulate Matter Emissions – Asphalt Plant

Legal Basis: 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. Table C of the permit establishes 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.

Diesel engines are fuel burning equipment. Condition 6 requires the Permittee to comply with the applicable PM standard(s) for diesel engines, including fugitive emissions from asphalt plants. Condition 6 establishes 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.

The permittee is required to keep a daily log of asphalt production parameters listed, as well as the parameters listed for baghouses and scrubbers. These are to be reported in each FOR.

The MR&R conditions are Standard Operating Permit Condition IX under 18 AAC 50.346(c), *Liquid-Fired Fuel Burning Equipment*, adopted into regulation pursuant to AS 46.14.010(e).

Condition 8 - Sulfur Compound Emissions Standard Requirements

Legal Basis: For a minor permit under 18 AAC 50.502(b), in accordance with 50.544(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 50.055(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 8 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. Condition 8 establishes 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 fuel used in asphalt burners. Although sulfur compound emissions standards do not apply to nonroad engines, all nonroad engines must be monitored to ensure the protection of ambient air quality standards (18 AAC 50.010(2), 18 AAC 50.110).

To simplify and reduce the amount of information to be reported by the Permittee and reviewed by the Department reporting does not require the submittal of all fuel receipts. Instead of attaching all fuel receipts or a statement from the fuel supplier with each FOR, the Permittee is to keep these records for at least five years and only report the fuel grade used during the reporting period. If only ULSD was used for the entire reporting period, the Permittee should submit a statement certified by the Responsible Official stating that only ULSD fuel was purchased. If a fuel type other than ULSD was used, the Permittee is to submit a list of fuel grades, including sulfur content for each fuel grade used.

The Department modified MR&R requirements to provide flexibility when fuel used during the reporting period is from a bulk supply/tank. The Permittee must report this in the semiannual

operating report and maintain fuel receipts for five years. The Department will review these records during Full Compliance Evaluations or when requested per Condition 5.4.

The Permittee is also to report the fuel type and sulfur content of fuel used in the asphalt burner. Records of non-distillate fuel or used oil for asphalt burners are to be kept on-site for at least five years.

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: If a source permitted under an MG3 Rev. 3 uses pipeline quality natural gas, no monitoring terms are needed and reporting should consist of submitting a statement certified by the Responsible Official stating that only natural gas was used.

Highline Power: If a source permitted under an MG3 Rev. 3 uses highline power, no monitoring terms are needed and reporting should consist of submitting a statement certified by the Responsible Official stating that only highline power was used.

Condition 9 - Pollution Control Equipment Breakdown Reporting

Legal Basis: This condition is intended to ensure all EUs operating at the stationary source are in compliance with 18 AAC 50.544(b)(2).

Factual Basis: The Department included these reporting requirements to better ensure compliance with the permit conditions. Permittees can more effectively meet their compliance obligations by ensuring that all EUs are well maintained and that any pollution control equipment, if used, functions properly. These requirements are an extension of the Good Air Pollution Control Practices of Condition 17.

Condition 10 - Excess Emission and Permit Deviation Reports

Legal Basis: This condition requires the Permittee to comply with the applicable requirement in 18 AAC 50.235(a)(2) and 18 AAC 50.240(c). 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 Form 2, *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 Department adopted this condition as Standard Permit Condition III under 18 AAC 50.346(c) pursuant to AS 46.14.010(e). The Department has determined that the standard condition adequately meets the requirements of 40 C.F.R. 71.6(a)(3). No additional emission unit or stationary source operational or compliance factors indicate the unit-specific or stationary-source-specific conditions would better meet the requirements. Therefore, the Department concludes that the standard conditions as modified meets the requirements of 40 C.F.R. 71.6(a)(3).

Conditions 11 - Air Pollution Prohibited

Legal Basis: This condition ensures compliance with the applicable requirements in 18 AAC 50.110. The requirements prohibit 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 stationary source because rock crushers produce emissions and because activities at or associated with the stationary source may result in complaints from the public. The Department adopted these requirements as Standard Permit Condition II under 18 AAC 50.346(a) pursuant to AS 46.14.010(e).

Factual Basis: Unforeseen emission impacts can cause violations of the requirements under 18 AAC 50.110. These violations can go undetected in the absence of public complaints. Public complaints are an indication that a violation of 18 AAC 50.110 has occurred. The Permittee is required to investigate and report any complaints and must keep records that detail the date, time, and nature of all complaints received. The Permittee must maintain a record of the investigation and any corrective actions undertaken and submit copies of these records upon request of the Department. Therefore, the Permittee must monitor and respond to complaints to ensure compliance with 18 AAC 50.110

Condition 12 – Non-road Engine Requirements

Legal Basis: Non-road engines are not subject to the standards approved under the State Implementation Plan for the air pollution control for stationary sources. 18 AAC 50.100 states that the PTE from non-road engines does not count towards the classification of a newly constructed or modified stationary source in accordance with AS 46.14.130.

Factual Basis: This condition requires the Permittee to keep records detailing the location and specifications of non-road engine EUs at any location where they operate. The date and location log requested in this condition should be submitted with each Facility Operating Report (FOR). This Condition remains unchanged from the 2014 MG3 Rev. 2.

The Department needs to know if an engine no longer qualifies as a non-road engine so that the proper monitoring, recordkeeping, and reporting for stationary engines are met.

A non-road engine has the meaning given in 40 C.F.R. 89.2, presented as follows, and is adopted by reference in 18 AAC 50. This condition and other conditions in this permit regarding non-road engines only apply to portable non-road engines, not self-propelled non-road engines.

Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:

- *In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or*
- *In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or*

- *That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.*

An internal combustion engine is not a nonroad engine if:

- *The engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act; or*
- *The engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or*
- *The engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.*

This condition provides supplemental information for non-road engines monitored under Conditions 5.2 and 7 and is intended to help ensure the protection of ambient air quality in accordance with 18 AAC 50.010(2) and 18 AAC 50.

Condition 13 – Stored Equipment

Legal Basis: This condition requires the permittee to record and report any equipment which is permitted with the Department under a separate permit but kept onsite with the asphalt plant operated under this permit solely for storage.

Factual Basis: If multiple sources are operated at the same site there is a potential that the aggregated emissions will exceed Title V permitting thresholds. This condition provides the Permittee the flexibility to store permitted asphalt plants, rock crushers and nonroad engines at an operating facility by reporting to the Department the collocated cold stacked equipment.

Condition 14 – Change of Ownership

Legal Basis: This condition requires new and previous owners of the permitted rock crusher plant to submit the transfer of ownership form and pay the administrative amendment fees in accordance with 18 AAC 50.400(f)(1)-(3) and 40 C.F.R. 71.7(d), adopted by reference in 18 AAC 50.040.

Factual Basis: If owner or operator of a stationary source transfers ownership of the stationary source, both new and previous owners must complete the transfer of ownership form. Once the form

is received by the Department, the new owner will receive authorization to operate the stationary source.

Condition 15 - Administration Fees

Legal Basis: 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.

Condition 16 – Assessable Emissions & Emission Fees

Legal Basis: 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 H₂S 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 SO₂ emissions that could trigger PSD.

Condition 17 - Good Air Pollution Control Practices

Legal Basis: 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. 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 stated below for Condition 17.1 and 17.2.

Condition 17.1 - Facilities with a Baghouse

Legal Basis: 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.

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. DP significantly below the manufacturer's specifications could indicate holes in the bags.

MR&R requirements are listed in Condition 7.3 for simplicity and to keep all MR&R requirements for the asphalt plant and control equipment in the same condition.

Condition 17.2 - Facilities with a Wet Scrubber

Legal Basis: 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.

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.

MR&R requirements are listed in Condition 7.3 for simplicity and to keep all MR&R requirements for the asphalt plant and control equipment in the same condition.

Condition 18 - Reasonable Precautions to Prevent Fugitive Dust

Legal Basis: 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 occupied structure, the Permittee under this minor general permit must implement the plan under Condition 18 or get the Department's approval to implement a different plan. The plan must be specific to any location named in the application and must be attached to the relocation notice required in Condition 2.

The "one mile" distance requirement came from a circa-2003 dispersion modeling analysis conducted in support of the 2003 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.

A sample fugitive dust control plan is provided as Appendix B with the MG3 Rev. 3. This sample plan may be used as is or modified to fit the needs of the Permittee.

Dust Control Plans:

- If a location listed in an application or in an application addendum (see Form 1) is within one mile of the nearest occupied off-site structure, the applicant or Permittee must attach a fugitive dust control plan as part of that application or addendum. The Permittee must also submit a fugitive dust control plan, or revision to the plan if requested by the Department. The operator must comply with a dust control plan approved by the Department.
- The plan must be specific to any location named in a permit application or application addendum, and must specify the measures that will be taken and under what circumstances the Permittee will use them. If necessary, the plan will identify the frequency with which the measures will be applied. A plan does not fulfill this requirement if it simply mentions the measures that can be taken to control fugitive dust for a particular emission unit.

Condition 19 – Terms to Make the Permit Enforceable

Legal Basis: 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 conditions for compliance required for all minor permits.

Condition 20.1 – General Source Test Requirements

Legal Basis: Applies because this is a standard condition to be included in all permits in accordance with 18 AAC 50.345(k).

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.

Condition 20.2, 20.3, & 20.4 - Operating Conditions, Reference Test Methods, Excess Air Requirements

Legal Basis: This condition applies because the Permittee is required to conduct source tests, and also ensures compliance with 18 AAC 50.220(b) - (c).

Factual Basis: This condition supplements the specific monitoring requirements stated elsewhere in this permit. Compliance monitoring with conditions 20.2-20.4 consists of the test reports required by Condition 19.8.

Reference Test Methods: You should use the following as reference test methods when conducting source testing for compliance with this permit:

- Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in Reference Method 9.
- Source testing for emissions of total particulate matter, sulfur compounds, and nitrogen compounds gases must be conducted in accordance with the methods and procedures specified in 40 C.F.R 60, Appendix A.
- Source testing for emissions of any pollutant may be determined using an alternative method approved by the Department in accordance with 40 C.F.R. 63 Appendix A, Method 301.

Condition 20.5 - Test Exemption

Legal Basis: 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), 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.

Condition 20.6, 20.7, & 20.8 - Test Plans, Notifications, and Reports

Legal Basis: This condition ensures 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 this condition. These standard conditions supplement specific monitoring requirements stated elsewhere in this permit. The source test itself monitors compliance with this condition.

ATTACHMENT 1: 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 SCREEN3².

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 welfare⁶. 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.

Model and Methods Used

For this modeling analysis I used ISCST3. 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

² SCREEN3 AND ISCSD 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.

⁶It is important to note that most plants operating under the general permits did so without public complaints to the Department.

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 concentrations were:

SO₂ 24 hour – 26 µg/m³;
SO₂ three hour – 44 µg/m³;
PM-10 24 hour – 31 µg/m³.

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 publication³ 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.

³ Hot Mix Asphalt Plant Emission Assessment Report, EPA-454/R-00-019, December 2000.

| Table 1 Fugitive Particulate Matter Emission Factors and Assumptions | | | |
|---|---|----------------------------------|---|
| Emission Source | PM-10 Emission Factor | Source of Emission Factor | Assumptions |
| 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 <i>s</i> is ground silt content <i>W</i> is vehicle weight <i>M</i> is soil moisture <i>E</i> is pounds of PM-10 /vehicle mile traveled | AP-42 Table 13.2.2 | Caterpillar 928g Loader 12 ¾ tons 3 yard bucket capacity 20 feet from aggregate pile to inlet hopper Soil Moisture - Uncontrolled operation 0.7% - Controlled operation 20% 10% road silt ⁴ |
| 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% - No emissions when wet 10% road silt ⁴ |
| 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 |

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.

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]

⁴ Hot Mix Asphalt Plant Emission Assessment Report, EPA-454/R-00-019, December 2000, page 15.

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]

| Table 2 PM-10 | |
|---|--|
| | 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.] |
| Worst Case All sources – Fugitives uncontrolled, dry conditions 0 meters terrain height | 1550 meters |
| Best Case 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 |

SO₂

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.

SO₂ 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 SO₂ 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.