

**DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**



**Guidance Document for
Preparing an Air Quality Control
Construction Permit
Application**

**Division of Air and Water Quality
Air Permit Program
August 25, 2003**



TABLE OF CONTENTS

Acronyms..... xi

IntroductionI-1

Part I – Do I Need a Permit?

Section 1.0 Sources Requiring Permits 1-1

 1.1 Classification Criteria 1-3

 1.1.1 Equipment Type and Size 1-3

 1.1.2 Emissions 1-4

 1.1.3 Location 1-6

 1.1.4 Owner Requested Limits, Pre-Approved Limits and Limits
 in Permit 1-22

 1.1.5 Overview of Determining Classifications 1-24

 1.2 Classifications for New Stationary Sources..... 1-25

 1.2.1 Ambient Air Quality Facility [18 AAC 50.300(b)] 1-30

 1.2.2 Prevention of Significant Deterioration Major Source [18
 AAC 50.300(c)] 1-31

 1.2.3 Nonattainment Major Source [18 AAC 50.300(d)] 1-33

 1.2.4 Major Stationary Source Near a Nonattainment Area [18
 AAC 50.300(e)] 1-34

 1.2.5 Hazardous Air Pollutant Major Source [18 AAC 50.300(f)]..... 1-35

 1.2.6 Port of Anchorage Facility [18 AAC 50.300(g)] 1-39

 1.3 Classifications for Modifications 1-40

 1.3.1 Modification M1 – Becoming an Ambient Air Quality
 Facility [18 AAC 50.300(b), (h)(1)] 1-43

 1.3.2 Modification M2 – Increase Over Current Allowable
 Emissions [18 AAC 50.300(b), (c), (d), (h)(2))]..... 1-43

 1.3.3 Modification M3 – PSD Major Modification [18 AAC
 50.300(c), (h)(3)]..... 1-44

 1.3.4 Modifications M4a and M4b – PSD Major Modification
 [18 AAC 50.300(b), (d), (e), (f), (g), (h)(4)]..... 1-46

 1.3.5 Modification M5 – Nonattainment Major Modification [18
 AAC 50.300(d), (h)(5)] 1-47

 1.3.6 Modification M6 – Nonattainment Major Modification [18
 AAC 50.300(d), (h)(6)] 1-47

 1.3.7 Modification M7 – Nonattainment Major Modification [18
 AAC 50.300(b), (c), (e), (f), (g), (h)(7)] 1-48



TABLE OF CONTENTS (cont'd.)

1.3.8 Modification M8 – Nonattainment Major Modification [18 AAC 50.300(b), (c), (e), (f), (g), (h)(8)] 1-48

1.3.9 Modification M9 – Major Modification Near a Nonattainment Area [18 AAC 50.300(b), (e), (f), (g), (h)(9)]..... 1-49

1.3.10 Modifications M10a and M10b – Hazardous Air Pollutant Major Modifications [18 AAC 50.300(b), (c), (d), (e), (f), (g), (h)(10)] 1-50

1.3.11 Modification M11 – Port of Anchorage Modification [18 AAC 50.300(g), (h)(11)] 1-50

Section 2.0 Emission Calculations..... 2-1

2.1 Internal Combustion Engine Emissions 2-2

2.2 How to Calculate Potential to Emit 2-4

2.2.1 Using Enforceable Limits for Potential to Emit Calculations (Allowable Emissions)..... 2-5

2.2.2 When to Include Fugitive Emissions in Potential to Emit Calculations 2-6

2.2.3 When to Include Nonroad Engine Emissions in Potential to Emit Calculations 2-7

2.3 How to Calculate an Increase in Actual Emissions 2-8

2.3.1 Emission Units Other Than Electric Utility Steam Generating Units 2-8

2.3.2 Electric Utility Steam Generating Units 2-9

2.3.3 When to Include Fugitive Emissions in Actual Emissions Calculations 2-10

2.3.4 When to Include Nonroad Engine Emissions in Actual Emissions Calculations 2-10

2.4 Emission Calculation Methods 2-10

2.4.1 Stack Test Data 2-11

2.4.2 Continuous Emission Monitoring System (CEMS)..... 2-11

2.4.3 Material Balances..... 2-11

2.4.4 Equipment Vendor Data..... 2-12

2.4.5 Emission Factors..... 2-12

2.4.6 Models 2-14

2.4.7 Engineering Estimation..... 2-15

2.5 Basic Procedures to Prepare an Emission Inventory 2-15

2.5.1 Step 1: Identify Equipment With Air Emissions 2-15

2.5.2 Step 2: Identify Specific Air Pollutants Emitted..... 2-16

2.5.3 Step 3: Obtain Equipment-Specific Information 2-16

2.5.4 Step 4: Identify the Time Period for the Emission Inventory.... 2-17

2.5.5 Step 5: Choose an Emission Inventory Approach 2-17

2.6 Common Conversion Factors 2-19



TABLE OF CONTENTS (cont'd.)

2.7 References 2-19

Part II – How Do I Prepare a Complete Permit Application?

Section 3.0 Application Preparation..... 3-1

3.1 Permit Application Content 3-1
3.2 Permit Application Assembly 3-7
3.3 Fees and Retainers 3-7
3.4 Certification 3-8
3.4.1 Who May Certify a Permit Application? 3-8
3.4.2 Certification Statement and Signature 3-9

Section 4.0 State Regulations -- Application F 4-1

4.1 Numerical Emission Standards 4-1
4.1.1 Opacity (Visible Emissions) 4-1
4.1.2 Particulate Matter Concentration 4-3
4.1.3 Sulfur Dioxide..... 4-5
4.1.4 Other Emission Standards 4-5
4.2 Numerical Emission Standards – Showing That Your Emission Units Will Comply 4-7
4.3 Other State Standards..... 4-8
4.3.1 Open Burning..... 4-8
4.3.2 Wood-Fired Heating Device 4-9
4.3.3 Ice Fog Standards..... 4-9

Section 5.0 Federal Regulations – Application Form F..... 5-1

5.1 New Source Performance Standards (NSPS) 5-2
5.1.1 What are New Source Performance Standards? 5-2
5.1.2 How Do I Determine if an NSPS Applies?..... 5-6
5.1.3 How Do I Demonstrate Compliance with an NSPS?..... 5-7
5.2 National Emission Standards for Hazardous Air Pollutants (NESHAPs)..... 5-7
5.2.1 What are National Emission Standards for Hazardous Air Pollutants? 5-7
5.2.2 How Do I Determine if a NESHAP or MACT Standard Applies? 5-12
5.2.3 How Do I Demonstrate Compliance with a NESHAP or MACT Standard? 5-12
5.3 Other Federal Regulations Adopted by the State of Alaska 5-13



TABLE OF CONTENTS (cont'd.)

Section 6.0 Air Quality Impact Analysis – PSD Major Source or Modification, Ambient Air Quality Facility or Modification, and Major Source or Modification Near A Nonattainment Area – Application Form G 6-1

- 6.1 Who Is Required to Conduct an AQIA 6-1
- 6.2 Ambient Air and Ambient Air Boundaries 6-3
- 6.3 Alaska Ambient Air Quality Standards 6-3
- 6.4 PSD Increments 6-5
 - 6.4.1 Determining the Baseline Concentrations Near Your Stationary Source 6-5
 - 6.4.2 Area Classification 6-8
 - 6.4.3 PSD Increments for Specific Air Quality Classifications 6-8
- 6.5 Maximum Allowable Ambient Concentrations 6-9
- 6.6 Overview of How to Prepare an AQIA 6-10
 - 6.6.1 Overview of a Preliminary Analysis and Full Impact Analysis 6-10
 - 6.6.2 Ambient Air Quality Data 6-12
 - 6.6.3 EPA-Approved Dispersion Models 6-14
 - 6.6.4 Modeling Protocol 6-15
- 6.7 In-Use Limits 6-16
- 6.8 References 6-16

Section 7.0 18 AAC 305 Requests 7-1

- 7.1 Owner Requested Limits to Avoid Classification – Application Form H 7-1
- 7.2 Permit Revisions and Revocations – Application Form I 7-2
- 7.3 Nonattainment Offset Emissions – Application Form N 7-2
- 7.4 Stack Injection – Application Form P 7-3

Section 8.0 Case-By-Case Technology Evaluations – For Major Sources and Modifications – PSD, Nonattainment, and HAP 8-1

- 8.1 Best Available Control Technology (BACT) – Application Form F 8-1
 - 8.1.1 What is BACT? 8-1
 - 8.1.2 Who is Required to Perform BACT? 8-2
 - 8.1.3 Schedule for Conducting BACT Analysis 8-4
 - 8.1.4 Overview of Performing a BACT Analysis 8-5
 - 8.1.5 Permit Conditions from a BACT Analysis 8-21
- 8.2 Lowest Achievable Emission Rate (LAER) – Application Form F 8-22
 - 8.2.1 What is LAER? 8-22
 - 8.2.2 Who is Required to Comply With LAER? 8-22
 - 8.2.3 How to Determine LAER 8-22



TABLE OF CONTENTS (cont'd.)

8.2.4 Permit Conditions from a LAER Analysis 8-24

8.3 Case-by-Case MACT 8-24

8.3.1 What is Case-by-Case MACT? 8-24

8.3.2 Who is Required to Perform a Case-by-Case MACT
Determination? 8-25

8.3.3 How to Perform a Case-by-Case MACT Determination..... 8-25

8.3.4 Permit Conditions from a Case-By-Case MACT
Determination..... 8-26

8.4 References 8-26

Section 9.0 Air Quality Related Values – PSD Sources and Modifications Only – Form G..... 9-1

9.1 Who is Required to Evaluate Air Quality Related Values? 9-1

9.2 What are Air Quality Related Values? 9-1

9.3 Federal Land and Federal Land Managers..... 9-3

9.4 How are Air Quality Related Values Evaluated? 9-3

9.4.1 Pre-Application..... 9-3

9.4.2 Source Applicability for Class I Areas 9-4

9.4.3 Class I Area Visibility Impact Analysis..... 9-4

9.4.4 Permit Application..... 9-5

9.5 References 9-5

Section 10.0 Port of Anchorage 10-1

Appendices

Appendix A Definitions

Appendix B Construction Permit Application Checklists

Appendix C Construction Permit Application Forms

Appendix D Construction Permit Application Instruction Manual

Appendix E Example Attachments

Appendix F Port of Anchorage Manual



LIST OF FIGURES

Figure I-1	Overview of the Permit Application Process	I-2
Figure 1-1	Class I Area – Denali National Park and Denali Wilderness.....	1-8
Figure 1-2	Class I Area – Bering Sea National Wildlife Refuge	1-9
Figure 1-3	Class I Area – Simeonof National Wildlife Refuge	1-10
Figure 1-4	Class I Area – Tuxedni National Wildlife Refuge	1-11
Figure 1-5	Anchorage Carbon Monoxide Nonattainment Area	1-13
Figure 1-6	Fairbanks and North Pole Carbon Monoxide Nonattainment Area	1-14
Figure 1-7	Mendenhall Valley PM-10 Nonattainment Area	1-15
Figure 1-8	Eagle River PM-10 Nonattainment Area	1-16
Figure 1-9	Unalaska SO ₂ Special Protection Area	1-18
Figure 1-10	St. Paul Island SO ₂ Special Protection Area	1-19
Figure 1-11	Port of Anchorage Boundary	1-21
Figure 6-1	Air Quality Control Region Map	6-7
Figure 8-1	Overview of BACT Analysis	8-20



LIST OF WORKSHEETS

Worksheet 1-1	Air Emission Unit Information.....	1-27
Worksheet 1-2	Classifications for New Stationary Sources	1-29
Worksheet 1-3	Modification Classifications	1-42



LIST OF FLOWCHARTS

Flowchart 1-1 Ambient Air Quality Facility – Industrial Process > 5 Tons/Hour 1-52

Flowchart 1-2 Ambient Air Quality Facility – Fuel Burning Equipment = 50
MMBtu/hr 1-53

Flowchart 1-3 Ambient Air Quality Facility – Fuel Burning Equipment = 100
MMBtu/hr 1-54

Flowchart 1-4 Ambient Air Quality Facility – Incinerators = 1,000 lbs/hr (Combined)..... 1-55

Flowchart 1-5 Ambient Air Quality Facility – Emission Standards for Coal
Preparation Facilities, Portland Cement Plants, and Petroleum
Refineries..... 1-56

Flowchart 1-6 Ambient Air Quality Facility – Incinerators Burning Sludge 1-57

Flowchart 1-7 Ambient Air Quality Facility – Sulfur Dioxide Special Protection Area..... 1-58

Flowchart 1-8 Prevention of Significant Deterioration Major Source – 250 TPY
Threshold..... 1-59

Flowchart 1-9 Prevention of Significant Deterioration Major Source – 100 TPY
Threshold..... 1-60

Flowchart 1-10 Nonattainment Major Source 1-61

Flowchart 1-11 Major Stationary Source Near A Nonattainment Area..... 1-62

Flowchart 1-12 Hazardous Air Pollutant Major Source 10 or 25 TPY Threshold 1-63

Flowchart 1-13 Port of Anchorage Facility – Type 1 1-64

Flowchart 1-14 Port of Anchorage Facility – Type 2 1-65

Flowchart 1-15 Modification M1 – Becoming an Ambient Air Quality Facility..... 1-66

Flowchart 1-16 Modification M2 – Increase Over Current Allowable Emissions 1-67

Flowchart 1-17 Modification M3 – PSD Major Modification..... 1-68

Flowchart 1-18 Modifications M4a and M4b – PSD Major Modification..... 1-69

Flowchart 1-19 Modification M5 – Nonattainment Major Modification..... 1-70

Flowchart 1-20 Modification M6 – Nonattainment Major Modification..... 1-71

Flowchart 1-21 Modification M7 – Nonattainment Major Modification..... 1-72

Flowchart 1-22 Modification M8 – Nonattainment Major Modification..... 1-73

Flowchart 1-23 Modification M9 – Major Modification Near a Nonattainment Area 1-74

Flowchart 1-24 Modifications M10a and M10b – Hazardous Air Pollutant Major
Modification..... 1-75

Flowchart 1-25 Modification M11 – Port of Anchorage Modification..... 1-76



LIST OF TABLES

Table 1-1	Class I Areas	1-7
Table 1-2	PSD Stationary Sources Types With 100 TPY Threshold	1-32
Table 1-3	Regulated Air Pollutants for PSD Purposes Only.....	1-33
Table 1-4	Hazardous Air Pollutants	1-35
Table 1-5	PSD Major Sources – Significance Thresholds	1-44
Table 1-6	PSD Major Modifications – Increase in Actual Emissions	1-45
Table 2-1	Emission Calculations That Support An Application.....	2-1
Table 2-2	Nonroad Engine Determinations	2-4
Table 2-3	Emission Units and Air Pollutants	2-16
Table 2-4	Common Conversion Factors	2-19
Table 3-1	Permit Application Requirements for Specific Classifications	3-4
Table 3-2	Permit Application Forms Required for Specific Classifications	3-6
Table 3-3	Project Retainers	3-8
Table 4-1	Opacity Standards	4-2
Table 4-2	Particulate Matter Concentration Standards	4-4
Table 4-3	Sulfur Dioxide Standards.....	4-5
Table 4-4	Other Emission Standards	4-6
Table 4-5	Open Burning Standards	4-8
Table 5-1	NSPS Regulations Adopted by the State of Alaska	5-5
Table 5-2	NESHAP Regulations (40 C.F.R. 61) Adopted by the State of Alaska.....	5-9
Table 5-3	MACT Standards (40 C.F.R. 63) Adopted by the State of Alaska.....	5-11
Table 6-1	Types of Sources and Air Pollutants for Which an AQIA Must Be Performed.....	6-2
Table 6-2	Alaska Ambient Air Quality Standards	6-4
Table 6-3	Baseline Dates.....	6-6
Table 6-4	Air Quality Classifications.....	6-8
Table 6-5	Maximum Allowable Increases (PSD Increment)	6-9
Table 6-6	Significant Impact Levels	6-11
Table 6-7	Ambient Air Monitoring Threshold Concentrations for PSD Major Sources and Modifications.....	6-13
Table 8-1	PSD Major Sources – Increase in Actual Emissions	8-3



ACRONYMS

AAAQS	Alaska Ambient Air Quality Standards
AAC	Alaska Administrative Code
AQIA	air quality impact analysis
AQRV	air quality related values
AS	Alaska Statutes
BACT	best available control technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CATC	Clean Air Technology Center
CEMS	continuous emissions monitoring system
C.F.R.	Code of Federal Regulations
CO	carbon monoxide
department	Alaska Department of Environmental Conservation
dscf/min	dry standard cubic feet per minute
EPA	U.S. Environmental Protection Agency
FIRE	Factor Information Retrieval
FLM	Federal Land Manager
FR	Federal Register
gr/dscf	grains per dry standard cubic foot
HAP	hazardous air pollutant
hp	horsepower
hr	hour
I.C.	internal combustion
km	kilometer
LAER	lowest achievable emission rate
lb	pound
MACT	maximum achievable control technology
$\mu\text{g}/\text{m}^3$	microgram per cubic meter
mg/m^3	milligram per cubic meter
MMBtu/hr	million British thermal unit per hour



MSWLF	municipal solid waste landfill
NESHAP	National Emission Standard for Hazardous Pollutants
NH ₃	ammonia
NMOC	nonmethane organic compound
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O ₃	ozone
Pb	lead
PM	particulate matter
PM-10	particulate matter =10 microns
ppm	parts per million
ppmv	parts per million by volume
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
SCRAM	Support Center for Regulatory Air Models
SIP	State Implementation Plan
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SO ₂	sulfur dioxide
SO _x	sulfur oxides
TPY	ton per year
U.S.C.	United States Code
UTM	Universal Transverse Mercator
VOC	volatile organic compound



INTRODUCTION

This Guidance Document has been developed by the Alaska Department of Environmental Conservation (department) to help applicants prepare a complete and accurate application for an air quality control construction permit. Applications that contain all the necessary information allow the department to conduct quicker reviews and to issue air quality control construction permits with minimal delay. This Guidance Document is based on the regulations specified in 18 Alaska Administrative Code (AAC) 50 (as amended through July 11, 2002), which were the regulations in effect at the time this document was prepared.

How to Use the Guidance Document

The Guidance Document should be used in conjunction with the Application Forms and Instruction Manual (included as Appendices C and D, respectively). The Instruction Manual provides specific instructions on how to complete each form, whereas this Guidance Document provides detailed procedures, explanations of terms and regulations, and references to sources of information you may need to complete your application.

Please note: Terms shown in italics have a specific regulatory definitions in law or regulation [AS 46.14.990 or 18 AAC 50.990]. Definitions are also included in Appendix A of this document. The terms "stationary source" (often referred to simply as "source") and "modification" have specific regulatory definitions. However, because these terms are used extensively throughout this document, they will not be shown in italics. The term "project" is used throughout this document to represent either "stationary source" or "modification". The term "emission unit" also has a specific regulatory definition but is not shown in italics since it is also used extensively throughout the document.

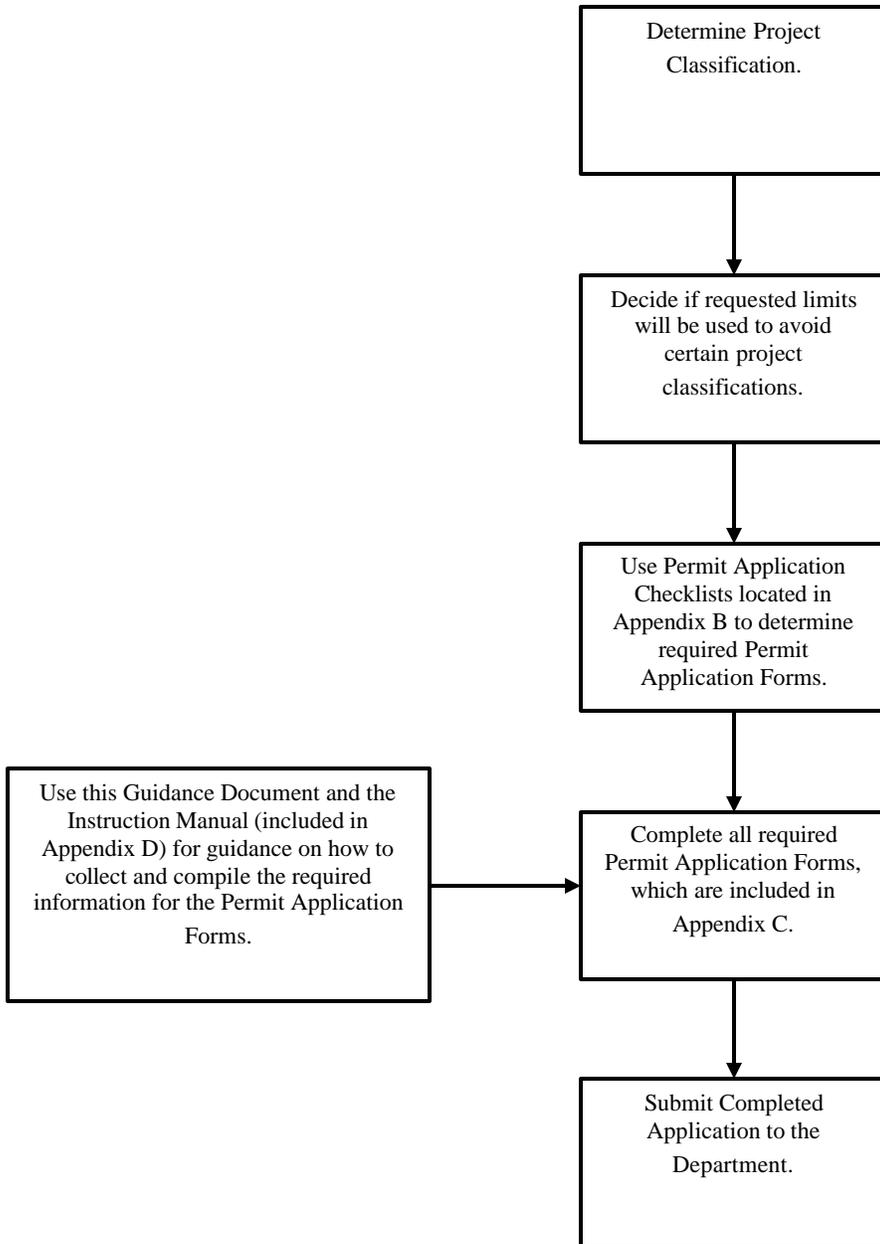
Overview of the Permit Application Process

Figure I-1 provides a general overview of the permit application process.



Figure I-1

OVERVIEW OF THE PERMIT APPLICATION PROCESS





Each step shown on Figure I-1 is briefly described below:

- **Determine Project Classification.** The first step of the permit application process is to determine your project classification(s). Your project classification will determine whether your project requires an air quality control construction permit. If a permit is required, your project classification will also determine the information that you must include in a complete permit application.

There are four basic criteria for deciding a project's classification:

- Equipment type and size;
- Emissions;
- Location; and
- Owner-requested limits.

Each of these criteria is discussed in more detail in Section 1.1.

Sections 1.2 and 1.3 present a step-by-step process to help you determine your project classification. For a new stationary source, follow the steps outlined in Section 1.2 to determine whether your project requires an air quality control construction permit. If you are planning to modify an existing stationary source, follow the steps outlined in Section 1.3 to determine whether your project requires an air quality control construction permit.

- **Decide if requested limits will be used to avoid certain classifications.** Owner Requested Limits (ORL) (in 18 AAC 50.225) and Pre-Approved Limits (PAL) (in 18 AAC 50.230) can be used to avoid certain project classifications and thus the requirement to have a permit. ORLs and PALs are discussed further in Section 1.1.4. Additionally, 18 AAC 50.305(a)(4) allows you to request a permit limit to avoid a project classification. The requirements for using 18 AAC 50.305(a)(4) are discussed in Section 7.1.
- **Use Permit Application Checklists.** Once you have determined your project classification(s), you can use the Permit Application Checklists included in Appendix B to identify the Permit Application Forms (in Appendix C) and other information that are required for a complete and accurate application.



- **Complete Permit Application Forms.** Once you have identified which Permit Application Forms must be completed, you can use the Instruction Manual (in Appendix D) in conjunction with this Guidance Document to learn how to develop the information to satisfy the permit application requirements.
- **Submit Completed Application to the Department.** Refer to Section 3 to learn how to prepare and assemble a complete permit application.



PART I - DO I NEED A PERMIT?

You need a permit if your proposed project falls into one or more of several classifications of stationary source or modification. Sections 1.0 and 1.1 provide a summary of the regulations that require certain types of sources and modifications to obtain an air quality control construction permit. Sections 1.0 and 1.1 also define several common terms and concepts used in the air quality regulations. Sections 1.2 and 1.3 present a step-by-step process to help you determine whether you need to submit a permit application. As part of this step-by-step process, you will also determine your stationary source or modification classification. Keep the results of your classification determination. This information is required if you submit a permit application.

1.0 SOURCES REQUIRING PERMITS

Alaska Statute (AS 46.14.130) requires an owner or operator to obtain a construction permit for:

- A new stationary source; or
- A modification of an existing stationary source.

New Terminology in 2003

Amendments in 2003 to AS 46.14 have changed the terminology. Before these changes Alaska's air statute and regulations used the term "facility" to mean an entire operation that contains all air pollution emission units, and "source" to mean an individual emission unit. These terms were not the same as those used by the United States Environmental Protection Agency (EPA) or by other state air quality agencies.

To make Alaska's terminology the same as EPA's, the 2003 amendments to Alaska's air statute:

- Replaced the term "facility" with "stationary source;" and
- Replaced the term "source" with "emission unit."

As of Summer 2003, the department has NOT yet changed regulations in 18 AAC 50, which use the old terminology. However, this Guidance Document, as well as the Instruction Manual and application forms use the new terminology as directed by statute.



Source - What is a source?

The 2003 revised AS 46.14.990 gives *stationary source* the meaning from 40 Code of Federal Regulations (C.F.R.) 51.166(b)(5):

“...any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the [Clean Air] Act.”¹

A new stationary source is one that is not yet constructed. Stationary sources that meet one or more of several classifications are required to receive a construction permit before construction. Stationary source classifications are discussed in detail in Section 1.2.

Please contact the department if you have trouble determining the extent of your stationary source.

Modification - What is a modification?

The 2003 revised AS 46.14.990 defines the term *modification* to have the same meaning as Clean Air Act (CAA) section 111(a) and 40 C.F.R. 60.14. CAA section 111(a) defines modification as:

“...any physical change in or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”

Department regulations group modifications into several classifications. Projects that meet one or more of the modification classifications are required to obtain a construction permit before construction. The classifications for modifications are discussed in detail in Section 1.3.

¹ 40 C.F.R. 51.166(b)(6) defines “building, structure, facility, or installation” as

“...all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4104-0066 and 003-005-00176-0, respectively).”



1.1 Classification Criteria

There are four criteria for deciding a project's (or stationary source's) classification:

- Equipment type and size;
- Emissions;
- Location; and
- Owner requested limits.

1.1.1 Equipment Type and Size

Alaska regulation requires that certain types of equipment be permitted. Such equipment includes, but is not limited to, the following:

- Industrial Processes;
- Fuel-Burning Equipment; and
- Incinerators.

Industrial processes, fuel-burning equipment, and incinerators may be required to obtain a construction permit depending on the size of the process or equipment. Size generally means the rating of the equipment to some parameter. For example, a crusher may produce gravel at five tons per hour, a diesel engine may have a rating of 500 horsepower, or an incinerator may have a rating of 100 pounds per hour.

Industrial Process – What is it?

Industrial process is defined in 18 AAC 50.990 to mean:

“...the extraction of raw material or the physical or chemical transformation of raw material in either composition or character...” [18 AAC 50.990(49)]

For example, the pumping of crude oil is an industrial process because it is an “...extraction of raw material...” as is refining crude oil into petroleum products because it is “...a physical or chemical transformation of raw material...”.



An industrial process may have combustion emissions and process emissions associated with it.

Fuel Burning Equipment – What is it?

Fuel-burning equipment is defined in 18 AAC 50.990 to mean:

“...a combustion device capable of emission, including flares, but excluding mobile internal combustion engines, incinerators, marine vessels, wood-fired heating devices, and backyard barbeques...” [18 AAC 50.990(41)]

Because all combustion devices produce emissions, *fuel-burning equipment* then means any device capable of combustion, excluding a few specific devices. Mobile internal combustion engines, incinerators, marine vessels, wood-fired heating devices, and backyard barbeques are excluded because they are either regulated elsewhere or are of such a small size that regulating them is unwieldy.

Incinerator – What is it?

Incinerator is defined in 18 AAC 50.990 to mean:

“...a device used for the thermal oxidation of garbage or other wastes, other than a wood-fired heating device, including an air curtain incinerator burning waste other than clean lumber, wood wastes, or yard wastes...” [18 AAC 50.990(48)]

1.1.2 Emissions

Some permit classifications are based on emissions. Therefore, emissions from the proposed project must be estimated and compared to the emission-based classifications.

Emissions are determined in several different ways:

- Actual;
- Potential; and
- Allowable.



Actual – What are actual emissions?

18 AAC 50.910 defines *actual emissions* to mean:

“The amount of actual emissions of each air pollutant emitted by a facility² is the average quantity, in tons per year, actually emitted by the facility² during the most recent two years of normal operation. The department will, in its discretion, consider facility-specific allowable emissions to be actual emissions of an air pollutant.” [18 AAC 50.910(a)]

For *electric utility steam generating units*, *actual emissions* are defined as:

“The actual emissions of an electric utility steam generating unit that has been physically or operationally changed will be established at a level equal to the expected actual annual emissions of the unit, if the change does not result in an emissions increase. To verify that the change does not result in an emissions increase, the source owner or operator shall (1) maintain information demonstrating that the physical or operational change did not result in an emissions increase; and (2) submit that information to the department annually for five years, unless the department, in its discretion, determines that a longer period up to 10 years is more representative of normal, post-change source operation.” [18 AAC 50.910(b)(1) & (2)]

Section 2.3 describes how to calculate an increase in *actual emissions*.

Potential – What are potential emissions?

The 2003 amendments to AS 46.14.990 define *potential to emit* to be the same as in 40 C.F.R. 51.166(b). That section defines *potential to emit* as:

“...the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restriction on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on

² Following the 2003 amendments to AS 46.14 “facility” can be read as “stationary source.”



emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.”

Section 2.2 describes how to calculate potential emissions.

Allowable – What are allowable emissions?

18 AAC 50.990 defines allowable emissions as:

“...the calculated emission rate of a source³ or facility³ using the maximum rated capacity and federally-enforceable limitations and conditions on emissions or operations...” [18 AAC 50.990(7)]

In most cases, this means the maximum emission rate from a stationary source or emission unit as limited by a construction or operating permit. “Federally-enforceable” limits may include federal or state emission standards, or limitations established by the permit. Contact the department if you have any question as to whether or not a particular limitation is “federally-enforceable.”

Section 2.2.1 describes how to calculate allowable emissions.

1.1.3 Location

The location of an existing or proposed source can influence what classifications apply to a project. There are several location types that may influence the project classification. These are:

- Class I Areas;
- Nonattainment Areas;
- Sulfur Dioxide (SO₂) Special Protection Areas; and
- The Port of Anchorage.

³ Following the 2003 amendments to AS 46.14 “source” can be interpreted to mean “emission unit,” and “facility” can be read as “stationary source.”



Class I Areas – 18 AAC 50.015(c)

Class I areas are regions that have special protection under the CAA. Alaska has four Class I Areas, which are listed in Table 1-1.

**Table 1-1
CLASS I AREAS**

1. Denali National Park including the Denali Wilderness but excluding the Denali National Preserve (see Figure 1-1).
2. Bering Sea National Wildlife Refuge designated as a National Wilderness Area (see Figure 1-2).
3. Simeonof National Wildlife Refuge designated as a National Wilderness Area (see Figure 1-3).
4. Tuxedni National Wildlife Refuge designated as a National Wilderness Area (see Figure 1-4).



[Insert Map of Denali National Park and Wilderness here]

Figure 1-1 Denali National Park and Denali Wilderness



[Insert Map of Bering Sea National Wildlife Refuge]

Figure 1-2 Bering Sea National Wildlife Refuge



[Insert Map of Simeonof National Wildlife Refuge here]

Figure 1-3 Simeonof National Wildlife Refuge



[Insert Map of Denali National Park and Wilderness here]

Figure 1-4 Tuxedni National Wildlife Refuge



Nonattainment Areas – 18 AAC 50.015(b)

Some areas of the state do not meet ambient air quality standards. These areas are called “nonattainment” areas. Nonattainment areas are identified by their location and the pollutant for which the area is in nonattainment. Currently the state has four areas classified as nonattainment:

- Anchorage urban area (Carbon Monoxide [CO]);
- Fairbanks and North Pole urban area (CO);
- Mendenhall Valley area of Juneau (particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers [PM-10]); and
- Eagle River area of Anchorage (PM-10).

Figures 1-5 through 1-8 show the boundaries of the nonattainment areas.



[Insert Anchorage Nonattainment Area Map Here]

Figure 1-5 Anchorage Carbon Monoxide Nonattainment Area



[Insert Fairbanks and North Pole Nonattainment Area Map Here]

Figure 1-6 Fairbanks and North Pole Carbon Monoxide Nonattainment Area



[Insert Mendenhall Valley Nonattainment Area Map Here]
Figure 1-7 Mendenhall Valley PM-10 Nonattainment Area



[Insert Eagle River Nonattainment Area Map Here]
Figure 1-8 Eagle River PM-10 Nonattainment Area



SO₂ Special Protection Areas

SO₂ special protection areas are areas established to prevent the violation of the ambient air quality standards and maximum allowable concentrations for sulfur dioxide. There are two SO₂ special protection areas:

- In the Unalaska area, the land and water areas within a 3.4 mile radius of the intersection of 53° 53' 4" N latitude and 166° 32' 11" W longitude; and
- In the St. Paul Island area, the land and water areas south of UTM Northing 6333.00 kilometers and (57° 8' 29" N latitude) and within 0.6 kilometers of St. Paul Island.

Figures 1-9 and 1-10 show the SO₂ Special Protection Areas.



[Insert Unalaska SO₂ Special Protection Area Map Here]

Figure 1-9 Unalaska SO₂ Special Protection Area



[Insert St. Paul Island SO₂ Special Protection Area Map Here]
Figure 1-10 St. Paul Island SO₂ Special Protection Area



Port of Anchorage

The Port of Anchorage has special regulations that apply if the planned project meets certain size criteria and includes any of the following:

- Volatile liquid storage tanks;
- Volatile liquid loading racks; or
- Volatile liquid delivery tanks.

These regulations are discussed in more detail in Section 10. Figure 1-11 shows the boundary of the Port of Anchorage.



[Insert Port of Anchorage Map Here]

Figure 1-11 Port of Anchorage Boundary



1.1.4 Owner Requested Limits, Pre-Approved Limits and Limits in Permit

Owner Requested Limits (ORL) and Pre-Approved Limits (PAL) are used to avoid classification and thus the requirement to have a permit. ORLs and PALs are only used to determine source-specific allowable emissions or a stationary source's *potential to emit*. They cannot be used to avoid the need for a permit if the classification is based on equipment size (rated capacity). There is not an advantage to using an ORL or PAL if the limit would not avoid all construction permit classifications for the project.

If it is possible to avoid all classification through the use of ORLs and/or PALs, we recommend that you do so. Obtaining an ORL and/or a PAL is a much simpler and cheaper administrative process than a construction permit. You may combine ORLs and PALs provided these two limits would keep a project from being in any classification.

You may also request limits to be included in a construction permit. These limits may not avoid the requirement to obtain a construction permit but may avoid particular regulatory requirements.

ORL – 18 AAC 50.225

To obtain an ORL, an applicant must submit to the department the following information:

- A completed stationary source identification form;
- A list of all emission units;
- A calculation of the stationary source's *actual emissions* and *potential to emit* air pollutants;
- A description of the proposed limit, including for each air pollutant a calculation of the effect the limit will have on the *potential to emit* and the allowable emissions;
- A description of a verifiable method to attain and maintain the limit, including monitoring and record keeping requirements;
- A citation to the requirement for a permit that the person seeks to avoid, including an explanation of why the requirement would apply in the absence of the limit and how the limit allows the person to avoid the requirement for a permit;
- A statement that the owner or operator will be able to comply with the limit;
- A certification, bearing the notarized signature of the person requesting the limit, that states: "Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this request are true, accurate, and complete;" and



- A retainer of \$300 to cover the department's pre-application assistance, billable at \$78 per hour.

Within 30 days after receiving a request for an ORL, the department will make a preliminary decision to approve the request, or deny the request and notify the owner or operator of the reasons for the denial. If the department makes a preliminary decision to approve an ORL, the department will solicit public comment on the preliminary decision. After the public comment period, the department will consider the comments received during the public comment period and will make a final decision whether to approve, approve with conditions, or deny the request for the proposed ORL. If the department approves a request for a limit, it will issue a letter of approval describing the ORL.

PAL – 18 AAC 50.230

PALs have already gone through necessary public comment, so the procedure for obtaining the limit is very simple. PALs only apply to the following emission units:

- Diesel engines; and
- Gasoline distribution facilities.

For diesel engines, limits on the allowable emissions of, or *potential to emit*, nitrogen oxides from diesel engines may be established by restricting the amount of fuel that may be burned in an engine. The applicant must meet the requirements specified in 18 AAC 50.230(c).

For gasoline distribution facilities, a limit on the maximum daily throughput of gasoline to less than 19,900 gallons may be established and, thereby, become a bulk gasoline plant under the standards adopted in 18 AAC 50.040(a)(2)(M) and (AA). The applicant must meet the requirements specified in 18 AAC 50.230(d).

If your project includes these emission units, you may request that the PALs be applied to your stationary source. To make the request, you must submit to the department the information required under 18 AAC 50.230.

Limit in Permit

As specified in 18 AAC 50.305(a)(4), you may request a permit limit to avoid a construction permit classification with more stringent or additional requirements. For example, if a



modification would result in a Prevention of Significant Deterioration (PSD) significant emission increase, a limit to emissions may be requested to avoid this increase. These types of requested limits are discussed further in Section 7.

You may also obtain a construction permit to set emission limits that will offset emission increases and allow construction of a new major source in a nonattainment area. [18 AAC 50.305(a)(1)] This type of requested limit is also described in Section 7.

1.1.5 Overview of Determining Classifications

For new stationary sources, follow the steps outlined in Section 1.2 to determine whether your source meets any of the criteria of 18 AAC 50.300(b) – (g). For modifications to existing stationary sources, follow the steps outlined in Section 1.3 to determine whether your project meets the criteria of 18 AAC 50.300(h).

In most cases, you will need to do the following to determine your project classifications:

- Prepare a source inventory;
- Identify equipment types;
- Estimate emissions; and
- Determine whether to apply for Owner Requested Limits or Pre-Approved Limits.



1.2 Classifications for New Stationary Sources

To help determine whether a new stationary source fits any of the classifications for a construction permit, Section 1.2:

- Describes the criteria for each new source classification, and presents information to help you determine whether your stationary source meets the criteria;
- Includes two worksheets to assemble the necessary information; and
- Presents flowcharts for stepping through each classification.

A source's classification determines the type of information required in a construction permit application. Classifications for new stationary sources are in 18 AAC 50.300 as follows:

- Ambient Air Quality Facility;
- Prevention of Significant Deterioration Major Source;
- Nonattainment Major Source;
- Major Stationary Source Near a Nonattainment Area;
- Hazardous Air Pollutant Major Source; and
- Port of Anchorage Facility.

A new stationary source can also get a construction permit to avoid any of the major source categories.

A stationary source may meet the criteria of more than one classification. You must identify all the classifications that apply to prepare a complete permit application.

We suggest the following procedures for using Section 1.2:

1. The first step involves data collection and calculations. Use Worksheet 1-1 to help compile the necessary information.
2. Next, either use the written descriptions and information in Sections 1.2.1 through 1.2.6, or follow Flowcharts 1-1 through 1-14, or both, as necessary to determine any classification that applies. The information included in Worksheet 1-1 will help you answer some of the questions in Flowcharts 1-1 through 1-14.



3. Fill out Worksheet 1-2. Flowcharts 1-1 to 1-14 walk you through the process of filling out Worksheet 1-2. Once you have completed Flowcharts 1-1 through 1-14, you should have the appropriate boxes checked on Worksheet 1-2, which will identify your classification(s). If any of the boxes are checked, a new stationary source will need an air quality control construction permit. If none are checked, you will not need an air quality control construction permit.
4. If you are making a change to an existing stationary source, Section 1.3 will help you determine if the change requires you to obtain an air quality control construction permit.

Once you have determined that you need a permit, refer to Part II – HOW DO I PREPARE A COMPLETE APPLICATION to learn how to prepare and assemble a complete permit application.



Worksheet 1-1

AIR EMISSION UNIT INFORMATION

1. Compile a list of all emission units, including equipment ratings and fuel type.
2. Compile a list of all industrial processes, including maximum rated throughput for processes that need pollution control devices. Enter the rating of the maximum rated throughput of an industrial process in Line 1:

Line 1: _____ **Tons/hour – maximum individual rating for an industrial process that requires a pollution control device.**

3. Convert the ratings of all *fuel-burning equipment* to MMBtu/hr. (See Section 2.0 for guidance on how to convert numerical units [e.g. hp to MMBtu/hr]).
4. Enter the rating (in MMBtu/hr) of the *fuel-burning equipment* with the maximum rating in Line 2.

Line 2: _____ **MMBtu/hr – maximum individual rating for fuel-burning equipment**

5. Sum the ratings (in MMBtu/hr) of all *fuel-burning equipment* and enter the total in Line 3.

Line 3: _____ **MMBtu/hr – total rating for all fuel-burning equipment**

6. Sum the ratings (in pounds/hr) of all *incinerators* and enter the total in Line 4.

Line 4: _____ **pounds/hr – total rating for all incinerators**

7. Calculate the annual emissions (in tons/yr) of *regulated air pollutants* from the stationary source on a *potential to emit* basis. (See Section 2.0 for guidance on calculating emissions.) Enter the annual emissions for carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM-10), oxides of sulfur (SO_x), and volatile organic compounds (VOCs) in Lines 5 through 9, respectively. In Line 10, enter the maximum emissions from any *regulated air pollutant* other than CO, NO_x, PM-10, SO_x, or VOC.

Line 5: _____ **tons/year of CO**

Line 6: _____ **tons/year of NO_x**

Line 7: _____ **tons/year of PM-10**

Line 8: _____ **tons/year of SO_x**

Line 9: _____ **tons/year of VOC**

Line 10: _____ **tons/year of maximum emissions of any regulated air pollutant other than CO, NO_x, PM-10, SO_x, or VOC**



Worksheet 1-1 (continued)

- 8. Calculate the annual *hazardous air pollutant* emissions (in tons/yr) from the stationary source on a *potential to emit* basis . (See Section 2.0 for guidance on calculating emissions.) Table 1-4 provides the list of *hazardous air pollutants*. Identify the *hazardous air pollutant* that has the maximum emissions and enter the emissions amount and name of *this hazardous air pollutant* in Line 11. Next, sum the emissions for all *hazardous air pollutants* and enter the results in Line 12.

Line 11: _____ tons/yr of _____ (enter name of hazardous air pollutant here)

Line 12: _____ tons/yr of all hazardous air pollutants

- 9. Check all the boxes below that accurately describe your location.

Line 13: **Located in a nonattainment area.**
 Check Pollutant(s): CO, PM-10

Line 14: **Located within 10 kilometers of a nonattainment area.**
 Check pollutant(s): CO, PM-10

Line 15: **Located in the Port of Anchorage. If so, mark all that apply:**
 Stationary Source includes a Volatile Liquid Storage Tank with volume of 9,000 barrels or more. List size: _____ barrels.
 Stationary Source includes a Volatile Liquid Loading Rack with a design throughput of 15 million gallons per year or more. List rating: _____ gallons per year.

Line 16: **Located in a Coastal Zone.**

Line 17: **Located in a SO₂ Special Protection Area.**

Line 18: **Located within 10 kilometers of a Class I area. Check which Class I area:**
 Denali National Park and Denali Wilderness
 Bering Sea National Wildlife Refuge
 Simeonof National Wildlife Refuge
 Tuxedni National Wildlife Refuge

- 9. Check all that apply.

Line 19: **Intend to request an ORL. If so, attach to your application the information required by 18 AAC 50.225.**

Line 20: **Intend to request a PAL. If so, attach to your application the information required by 18 AAC 50.230.**

Line 21: **Intend to request a construction permit with conditions to avoid a major source classification.**



Worksheet 1-2

CLASSIFICATIONS FOR NEW STATIONARY SOURCES

- 1. **Ambient Air Quality Facility**
 - 1a.1. A stationary source requiring an air pollutant control unit or system to comply with 18 AAC 50.050 – 18 AAC 50.060 and containing an industrial process with a total rated capacity or design throughput greater than 5 tons per hour.
 - 1a.2. A stationary source requiring an air pollutant control unit or system to comply with 18 AAC 50.050 – 18 AAC 50.060 and containing fuel-burning equipment with a rated capacity of 50 million Btu per hour (MMBtu/hr) or more.
 - 1b. A stationary source containing fuel-burning equipment with a rated capacity of 100 MMBtu/hr or more.
 - 1c. A stationary source containing one or more incinerators with a total combined rated capacity of 1,000 pounds per hour or more.
 - 1d. A stationary source subject to the standards set by 18 AAC 50.055(a)(5), 18 AAC 50.055(a)(7), or 18 AAC 50.055(d).
 - 1e. A stationary source containing an incinerator that burns waste containing more than 10 percent sludge from a municipal wastewater treatment plant that serves 10,000 or more persons.
 - 1f. A stationary source located in one of the sulfur dioxide special protection areas and the stationary source contains a source with a rated capacity of 10 MMBtu/hr or more and that operates at specific multiple locations in the state for temporary periods of time or commences construction or operation on or after January 18, 1997.
- 2. **Prevention of Significant Deterioration (PSD) Major Source**
 - 2a. A stationary source that emits or has the *potential to emit* 250 TPY or more of a *regulated air pollutant* in an area designated attainment or unclassifiable for that air pollutant.
 - 2b. A stationary source that emits or has the *potential to emit* 100 TPY or more of a *regulated air pollutant* in an area designated attainment or unclassifiable for that air pollutant and the source type is listed under 18 AAC 50.300(c)(2).
- 3. **Nonattainment Major Source**
- 4. **Major Stationary Source Near a Nonattainment Area**
- 5. **Hazardous Air Pollutant Major Source**
 - 5a. A stationary source that emits or has the *potential to emit* 10 TPY or more of any single *hazardous air pollutant*.
 - 5b. A stationary source that emits or has the *potential to emit* 25 TPY or more in the aggregate of two or more *hazardous air pollutants*.
- 6. **Port of Anchorage Facility**
 - 6a. A stationary source that is located within the Port of Anchorage and that contains a volatile liquid storage tank with a volume of 9,000 barrels or more.
 - 6b. A stationary source that is located within the Port of Anchorage and that contains a volatile liquid loading rack with a design throughput of 15 million gallons per year or more.



1.2.1 Ambient Air Quality Facility [18 AAC 50.300(b)]

The criteria for an Ambient Air Quality Facility include such items as type of equipment, equipment size, whether the equipment is subject to specific emission standards, and whether the source is located in a sulfur dioxide special protection area. The types of equipment that may result in the stationary source being classified as an Ambient Air Quality Facility include, but are not limited to, the following:

- An **industrial process**,
- **Fuel-burning equipment**, or
- An **incinerator**,

Section 1.1.1 includes the definition for these types of equipment.

Following are the types of Ambient Air Quality Facilities:

- A stationary source containing an *industrial process* with a total rated capacity or design throughput greater than 5 tons per hour **and** requiring an air pollutant control unit or system to comply with:
 - 18 AAC 50.055 (Industrial Process and Fuel Burning Equipment); and
 - 18 AAC 50.060 (Pulp Mills).
- A stationary source containing *fuel-burning equipment* with a rated capacity of 50 million British thermal units per hour (MMBtu/hr) or more **and** requiring an air pollutant control unit or system to comply with 18 AAC 50.055 (Industrial Process and Fuel Burning Equipment).
- A stationary source containing *fuel-burning equipment* with a rated capacity of 100 MMBtu/hr or more. Note: This requirement does not apply to a portable oil and gas operation that qualifies for and operates in compliance with 18 AAC 50.390 (Permit-by-Rule for Drilling Rigs and Associated Equipment).
- A stationary source containing one or more *incinerators* with a total combined rated capacity of 1,000 pounds per hour or more.



- A stationary source subject to the standards set by the following regulations:
 - *Coal preparation facility*: Visible emission standard for a coal preparation facility constructed or modified after November 1, 1982 [18 AAC 50.055(a)(5)];
 - Portland cement plant: Visible emission standard for a portland cement plant constructed or modified after November 1, 1982 [18 AAC 50.055(a)(7)]; or
 - *Petroleum refinery*: Emission standards for a petroleum refinery, constructed or modified after November 1, 1982. [18 AAC 50.055(d)]
- A stationary source containing an *incinerator* that burns waste containing more than 10 percent sludge from a municipal wastewater treatment plant that serves 10,000 or more persons.
- A stationary source located in a sulfur dioxide (SO₂) special protection area that contains a source with a rated capacity of 10 MMBtu/hr **and** meeting one of the criteria listed below:
 - a) Operates at specific multiple locations in the state for temporary periods of time; **or**
 - b) Commences construction or operation on or after January 18, 1997.

SO₂ special protection areas are listed in 18 AAC 50.025(c). They are identified in Section 1.1.3 and shown in Figures 1-9 and 1-10.

Flowcharts 1-1 through 1-7 also present the criteria for Ambient Air Quality Facilities.

1.2.2 Prevention of Significant Deterioration Major Source [18 AAC 50.300(c)]

All sources that emit or have the *potential to emit* 250 tons per year (TPY) or more of a *regulated air pollutant* **and** are located in an area designated attainment or unclassifiable for that air pollutant are classified as PSD Major Sources. However, certain source types that emit or have the *potential to emit* 100 TPY or more of a *regulated air pollutant* **and** are located in an area designated attainment or unclassifiable for that air pollutant are classified as PSD Major Sources. The stationary source types to which the 100 TPY threshold applies are listed in Table 1-2.



Table 1-2
PSD STATIONARY SOURCE TYPES WITH 100 TPY THRESHOLD

(A)	Fossil-fuel fired steam electric plant of more than 250 MMBtu/hr heat input
(B)	Coal-cleaning plant with thermal dryers
(C)	Kraft pulp mill
(D)	Portland cement plant
(E)	Primary zinc smelter
(F)	Iron and steel mill plant
(G)	Primary aluminum ore reduction plant
(H)	Primary copper smelter
(I)	Municipal incinerator with a rated capacity greater than 250 tons of refuse per day
(J)	Hydrofluoric, sulfuric, or nitric acid plant
(K)	Petroleum refinery
(L)	Lime plant
(M)	Phosphate rock processing plant
(N)	Coke-oven battery
(O)	Sulfur recovery plant
(P)	Carbon-black plant (furnace process)
(Q)	Primary lead smelter
(R)	Fuel conversion plant
(S)	Sintering plant
(T)	Secondary metal production plant
(U)	Chemical processing plant
(V)	Fossil-fuel boiler or combination of boilers totaling more than 250 MMBtu/hr heat input
(W)	Petroleum storage and transfer unit with a total storage capacity exceeding 300,000 barrels
(X)	Taconite ore processing plant
(Y)	Glass-fiber processing plant
(Z)	Charcoal production plant

The basic steps to determine whether the stationary source meets this classification are as follows:

1. Calculate the *regulated air pollutant* emissions from the stationary source on a *potential to emit* basis. Table 1-3 identifies the *regulated air pollutants* for PSD



- purposes only. Section 1.1.2 gives the definition of *potential to emit*. Section 2.2 tells how to calculate *potential to emit*.
2. Determine whether the source is one of the types listed in Table 1-2.
 3. Determine whether the source is located in an attainment or unclassifiable area for any *regulated air pollutants* that the source emits in quantities above the applicable thresholds described above (i.e., 250 TPY for all stationary sources and 100 TPY for listed sources). Area classifications for Alaska are described in 18 AAC 50.015. Nonattainment areas are described in Section 1.1.3 and are shown in Figures 1-5 through 1-8. All other areas are in attainment or unclassifiable for ambient air.

Flowcharts 1-8 and 1-9 also present the criteria for a PSD Major Source.

Table 1-3
REGULATED AIR POLLUTANTS
FOR PSD PURPOSES ONLY

PM-10
Sulfur oxides, measured as SO ₂
CO
Volatile Organic Compounds (VOCs) (as on ozone indicator)
Oxides of Nitrogen (NO _x) ^a
Lead
Reduced Sulfur Compounds, expressed as SO ₂
Ammonia

^a The standard is actually for nitrogen dioxide (NO₂). However, the emissions of NO_x are regulated as these compounds convert to NO₂.

1.2.3 Nonattainment Major Source [18 AAC 50.300(d)]

The criteria for a Nonattainment Major Source are based on whether the source is located in an area designated nonattainment for a specific air pollutant and the amount of emissions of the nonattainment pollutant emitted. A stationary source that is located in an area designated as nonattainment **and** that has the *potential to emit* 100 TPY or more of the nonattainment air pollutant is classified as a Nonattainment Major Source.



The basic steps to determine whether the stationary source meets this classification are as follows:

1. Determine whether the stationary source is located in a nonattainment area. Area classifications for Alaska are described in 18 AAC 50.015. Nonattainment areas are described in Section 1.1.3 and are shown in Figures 1-5 through 1-8. All other areas are in attainment or unclassifiable for ambient air.
2. If it is located in a nonattainment area, then calculate *potential to emit* for the nonattainment pollutant(s). Section 1.1.2 gives the definition of *potential to emit*. Section 2.2 tells how to calculate *potential to emit*.

Flowchart 1-10 also presents the criteria for a Nonattainment Major Source.

1.2.4 Major Stationary Source Near a Nonattainment Area [18 AAC 50.300(e)]

The criteria for a Major Stationary Source Near a Nonattainment Area are based on whether the source is located near an area designated nonattainment for a specific air pollutant and the amount of emissions of the nonattainment pollutant. If the stationary source is either a PSD Major Source (see Section 1.2.2) or a Nonattainment Major Source (see Section 1.2.3), then it cannot be classified as a Major Stationary Source Near a Nonattainment Area. If the stationary source is not classified as a PSD Major Source or a Nonattainment Major Source **and** it meets the criteria below, then it would be classified as a Major Stationary Source Near a Nonattainment Area:

- The stationary source is located within 10 kilometers of an area designated as nonattainment; and
- It emits or has the *potential to emit* 100 TPY or more of the nonattainment air pollutant.

The basic steps to determine whether the project meets this classification are as follows:

1. Review Sections 1.2.2 and 1.2.3 to determine whether the project is classified as either a PSD Major Source or a Nonattainment Major Source, respectively. If it does not meet either of those classifications, then determine whether the source is located within 10 kilometers of an area designated as nonattainment. Area classifications for



Alaska are described in 18 AAC 50.015. Nonattainment areas are described in Section 1.1.3 and are shown in Figures 1-5 through 1-8. All other areas are in attainment or unclassifiable for ambient air.

2. If the stationary source is located within 10 kilometers of a nonattainment area, calculate *potential to emit* of the nonattainment pollutant(s). Section 1.1.2 gives the definition of *potential to emit*. Section 2.2 tells how to calculate *potential to emit*.

Flowchart 1-11 also presents the criteria for a Major Stationary Source Near a Nonattainment Area.

1.2.5 Hazardous Air Pollutant Major Source [18 AAC 50.300(f)]

The criteria for a Hazardous Air Pollutant Major Source are based on the amount of emissions of *hazardous air pollutants*. A stationary source is classified as a Hazardous Air Pollutant Major Source if it emits or has the *potential to emit* 10 TPY or more of any single *hazardous air pollutant* or 25 TPY or more in the aggregate of two or more *hazardous air pollutants*. Table 1-4 lists the *hazardous air pollutants*.

**Table 1-4
HAZARDOUS AIR POLLUTANTS**

CAS Number	Chemical Name	CAS Number	Chemical Name
75070	Acetaldehyde	108394	m-Cresol
60355	Acetamide	106445	p-Cresol
75058	Acetonitrile	98828	Cumene
98862	Acetophenone	94757	2,4-D, salts and esters
53963	2-Acetylaminofluorene	3547044	DDE
107028	Acrolein	334883	Diazomethane
79061	Acrylamide	132649	Dibenzofurans
79107	Acrylic acid	96128	1,2-Dibromo-3-chloropropane
107131	Acrylonitrile	84742	Dibutylphthalate
107051	Allyl chloride	106467	1,4-Dichlorobenzene(p)
92671	4-Aminobiphenyl	91941	3,3-Dichlorobenzidene
62533	Aniline	111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
90040	o-Anisidine	542756	1,3-Dichloropropene
1332214	Asbestos	62737	Dichlorvos



**Table 1-4
HAZARDOUS AIR POLLUTANTS**

CAS Number	Chemical Name	CAS Number	Chemical Name
71432	Benzene (including benzene from gasoline)	111422	Diethanolamine
92875	Benzidine	121697	N,N-Diethyl aniline (N,N-Dimethylaniline)
98077	Benzotrichloride	64675	Diethyl sulfate
100447	Benzyl chloride	119904	3,3-Dimethoxybenzidine
92524	Biphenyl	60117	Dimethyl aminoazobenzene
117817	Bis(2-ethylhexyl)phthalate (DEHP)	119937	3,3'-Dimethyl benzidine
542881	Bis(chloromethyl)ether	79447	Dimethyl carbamoyl chloride
75252	Bromoform	68122	Dimethyl formamide
106990	1,3-Butadiene	57147	1,1-Dimethyl hydrazine
156627	Calcium cyanamide	131113	Dimethyl phthalate
133062	Captan	77781	Dimethyl sulfate
63252	Carbaryl	534521	4,6-Dinitro-o-cresol, and salts
75150	Carbon disulfide	51285	2,4-Dinitrophenol
56235	Carbon tetrachloride	121142	2,4-Dinitrotoluene
463581	Carbonyl sulfide	123911	1,4-Dioxane (1,4-Diethyleneoxide)
120809	Catechol	122667	1,2-Diphenylhydrazine
133904	Chloramben	106898	Epichlorohydrin (1-Chloro-2,3-epoxypropane)
57749	Chlordane	106887	1,2-Epoxybutane
7782505	Chlorine	140885	Ethyl acrylate
79118	Chloroacetic acid	100414	Ethyl benzene
532274	2-Chloroacetophenone	51796	Ethyl carbamate (Urethane)
108907	Chlorobenzene	75003	Ethyl chloride (Chloroethane)
510156	Chlorobenzilate	106934	Ethylene dibromide (Dibromoethane)
67663	Chloroform	107062	Ethylene dichloride (1,2-Dichloroethane)
107302	Chloromethyl methyl ether	107211	Ethylene glycol
126998	Chloroprene	151564	Ethylene imine (Aziridine)
1319773	Cresols/Cresylic acid (isomers and mixture)	75218	Ethylene oxide
95487	o-Cresol	96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)	108952	Phenol
50000	Formaldehyde	106503	p-Phenylenediamine
76448	Heptachlor	75445	Phosgene
118741	Hexachlorobenzene	7803512	Phosphine
87683	Hexachlorobutadiene	7723140	Phosphorus
77474	Hexachlorocyclopentadiene	85449	Phthalic anhydride
67721	Hexachloroethane	1336363	Polychlorinated biphenyls (Aroclors)
822060	Hexamethylene-1,6-diisocyanate	1120714	1,3-Propane sultone



**Table 1-4
HAZARDOUS AIR POLLUTANTS**

CAS Number	Chemical Name	CAS Number	Chemical Name
680319	Hexamethylphosphoramide	57578	beta-Propiolactone
110543	Hexane	123386	Propionaldehyde
302012	Hydrazine	114261	Propoxur (Baygon)
7647010	Hydrochloric acid	78875	Propylene dichloride (1,2-Dichloropropane)
7664393	Hydrogen fluoride (Hydrofluoric acid)	75569	Propylene oxide
123319	Hydroquinone	75558	1,2-Propylenimine (2-Methyl aziridine)
78591	Isophorone	91225	Quinoline
58899	Lindane (all isomers)	106514	Quinone
108316	Maleic anhydride	100425	Styrene
67561	Methanol	96093	Styrene oxide
72435	Methoxychlor	1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
74839	Methyl bromide (Bromomethane)	79345	1,1,2,2-Tetrachloroethane
74873	Methyl chloride (Chloromethane)	127184	Tetrachloroethylene (Perchloroethylene)
71556	Methyl chloroform (1,1,1-Trichloroethane)	7550450	Titanium tetrachloride
78933	Methyl ethyl ketone (2-Butanone) ^a	108883	Toluene
60344	Methyl hydrazine	95807	2,4-Toluene diamine
74884	Methyl iodide (Iodomethane)	584849	2,4-Toluene diisocyanate
108101	Methyl isobutyl ketone (Hexone)	95534	o-Toluidine
624839	Methyl isocyanate	8001352	Toxaphene (chlorinated camphene)
80626	Methyl methacrylate	120821	1,2,4-Trichlorobenzene
1634044	Methyl tert butyl ether	79005	1,1,2-Trichloroethane
101144	4,4-Methylene bis(2-chloroaniline)	79016	Trichloroethylene
75092	Methylene chloride (Dichloromethane)	95954	2,4,5-Trichlorophenol
101688	Methylene diphenyl diisocyanate (MDI)	88062	2,4,6-Trichlorophenol
101779	4,4-Methylenedianiline	121448	Triethylamine
91203	Naphthalene	1582098	Trifluralin
98953	Nitrobenzene	540841	2,2,4-Trimethylpentane
92933	4-Nitrobiphenyl	108054	Vinyl acetate
100027	4-Nitrophenol	593602	Vinyl bromide
79469	2-Nitropropane	75014	Vinyl chloride
684935	N-Nitroso-N-methylurea	75354	Vinylidene chloride (1,1-Dichloroethylene)
62759	N-Nitrosodimethylamine	1330207	Xylenes (isomers and mixture)
59892	N-Nitrosomorpholine	95476	o-Xylenes
56382	Parathion	108383	m-Xylenes
82688	Pentachloronitrobenzene (Quintobenzene)	10643	p-Xylenes
87865	Pentachlorophenol	0	Antimony Compounds



**Table 1-4
HAZARDOUS AIR POLLUTANTS**

CAS Number	Chemical Name	CAS Number	Chemical Name
0	Arsenic Compounds (inorganic including arsine)		
0	Beryllium Compounds		
0	Cadmium Compounds		
0	Chromium Compounds		
0	Cobalt Compounds		
0	Coke Oven Emissions		
0	Cyanide Compounds ^b		
0	Glycol ethers ^c		
0	Lead Compounds		
0	Manganese Compounds		
0	Mercury Compounds		
0	Fine mineral fibers ^d		
0	Nickel Compounds		
0	Polycyclic Organic Matter ^e		
0	Radionuclides (including radon) ^f		
0	Selenium Compounds		

NOTE: For all listings above that which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

^a While still listed as a hazardous air pollutant (HAP), on June 23, 1999, EPA published in Federal Register 64 No. 120 Page 33453 a notice of receipt of a complete petition to delist methyl ethyl ketone.

^b X'CN where X = H' or any other group where a formal dissociation may occur. For example KCN or Ca(CN)₂.

^c Includes mono- and di- ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH₂CH₂)_n-OR' where n = 1, 2, or 3
R = alkyl or aryl groups

R' = R, H, or groups which, when removed, yield glycol ethers with the structure: R-(OCH₂CH)_n-OH. Polymers are excluded from the glycol category.

^d Includes mineral fiber emissions from sources manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

^e Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100° C.

^f A type of atom which spontaneously undergoes radioactive decay.



The basic steps to determine whether the project meets this classification are as follows:

1. Calculate the *potential to emit hazardous air pollutants*. Note that emissions from an oil and gas production or exploration well with its associated equipment and emissions from a pipeline compressor or pump station may not be aggregated with emissions from another similar unit. Section 1.1.2 gives the definition of *potential to emit*. Section 2.2 tells how to calculate *potential to emit*.
2. Determine the maximum emissions for a single *hazardous air pollutant*.
3. Determine the total emissions for all *hazardous air pollutants*.

Flowchart 1-12 also presents the criteria for a Hazardous Air Pollutant Major Source.

1.2.6 Port of Anchorage Facility [18 AAC 50.300(g)]

A source is classified as a Port of Anchorage Facility if the stationary source is located within the Port of Anchorage and contains:

- A *volatile liquid storage tank* with a volume of 9,000 barrels or more; or
- A *volatile liquid loading rack* with a design throughput of 15 million gallons per year or more.

The basic steps to determine whether the project meets this classification are as follows:

1. Determine whether the source is located within the Port of Anchorage. A complete description of the Port of Anchorage is in the state air quality control plan adopted by reference in 18 AAC 50.030 (see Figure 1-11 of this Guidance Document).
2. If the source is located within the Port of Anchorage, then determine whether it contains the type of equipment listed above and whether the equipment meets the capacity thresholds.

Flowcharts 1-13 and 1-14 also present the criteria for a Port of Anchorage Facility.



1.3 Classifications for Modifications

If you are planning to change an existing stationary source, you may be required to obtain an air quality control construction permit before making the change. This section describes the types of changes that require an air quality control construction permit. The first step in determining whether you need a permit before the change is determining your source's current classification type(s). (See Section 1.2.)

The criteria for each type of modification, as well as information to help you determine whether the source modification meets the criteria, are described in Sections 1.3.1 through 1.3.11. Several worksheets and flowcharts are also provided to help you determine whether the source change requires a construction permit.

You must identify all the modification classifications that apply to the project to prepare a complete permit application.

We suggest the following procedures for using the worksheets and flowcharts to determine if any of the modification classifications apply:

- 1 Use Section 1.2 to determine existing stationary source classification.
- 2 Next, either use the written descriptions and information in Sections 1.3.1 through 1.3.11, or follow Flowcharts 1-15 through 1-25, or both, as necessary to determine any modification classification that applies. The information included in Worksheet 1-1 will help you answer some of the questions in Flowcharts 1-15 through 1-25.
- 3 Fill out Worksheet 1-3. Flowcharts 1-15 through 1-25 walk you through the process of filling out Worksheet 1-3. Once you have completed Flowcharts 1-15 through 1-25, you should have the appropriate boxes checked on Worksheet 1-3, which will identify your modification classification(s). If any of the boxes are checked, the change requires an air quality control construction permit. If none are checked, the change will not need an air quality control construction permit.



Most of the classifications for modification require you to calculate the increase in *actual emissions* from the modification. Section 1.1.2 includes the definition of *actual emissions*. Section 2.3 shows how to calculate an increase in *actual emissions*.

The modification classifications are referred to in this document as Modification M1, M2, M3, etc. A description of each modification classification is included in the sections below.

Once you have determined that you need a permit refer to Part II – HOW DO I PREPARE A COMPLETE APPLICATION to learn how to prepare and assemble a complete permit application.



Worksheet 1-3

MODIFICATION CLASSIFICATIONS

- M1. Becoming an Ambient Air Quality Facility.** A modification that would cause the stationary source to be classified as an Ambient Air Quality Facility.
- M2. Increase Over Current Allowable Emissions.** For Ambient Air Quality Facilities, Prevention of Significant Deterioration Major Sources, and Nonattainment Major Sources, a modification that would increase *actual emissions* of an air pollutant for which an ambient air quality standard is established in 18 AAC 50.010 beyond the source's allowable emissions for that pollutant.
- M3. PSD Major Modification.** For Prevention of Significant Deterioration Major Sources, a modification that would result in an increase in *actual emissions* at least equal to one of the Prevention of Significant Deterioration Significance Thresholds.
- M4a. PSD Major Modification.** For sources that are not classified as Prevention of Significant Deterioration Major Sources, a modification that would result in an increase in *actual emissions* of a *regulated air pollutant* of at least 250 TPY in an area designated attainment or unclassifiable for that air pollutant.
- M4b. PSD Major Modification.** For sources that are not classified as Prevention of Significant Deterioration Major Sources, and for Source types listed under 18 AAC 50.300(c)(2), a modification that would result in an increase in *actual emissions* of a *regulated air pollutant* of at least 100 TPY in an area designated attainment or unclassifiable for that air pollutant.
- M5. Nonattainment Major Modification.** For Nonattainment Major Sources, in carbon monoxide nonattainment areas, a modification that would result in an increase in *actual emissions* of at least 100 TPY of carbon monoxide.
- M6. Nonattainment Major Modification.** For Nonattainment Major Sources, that are located in PM-10 nonattainment areas, a modification that would result in an increase in *actual emissions* of at least 15 TPY of PM-10.
- M7. Nonattainment Major Modification.** For sources that are not Nonattainment Major Sources, in carbon monoxide nonattainment areas, a modification that would result in an increase in *actual emissions* of at least 100 TPY of carbon monoxide.
- M8. Nonattainment Major Modification.** For sources that are not Nonattainment Major Sources, in PM-10 nonattainment areas, a modification that would result in an increase in *actual emissions* of at least 100 TPY of PM-10.
- M9. Major Modification Near a Nonattainment Area.** At a stationary source located within 10 kilometers of a nonattainment area, a modification that would result in an increase in *actual emissions* of at least 100 TPY of the nonattainment air pollutant. This only applies if 1.) the existing source is not classified as a Prevention of Significant Deterioration Major Source or a Nonattainment Major Source and 2.) the modification is not classified under M3, M4a, M4b, M5, M6, M7, or M8 above.
- M10a. Hazardous Air Pollutant Major Modification.** A modification that would result in an increase in *actual emissions* of at least 10 TPY of any single *hazardous air pollutant*.
- M10b. Hazardous Air Pollutant Major Modification.** A modification that would result in an increase in *actual emissions* of at least 25 TPY of two or more *hazardous air pollutants*.
- M11. Port of Anchorage.** In the Port of Anchorage, a modification that results in any increase in *actual emissions* of organic vapors and causes a source to become regulated under 18 AAC 50.085 or 18 AAC 50.090.



1.3.1 **Modification M1 – Becoming an Ambient Air Quality Facility [18 AAC 50.300(b), (h)(1)]**

A construction permit is required if the modification would cause the stationary source to be classified as an Ambient Air Quality Facility.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the existing stationary source is classified as an Ambient Air Quality Facility. (See Section 1.2.1 and Flowcharts 1-1 through 1-7.)
2. If the existing stationary source does not meet the criteria for an Ambient Air Quality Facility, then refer to Section 1.2.1 and Flowcharts 1-1 through 1-7 to determine whether the stationary source as modified would meet the criteria for an Ambient Air Quality Facility.

Flowchart 1-15 also steps through the criteria for Modification M1.

1.3.2 **Modification M2 – Increase Over Current Allowable Emissions [18 AAC 50.300(b), (c), (d), (h)(2)]**

Modification M2 applies to Ambient Air Quality Facilities, PSD Major Sources, and Nonattainment Major Sources. If the existing stationary source meets any of these classifications, a construction permit is required if the modification to the source would increase *actual emissions* of CO, NO₂, PM-10, SO₂, VOCs, lead, reduced sulfur compounds, or ammonia beyond the current allowable emissions for the specific pollutant.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the stationary source is classified as an Ambient Air Quality Facility, a PSD Major Source, or a Nonattainment Major Source. See Sections 1.2.1, 1.2.2, and 1.2.3, or refer to Flowcharts 1-1 through 1-10.
2. Calculate the increase in *actual emissions* of CO, NO₂, PM-10, SO₂, VOCs, lead, reduced sulfur compounds, or ammonia that would result from the modification.
3. Compare the *actual emissions*, including the emissions increase of each pollutant, to the current allowable emissions for the specific pollutant.



NOTE: If no allowable emissions have been established for these pollutants, a construction permit is required unless the department determines in writing, or has previously determined, that the increase will not cause the source to violate an applicable air quality control requirement, including the ambient air quality standards established under 18 AAC 50.010 and the maximum allowable ambient concentrations established under 18 AAC 50.020.

Flowchart 1-16 also presents the criteria for Modification M2.

1.3.3 Modification M3 – PSD Major Modification [18 AAC 50.300(c), (h)(3)]

Modification M3 applies to PSD Major Sources whose modification was commenced after August 7, 1980 or after issuance of the most recent air quality construction permit or air quality operating permit. For an existing PSD Major Source, a construction permit is required when the source modification meets at least one of the criteria listed in Table 1-5.

Table 1-5
PSD MAJOR SOURCES – SIGNIFICANCE THRESHOLDS

1. A modification that would result in an increase in <i>actual emissions</i> of at least the amounts shown in Table 1-6.
2. A modification that would result in any increase in <i>actual emissions</i> of a <i>regulated air pollutant</i> not listed in Table 1-6, except for <i>hazardous air pollutants</i> , <i>organic vapors</i> , and ammonia. ^a
3. Notwithstanding the criteria listed in items 1 and 2 of this table, a modification that meets the following criteria: <ul style="list-style-type: none"> • The stationary source is located within 10 kilometers of a Class I area^b, and • The modification would result in any increase in <i>actual emissions</i> of a <i>regulated air pollutant</i> that would result in an ambient concentration of that pollutant greater than one microgram per cubic meter (24-hour average) in the Class I area.

^a See 18 AAC 50.300(h)(3)(B)(xvi). Essentially this is limited to ozone depleting substances. Ozone depleting substances are specified in Clean Air Act, Section 6.02.

^b Class I areas are specified in 18 AAC 50.015. For Alaska, Class I areas (see Figures 1-1 through 1-4) are as follows:

- Denali National Park including the Denali Wilderness but excluding the Denali National Preserve;
- Bering Sea National Wildlife Refuge designated as a National Wilderness Area;
- Simeonof National Wildlife Refuge designated as a National Wildlife Area; and
- Tuxedni National Wildlife Refuge designated as a National Wilderness Area.



**Table 1-6
PSD MAJOR MODIFICATIONS – INCREASE IN ACTUAL EMISSIONS**

Air Pollutant	Actual Emissions of At Least (TPY)
CO	100
NO _x	40
SO ₂	40
Total Particulate Matter	25
PM-10	15
VOCs (as on ozone indicator)	40
Lead	0.6
Fluorides	3
Sulfuric Acid Mist	7
Total Reduced Sulfur Compounds, including H ₂ S	10
Hydrogen Sulfide (H ₂ S)	10
Reduced Sulfur Compounds, including H ₂ S	10
Municipal Waste Combustor Organics, measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans	0.0000035
Municipal Waste Combustor Metals, measured as particulate matter	15
Municipal Waste Combustor Acid Gases, measured as sulfur dioxide and hydrogen chloride combined	40
Municipal Solid Waste Landfill Emissions measured as nonmethane organic compounds	45 megagrams per year (50 TPY)

The basic steps to determine whether the modification fits this classification are as follows:

1. Determine whether the existing stationary source is classified as a PSD Major Source by using Section 1.2.2 or Flowcharts 1-8 and 1-9. Only if it is a PSD Major Source – proceed with steps 2 through 5.
2. Calculate the increase in *actual emissions* of all *regulated air pollutants* (see Table 1-3) that will result from the modification.
3. Compare the *actual emissions* increase of each pollutant to the PSD Significance Thresholds listed in Table 1-6. If the increase is greater than or equal to any of the Significance Thresholds, you need a construction permit.



4. If the change results in an increase in *actual emissions* of an ozone depleting substance, you need a construction permit.
5. If your stationary source is located within 10 kilometers of a Class I area, and does not already need a permit under steps 3 or 4, then you must perform an Air Quality Impact Analysis (AQIA) to find out if you need a permit. [See Section 6 for details on how to perform an AQIA.] If the maximum concentration resulting from the increase in *actual emissions* of any *regulated air pollutant* would exceed one microgram per cubic meter (24-hour average) within the Class I area, you need a construction permit.

Flowchart 1-17 also presents criteria for Modification M3.

1.3.4 Modifications M4a and M4b – PSD Major Modification [18 AAC 50.300(b), (d), (e), (f), (g), (h)(4)]

Modifications M4a and M4b apply to all stationary sources, except those that are already PSD Major. A construction permit is required if the modification would result in an increase in *actual emissions*, resulting from all changes at the stationary source since August 7, 1977, of at least:

- 250 TPY or more in an area designated attainment or unclassifiable for that air pollutant (Modification M4a); or
- For any source type listed in Table 1-2, 100 TPY or more in an area designated attainment or unclassifiable for that air pollutant (Modification M4b).

The basic steps to determine whether the source modification meets this classification are as follows:

1. Determine whether the existing stationary source is classified as a PSD Major Source by using Section 1.2.2 or Flowcharts 1-8 and 1-9.
2. Calculate the increase in *actual emissions* of all *regulated air pollutants* (see Table 1-3) that will result from the modification.
3. Determine whether the stationary source is one of the types listed in Table 1-2.
4. Determine whether the stationary source is located in an attainment or unclassifiable area for any *regulated air pollutants* exceeding the applicable thresholds described



above (i.e., 250 TPY for all sources and 100 TPY for listed sources.) Area classifications for Alaska are described in 18 AAC 50.015. See Section 1.1.3 and Figures 1-5 through 1-8 for nonattainment areas. All other areas are in attainment or unclassifiable for ambient air.

Flowchart 1-18 also presents the criteria for Modification M4a or M4b.

1.3.5 Modification M5 – Nonattainment Major Modification [18 AAC 50.300(d), (h)(5)]

Modification M5 applies to Nonattainment Major Sources that are located in a CO nonattainment area. For sources meeting these criteria, a construction permit is required if the modification would result in an increase in *actual emissions*, resulting from all changes at the source since July 21, 1991, of at least 100 TPY of CO.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the stationary source is located in a nonattainment area for CO. See Section 1.1.3 and Figures 1-5 and 1-6.
2. Determine whether the existing stationary source is a Nonattainment Major Source. See Section 1.2.3 or Flowchart 1-10.
3. Calculate the increase in *actual emissions* of CO that will result from the source modification.

Flowchart 1-19 also presents the criteria for Modification M5.

1.3.6 Modification M6 – Nonattainment Major Modification [18 AAC 50.300(d), (h)(6)]

Modification M6 applies to Nonattainment Major Sources that are located in a PM-10 nonattainment area. For a PM-10 Nonattainment Major Source, a construction permit is required if the modification would result in an increase in *actual emissions*, resulting from all changes at the source since April 23, 1994, of at least 15 TPY of PM-10.



The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the source is located in a nonattainment area for PM-10. See Section 1.1.3 and Figures 1-7 and 1-8.
2. Determine whether the existing stationary source is classified as a Nonattainment Major Source. See Section 1.2.3 or Flowchart 1-10.
3. Calculate the increase in *actual emissions* of PM-10 that will result from the modification.

Flowchart 1-20 also presents the criteria for Modification M6.

1.3.7 Modification M7 – Nonattainment Major Modification [18 AAC 50.300(b), (c), (e), (f), (g), (h)(7)]

Modification M7 applies to all stationary sources, except for CO Nonattainment Major Sources. A construction permit is required for these sources if the modification would result in an increase in *actual emissions* resulting from all changes at the source since July 21, 1991 of at least 100 TPY of CO.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the source is located in a nonattainment area for CO. See Section 1.1.3 and Figures 1-5 and 1-6.
2. Determine whether the existing stationary source is classified as a Nonattainment Major Source. See Section 1.2.3 or Flowchart 1-10.
3. Calculate the increase in *actual emissions* of CO that will result from the modification.

Flowchart 1-21 also presents the criteria for Modification M7.

1.3.8 Modification M8 – Nonattainment Major Modification [18 AAC 50.300(b), (c), (e), (f), (g), (h)(8)]

Modification M8 applies to all sources, except for PM-10 Nonattainment Major Sources. For a source meeting these criteria, a construction permit is required if the modification would result in



an increase in actual emissions resulting from all changes at the source since April 23, 1994, of at least 100 TPY of PM-10.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the source is located in a nonattainment area for PM-10. See Section 1.1.3 and Figures 1-7 and 1-8.
2. Determine whether the existing source is classified as a Nonattainment Major Source. See Section 1.2.3 or Flowchart 1-10.
3. Calculate the increase in *actual emissions* of PM-10 that will result from the modification.

Flowchart 1-22 also presents the criteria for Modification M8.

1.3.9 Modification M9 – Major Modification Near a Nonattainment Area [18 AAC 50.300(b), (e), (f), (g), (h)(9)]

Modification M9 applies to all stationary sources, except for PSD Major Sources and Nonattainment Major Sources. This classification does **not** apply if the modification meets the criteria for Modifications M3, M4a, M4b, M5, M6, M7, or M8.

For a stationary source located within 10 kilometers of a nonattainment area, a construction permit is required if the modification would result in an increase in *actual emissions* of at least 100 TPY of the nonattainment air pollutant.

The basic steps to determine whether the modification meets this classification are as follows:

1. Determine whether the source is located within 10 kilometers of an area designated as nonattainment. See Section 1.1.3 and 1-5 through 1-8.
2. Determine whether the modification meets the criteria for Modifications M3, M4a, M4b, M5, M6, M7, or M8. See Sections 1.3.3 through 1.3.8 and Flowcharts 1-17 through 1-22.
3. Determine whether the stationary source is classified as a PSD Major Source or a Nonattainment Major Source. See Sections 1.2.2 and 1.2.3, Flowcharts 1-8 and 1-9



(for PSD Major Source), and Flowchart 1-10 (for Nonattainment Major Source) for assistance in determining whether the existing stationary source meets either of these classifications.

4. Calculate the increase in *actual emissions* of the nonattainment air pollutant(s) that will result from the modification.

Flowchart 1-23 also presents the criteria for Modification M9.

1.3.10 Modifications M10a and M10b – Hazardous Air Pollutant Major Modifications [18 AAC 50.300(b), (c), (d), (e), (f), (g), (h)(10)]

Modifications M10a and M10b apply to all classifications. A construction permit is required if the modification would result in an increase in *actual emissions* of 10 TPY or more of any single *hazardous air pollutant* (Modification M10a), or 25 TPY or more in the aggregate of two or more *hazardous air pollutants* (Modification M10b).

The basic steps to determine whether the modification meets this classification are as follows:

1. Calculate the increase in *actual emissions* of *hazardous air pollutants* (see Table 1-4) that will result from the modification.
2. Determine the maximum emissions increase for a single *hazardous air pollutant*.
3. Determine the total emissions increase for all *hazardous air pollutants*.

Flowchart 1-24 also presents the criteria for Modifications M10a and M10b.

1.3.11 Modification M11 – Port of Anchorage Modification [18 AAC 50.300(g), (h)(11)]

Modification M11 only applies if the stationary source is located in the Port of Anchorage. A construction permit is required if the source modification would:

- Result in any increase in *actual emissions* of organic vapors; **and**
- Cause a source to become regulated under 18 AAC 50.085 (Volatile Liquid Storage Tank Emission Standards) or 18 AAC 50.090 (Volatile Liquid Loading Racks and Delivery Tank Emission Standards).



The basic steps to determine whether the modification meets this classification are as follows:

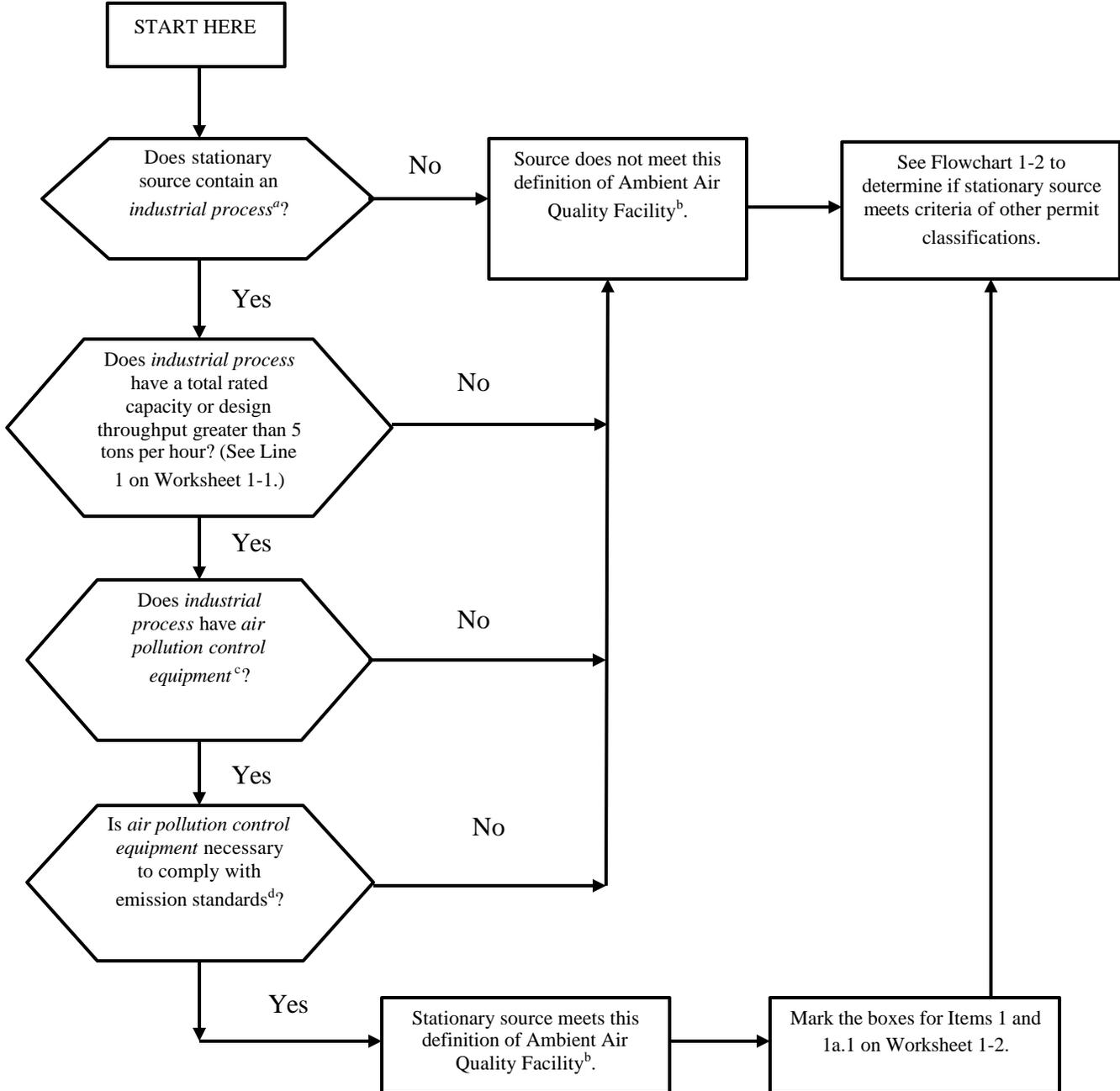
1. Determine whether the stationary source is located within the Port of Anchorage. A complete description of the Port of Anchorage is in the state air quality control plan adopted by reference in 18 AAC 50.030 (see Figure 1-11 of this Guidance Document).
2. Calculate the increase in *actual emissions* of organic vapors that will result from the modification.
3. If the modification will result in an increase in *actual emissions* of organic vapors, determine next whether the modification will cause a source to become regulated under 18 AAC 50.085 (Volatile Liquid Storage Tank Emission Standards) or 18 AAC 50.090 (Volatile Liquid Loading Racks and Delivery Tank Emission Standards). The following types of emission units are regulated under 18 AAC 50.085 and 50.090:
 - *Volatile Liquid Storage Tanks* with a capacity of at least 952 barrels (or 40,000 gallons) are regulated under 18 AAC 50.085; and
 - *Volatile Liquid Loading Racks* with a design throughput of 15 million gallons (or 357,143 barrels) or more per year are regulated under 18 AAC 50.090.

Flowchart 1-25 also presents the criteria for Modification M11.



Flowchart 1-1

AMBIENT AIR QUALITY FACILITY INDUSTRIAL PROCESS > 5 TONS/HOUR



^a As defined in 18 AAC 50.990(49).

^b As specified in 18 AAC 50.300(b)(1)(A).

^c As defined in 18 AAC 50.990(5).

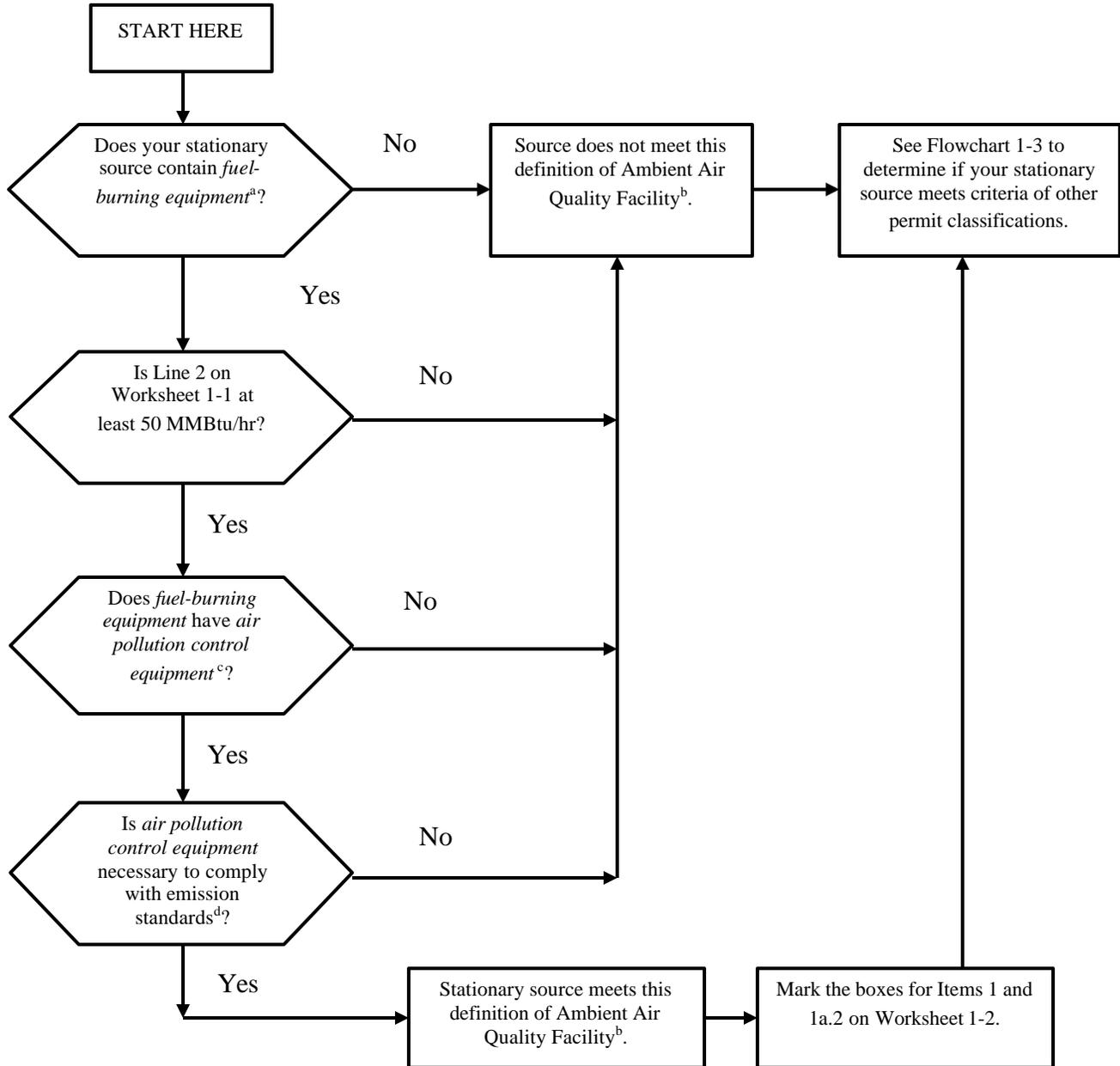
^d As specified in:

- 18 AAC 50.055: Industrial Process and Fuel-Burning Equipment; or
- 18 AAC 50.060: Pulp Mills.



Flowchart 1-2

AMBIENT AIR QUALITY FACILITY FUEL BURNING EQUIPMENT = 50 MMBTU/HR



^a As defined in 18 AAC 50.990(41).

^b As specified in 18 AAC 50.300(b)(1)(B).

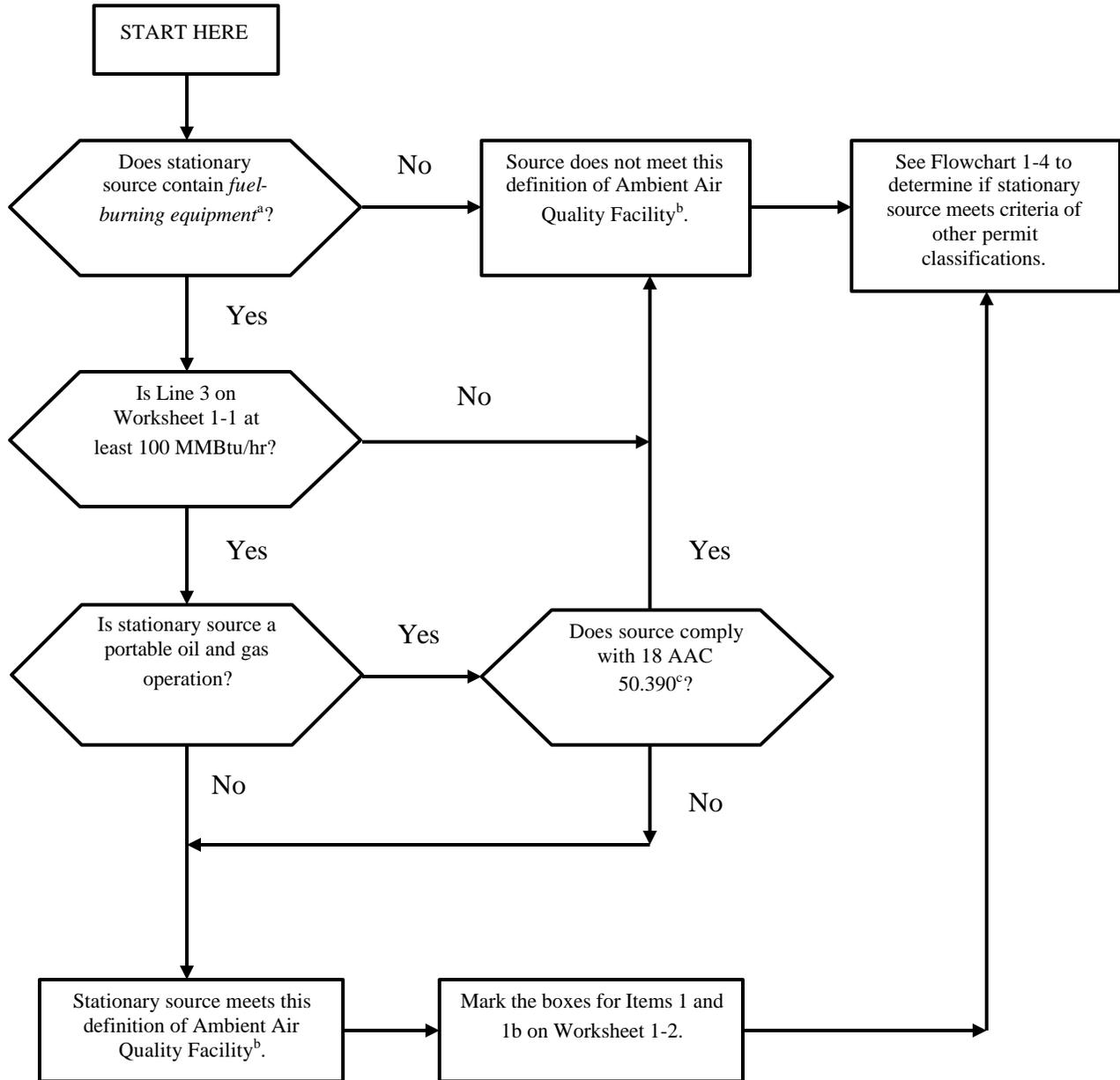
^c As defined in 18 AAC 50.990(5).

^d As specified in 18 AAC 50.055: Industrial Process and Fuel-Burning Equipment.



Flowchart 1-3

AMBIENT AIR QUALITY FACILITY FUEL BURNING EQUIPMENT = 100 MMBTU/HR



^a As defined in 18 AAC 50.990(41).

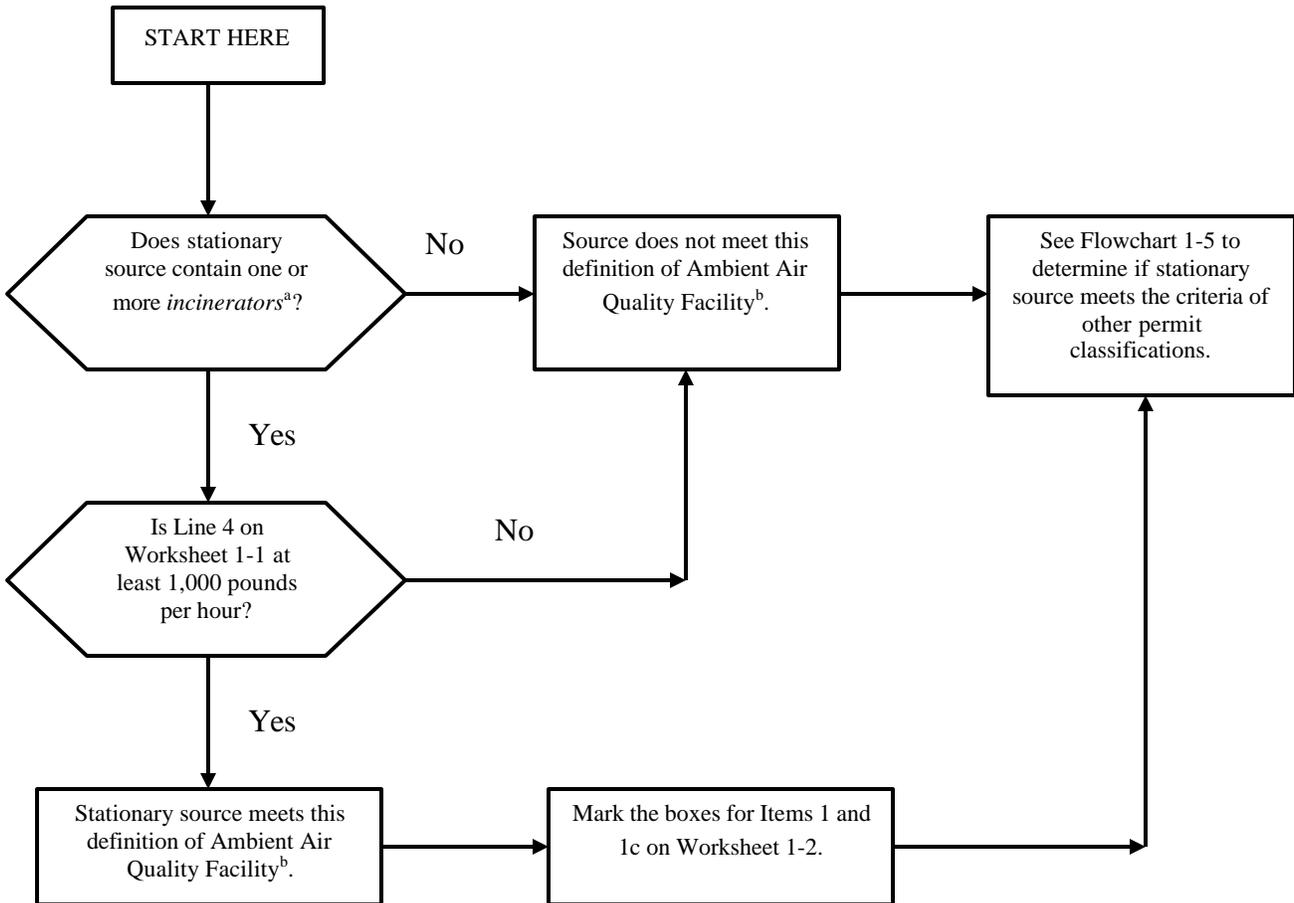
^b As specified in 18 AAC 50.300(b)(2).

^c To answer “yes” source must qualify for and operate in compliance with 18 AAC 50.390 (Permit-by-Rule for Drilling Rigs and Associated Equipment).



Flowchart 1-4

AMBIENT AIR QUALITY FACILITY INCINERATORS = 1,000 LBS/HR (COMBINED)



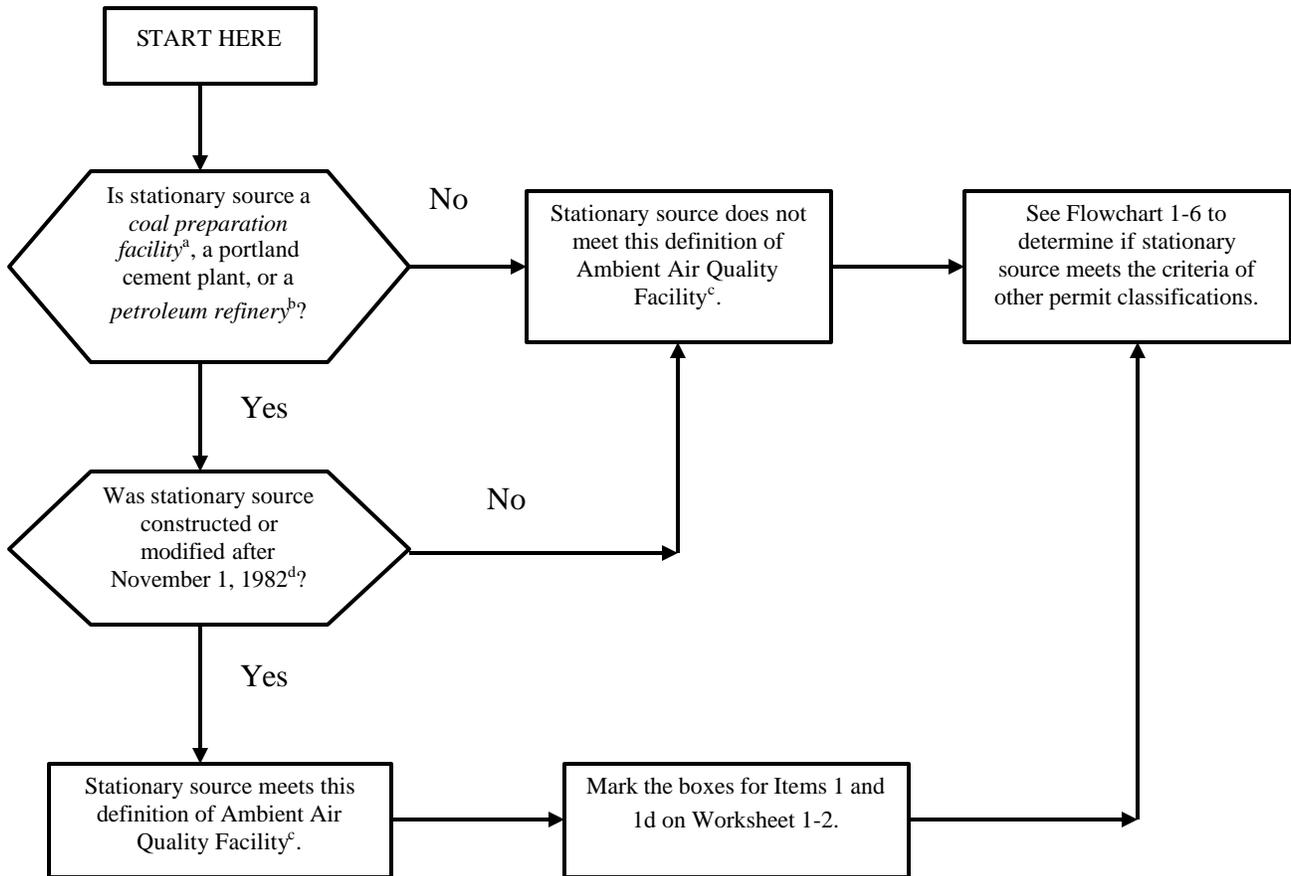
^a As defined in 18 AAC 50.990(48).

^b As specified in 18 AAC 50.300(b)(3).



Flowchart 1-5

AMBIENT AIR QUALITY FACILITY EMISSION STANDARDS FOR COAL PREPARATION FACILITIES, PORTLAND CEMENT PLANTS, AND PETROLEUM REFINERIES



^a As defined in 18 AAC50.990(18).

^b As defined in 18 Aac 50.990(69).

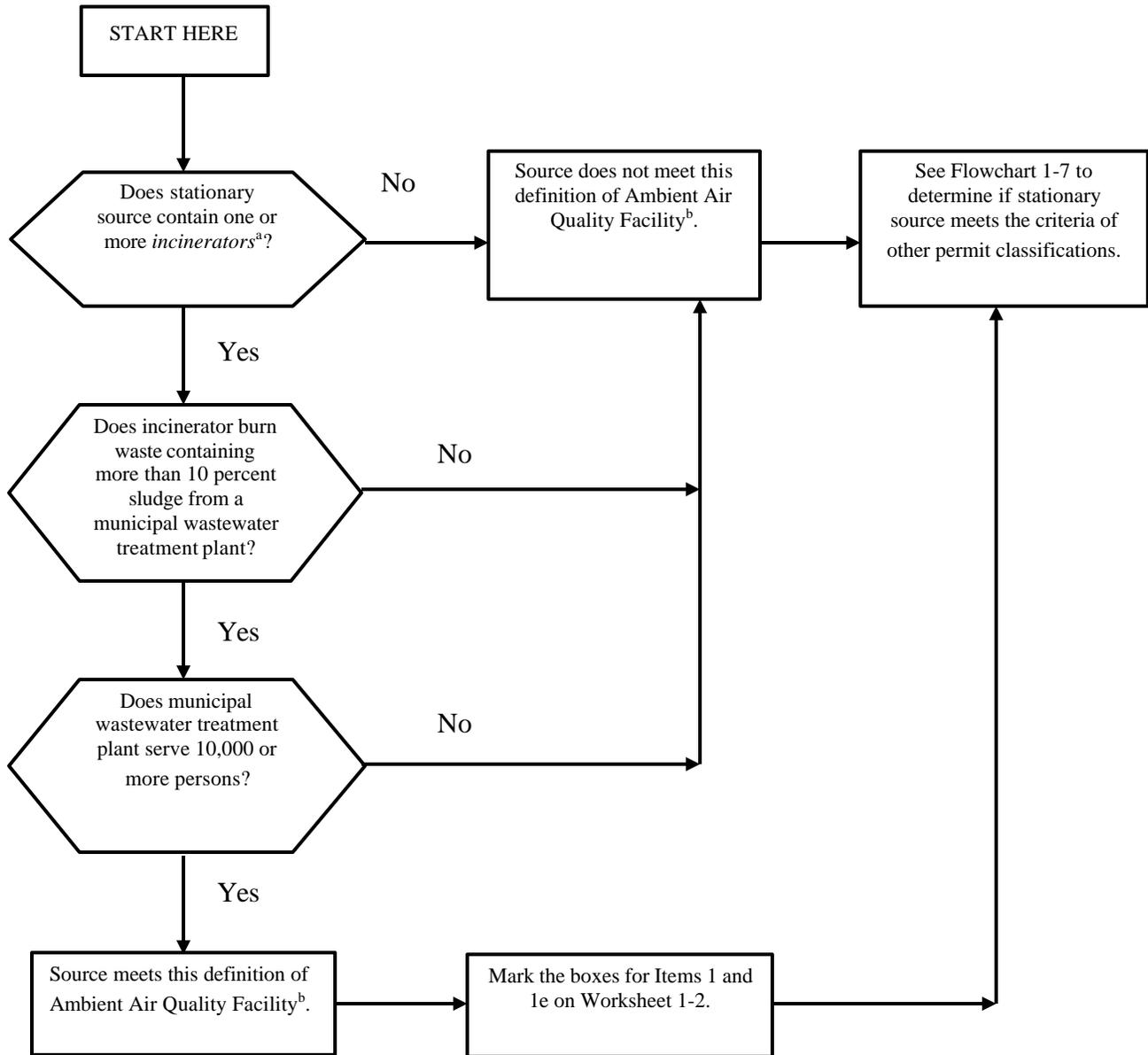
^c As specified in 18 AAC 50.300(b)(4).

^d For petroleum refineries, this only applies if the following sources were constructed or modified after November 1, 1982: 1.) a catalytic cracking unit catalyst regenerator, 2.) a sulfur recovery plant rated at more than 20 long tons per day, and 3.) fuel-burning equipment.



Flowchart 1-6

AMBIENT AIR QUALITY FACILITY INCINERATORS BURNING SLUDGE



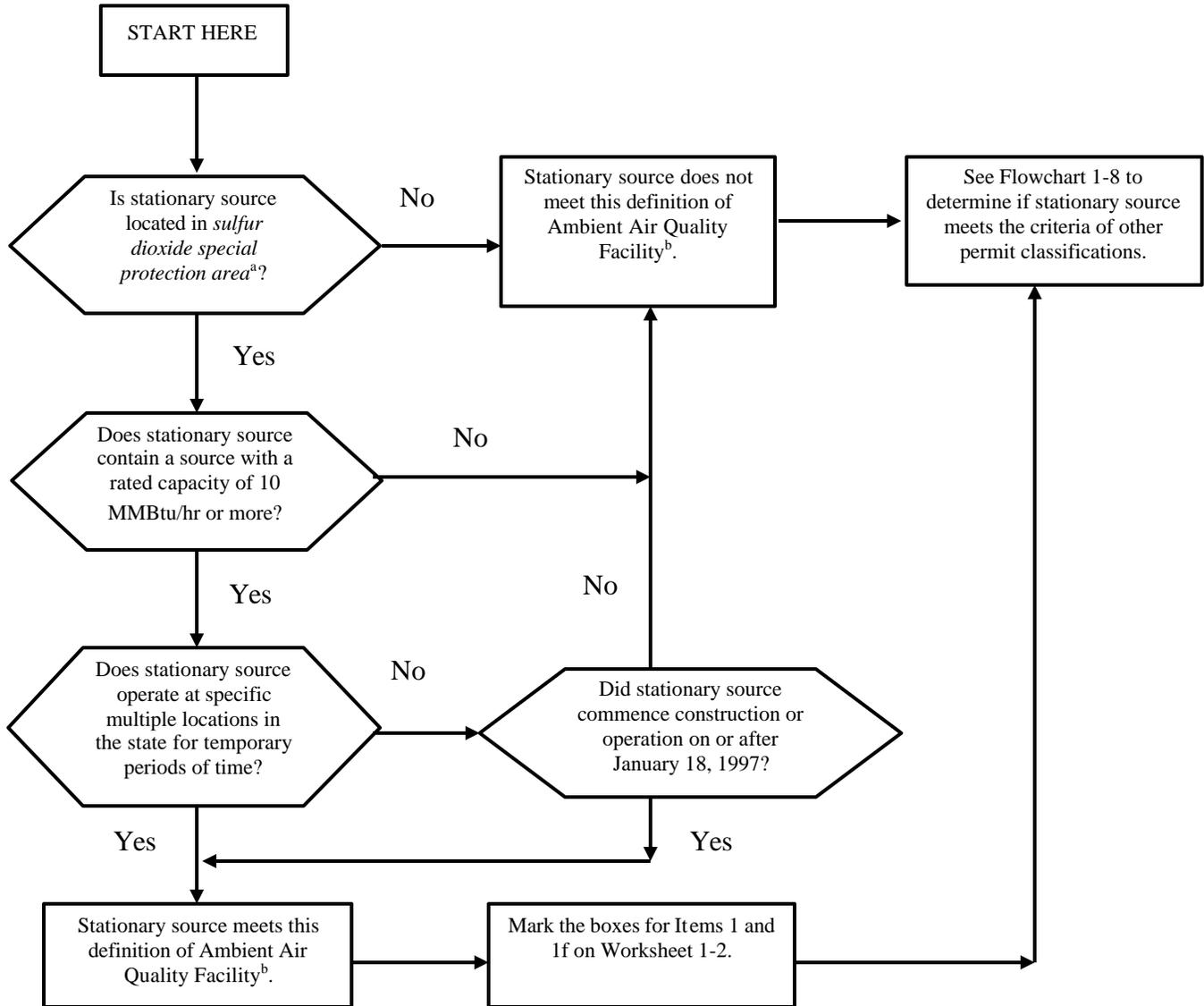
^a As defined in 18 AAC 50.990(48).

^b As specified in 18 AAC 50.300(b)(5).



Flowchart 1-7

AMBIENT AIR QUALITY FACILITY SULFUR DIOXIDE SPECIAL PROTECTION AREA

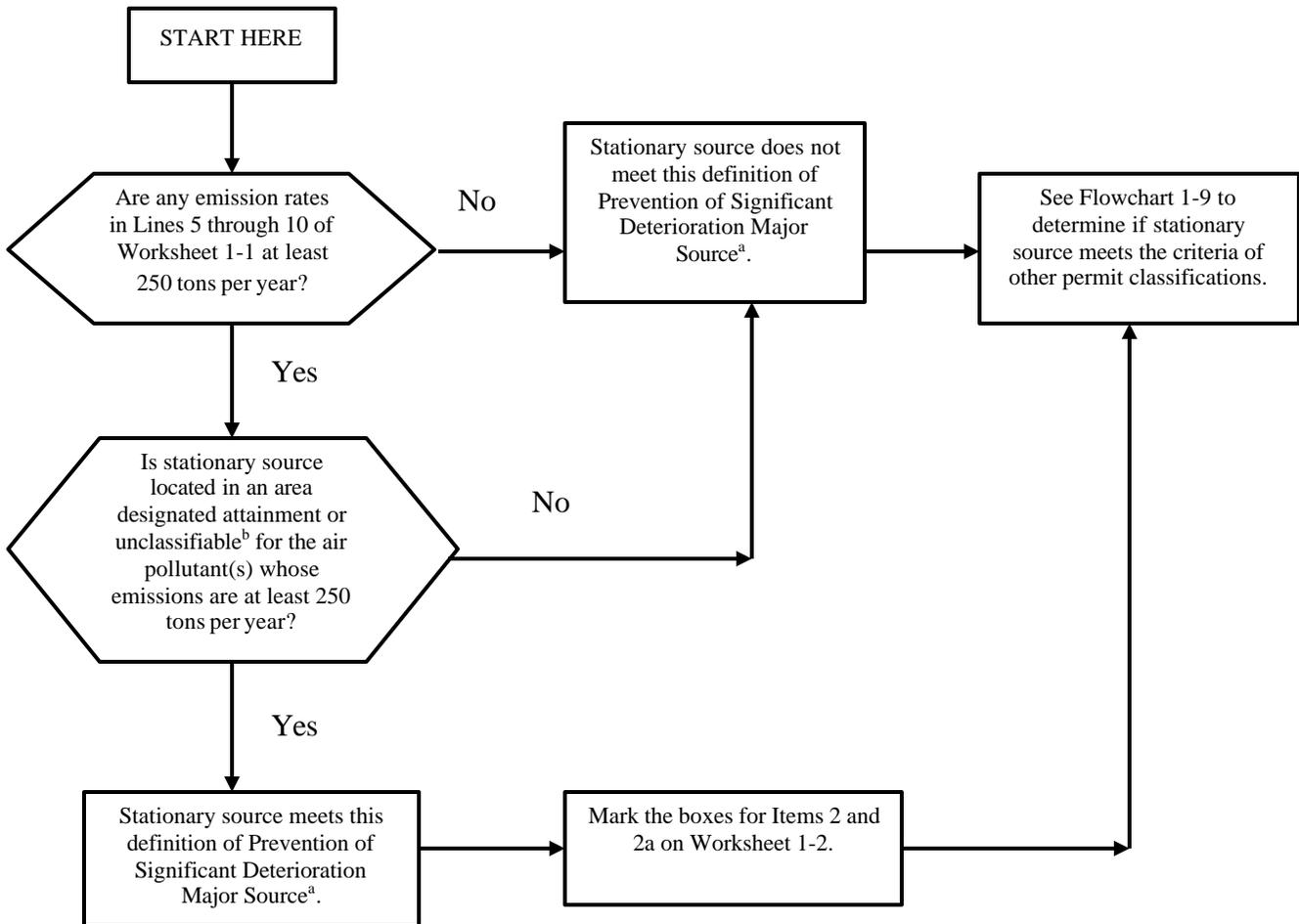


^a Sulfur dioxide special protection areas are listed in 18 AAC 50.025(c) and in Section 1.1.3 of this document.

^b As specified in 18 AAC 50.300(b)(6)(a).



Flowchart 1-8 PREVENTION OF SIGNIFICANT DETERIORATION MAJOR SOURCE 250 TPY THRESHOLD

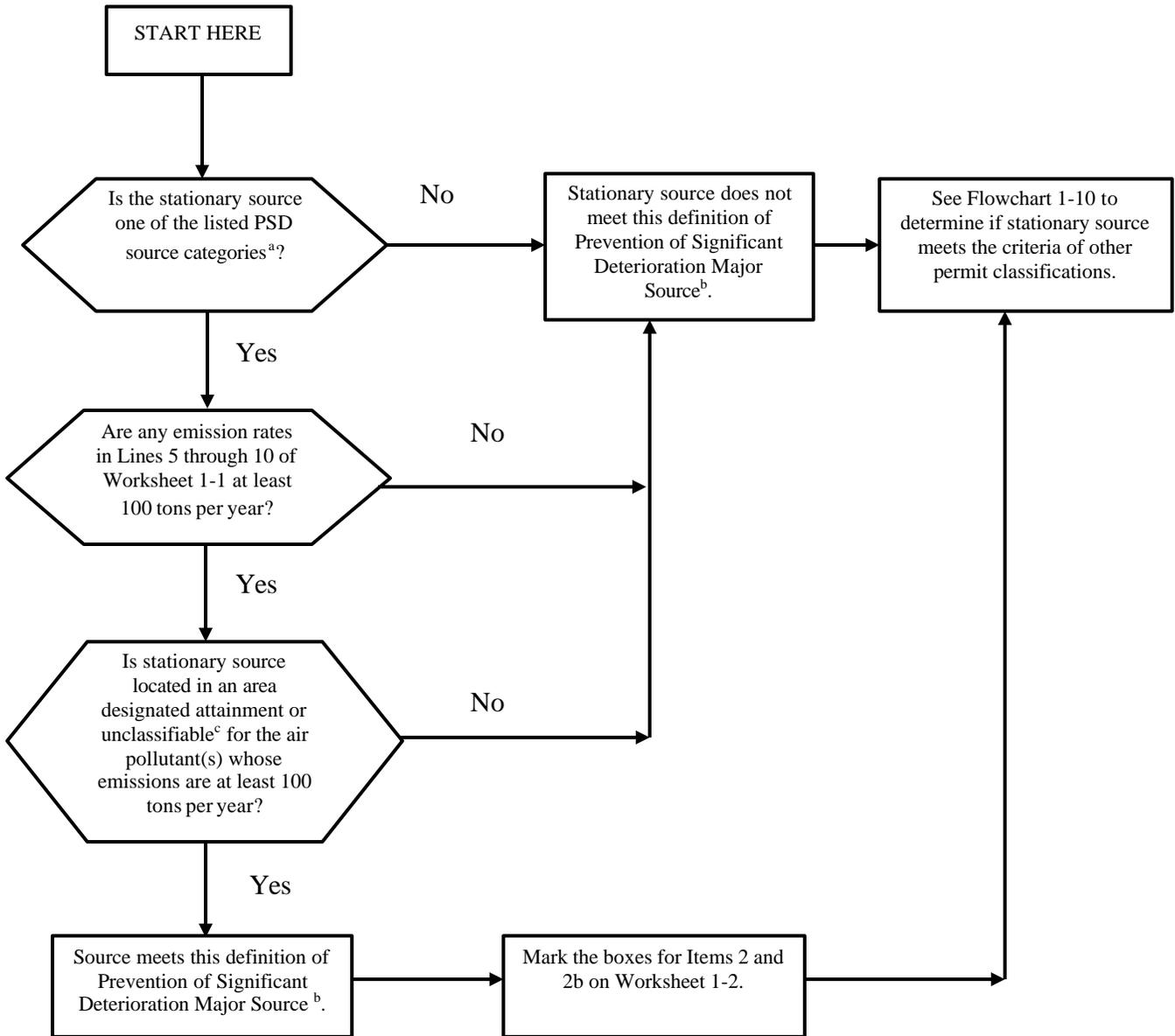


^a As specified in 18 AAC 50.300(c)(1).

^b Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.



Flowchart 1-9
PREVENTION OF SIGNIFICANT DETERIORATION MAJOR SOURCE
100 TPY THRESHOLD



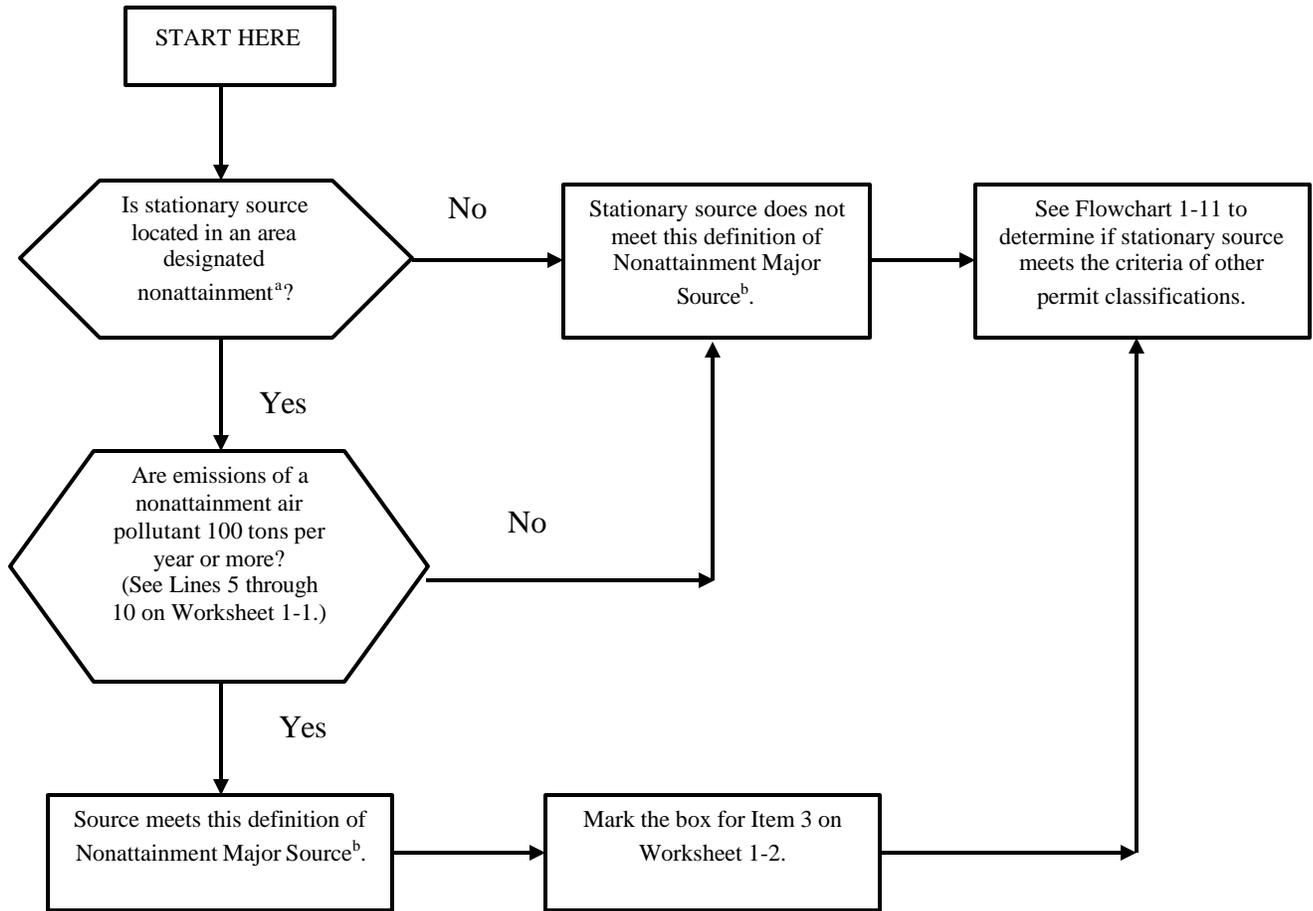
^a The listed source categories are found in 18 AAC 50.300(c)(2) and in Table 1-2 of this document.

^b As specified in 18 AAC 50.300(c)(2).

^c Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.



Flowchart 1-10 NONATTAINMENT MAJOR SOURCE



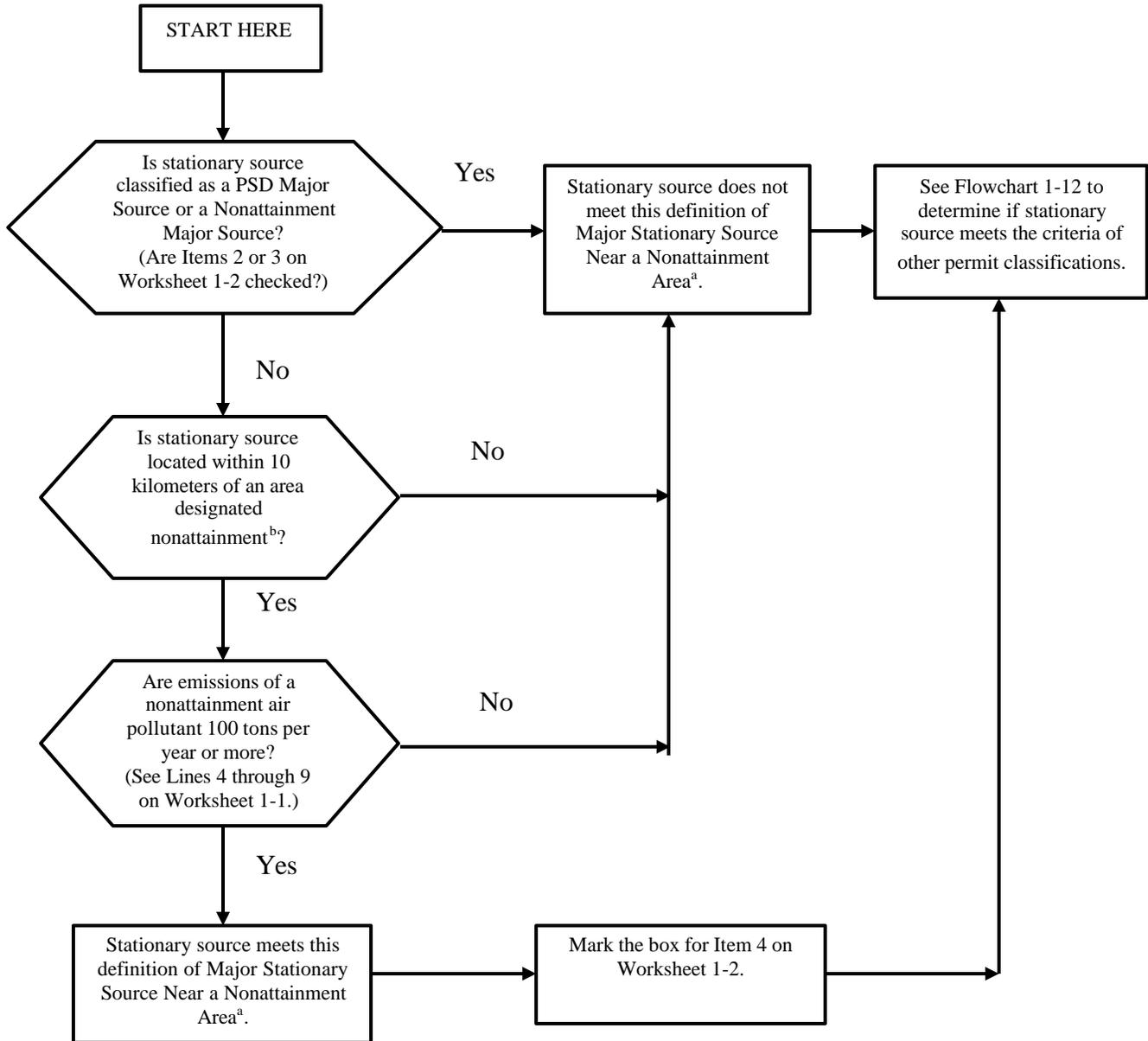
^a Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^b As specified in 18 AAC 50.300(d).



Flowchart 1-11

MAJOR STATIONARY SOURCE NEAR A NONATTAINMENT AREA

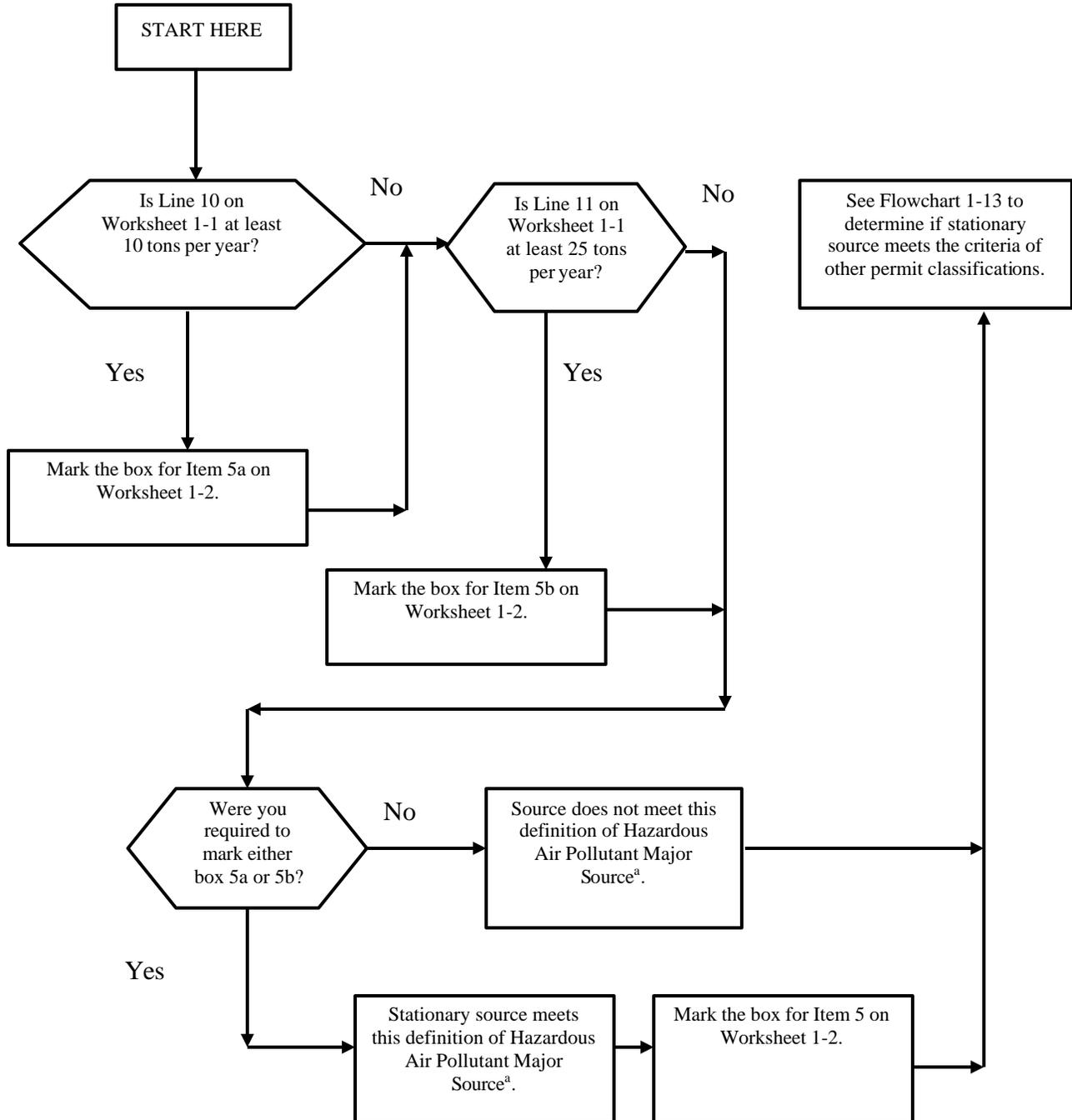


^a As specified in 18 AAC 50.300(e).

^b Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.



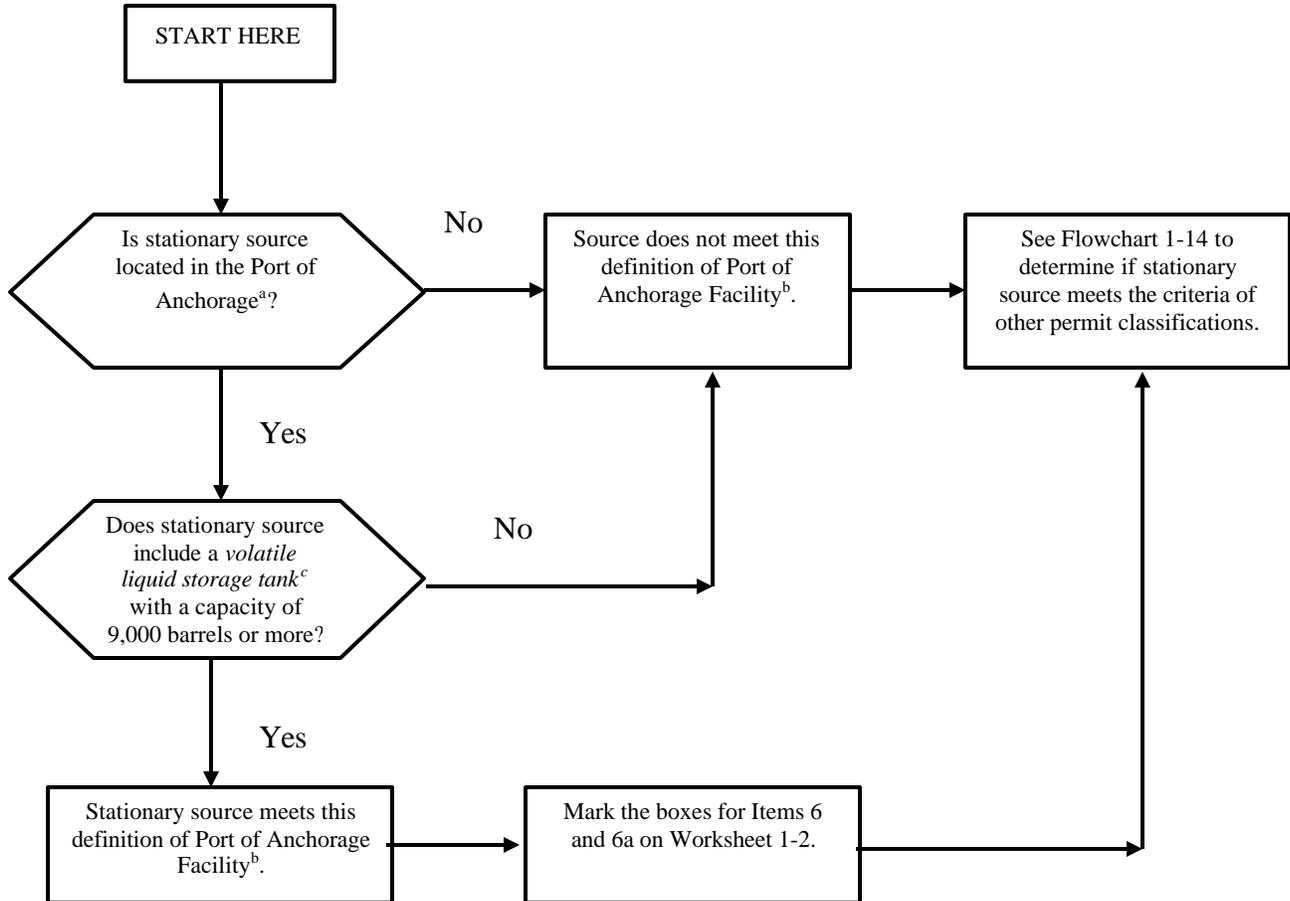
Flowchart 1-12 HAZARDOUS AIR POLLUTANT MAJOR SOURCE 10 OR 25 TPY THRESHOLD



^a As specified in 18 AAC 50.300(f).



Flowchart 1-13 PORT OF ANCHORAGE FACILITY – TYPE 1



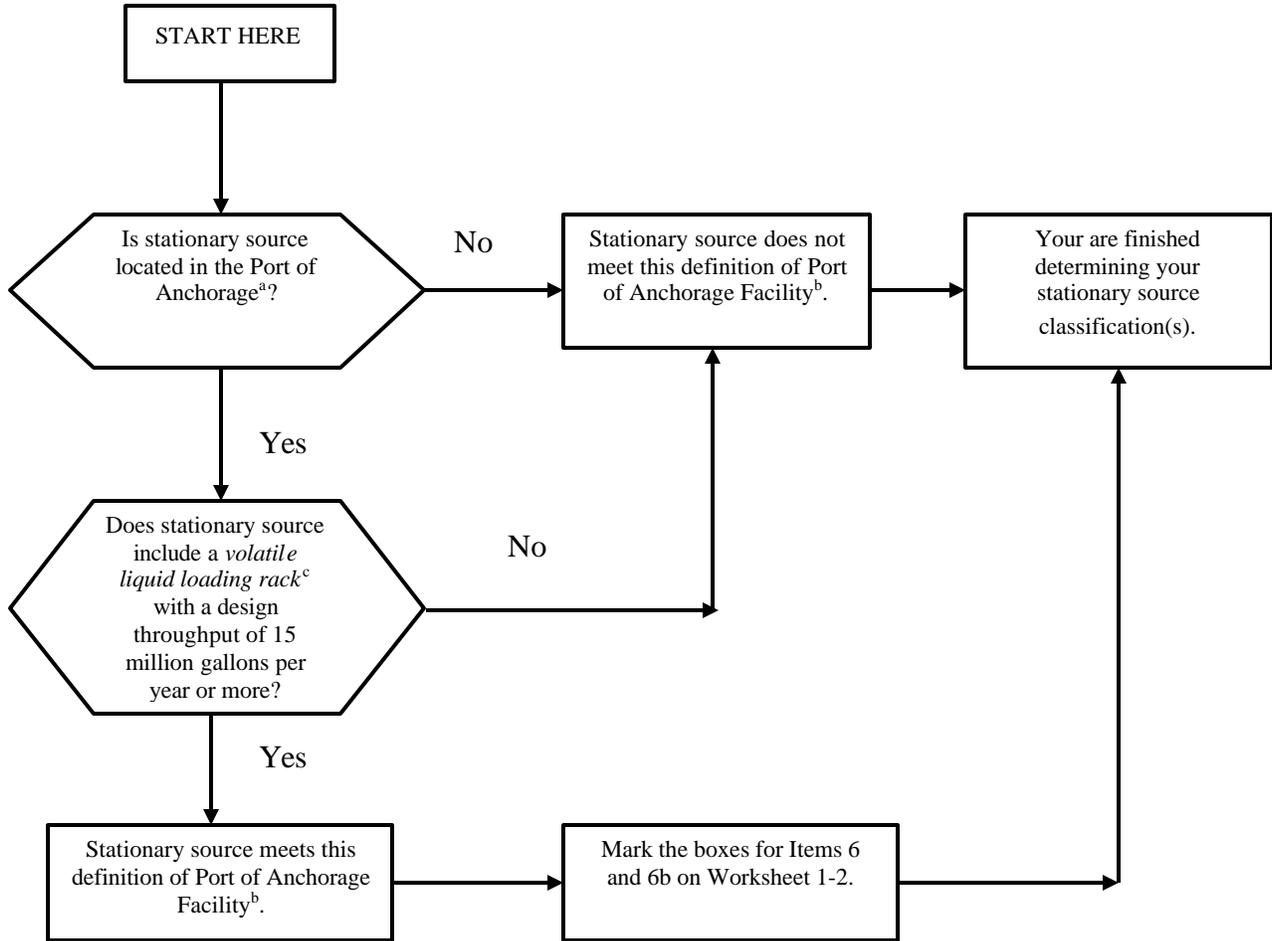
^a A complete description of the Port of Anchorage is in the state air quality control plan adopted by reference in 18 AAC 50.030. See Section 1.1.3 of this document.

^b As specified in 18 AAC 50.300(g)(1).

^c As defined in 18 AAC 50.990(102).



Flowchart 1-14 PORT OF ANCHORAGE FACILITY – TYPE 2



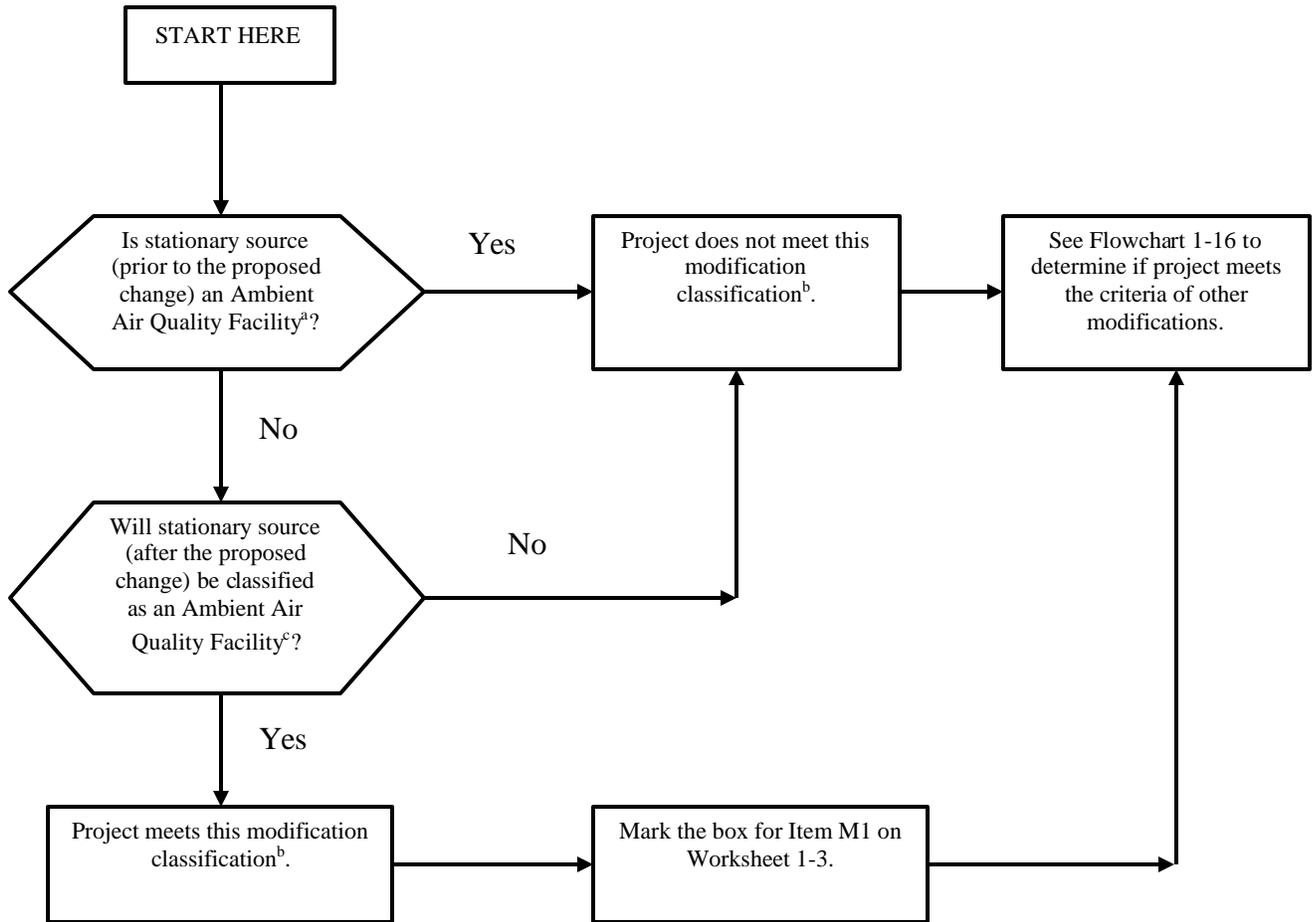
^a A complete description of the Port of Anchorage is in the state air quality control plan adopted by reference in 18 AAC 50.030. See Section 1.1.3 of this document.

^b As specified in 18 AAC 50.300(g)(2).

^c As defined in 18 AAC 50.990(101).



Flowchart 1-15
MODIFICATION M1
BECOMING AN AMBIENT AIR QUALITY FACILITY



^a Section 1.2.1 describes the criteria for an Ambient Air Quality Facility. Additionally, Flowcharts 1-1 through 1-7 can be used to determine if your existing stationary source meets the criteria for an Ambient Air Quality Facility.

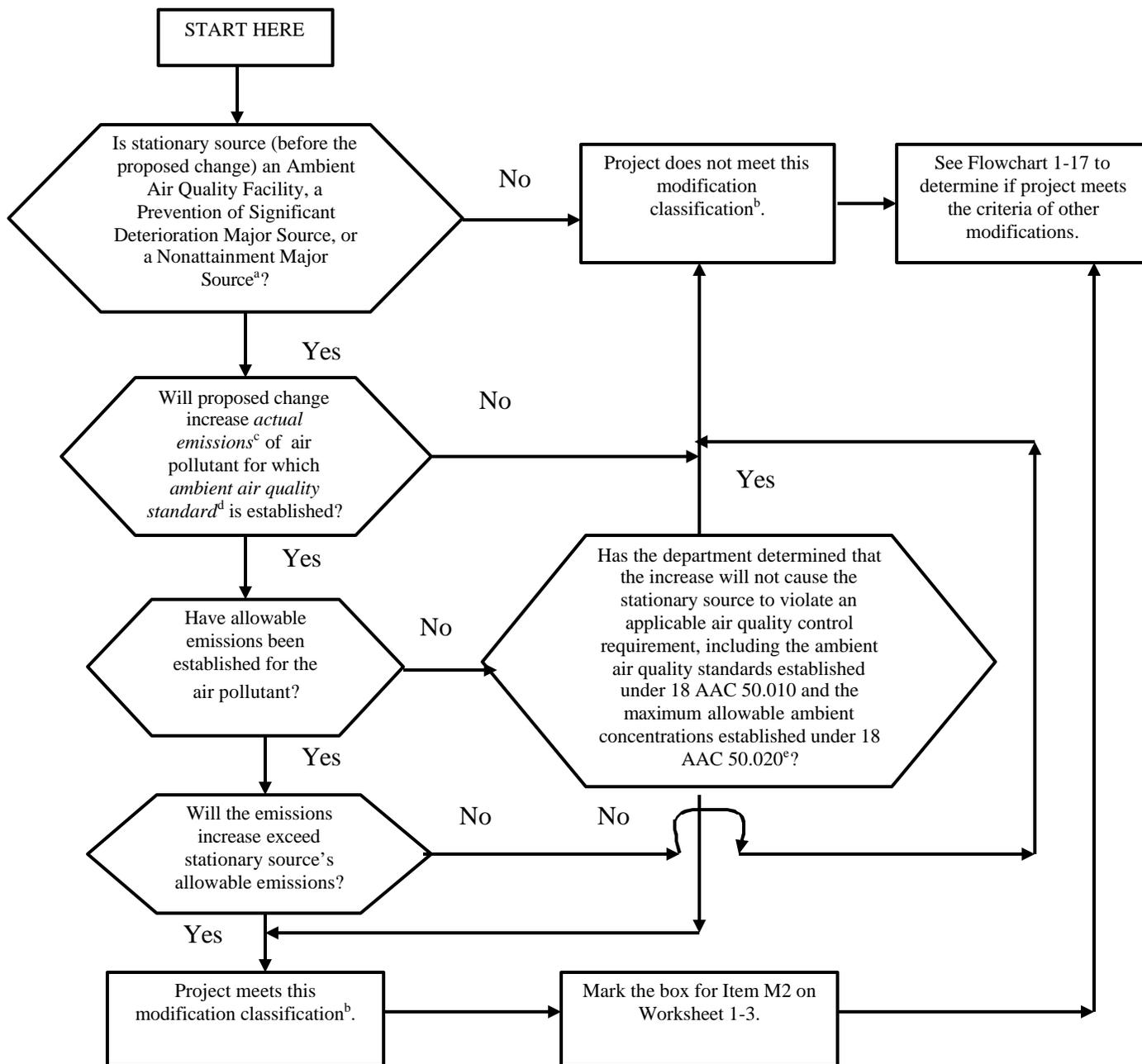
^b As specified in 18 AAC 50.300(h)(1).

^c Use Flowcharts 1-1 through 1-7 and Section 1.2.1 to determine if your source after modification meets the criteria for an Ambient Air Quality Facility.



Flowchart 1-16

MODIFICATION M2 INCREASE OVER CURRENT ALLOWABLE EMISSIONS



^a Sections 1.2.1, 1.2.2, and 1.2.3 describe the criteria for Ambient Air Quality Facility, Prevention of Significant Deterioration Major Source, and Nonattainment Major Source, respectively. Additionally, Flowcharts 1-1 through 1-7 (for Ambient Air Quality Facility), Flowcharts 1-8 and 1-9 (for PSD Major Source), and Flowchart 1-10 (for Nonattainment Major Source) can be used to determine if your existing stationary source meets these source classifications.

^b As specified in 18 AAC 50.300(h)(2).

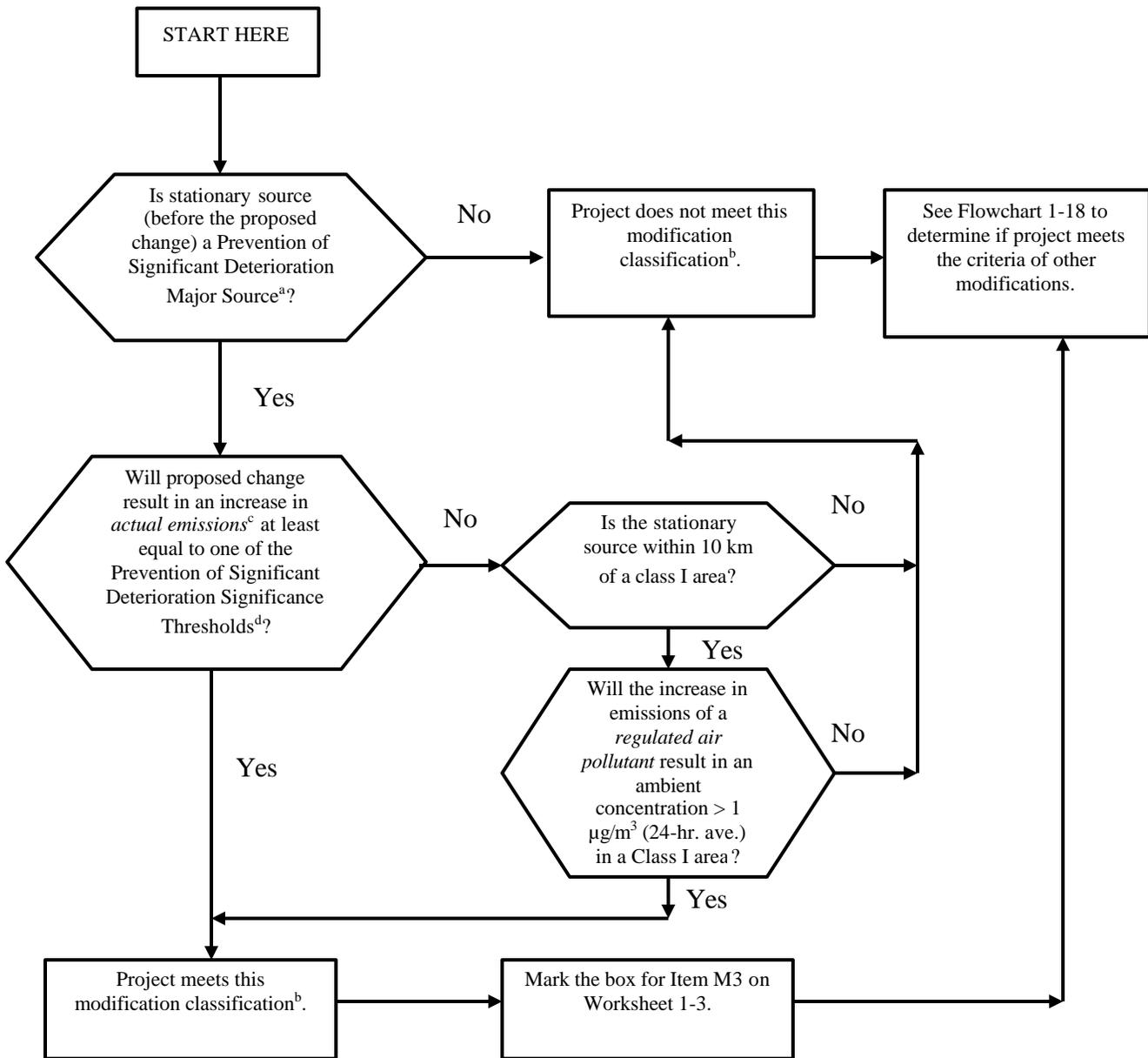
^c As defined in 18 AAC 50.910.

^d Ambient Air Quality standards are listed in 18 AAC 50.010.

^e Contact the department if you want to request a determination.



Flowchart 1-17 MODIFICATION M3 PSD MAJOR MODIFICATION



^a Section 1.2.2 describes the criteria for Prevention of Significant Deterioration Major Source. Additionally, Flowcharts 1-8 and 1-9 can be used to determine if your existing stationary source meets the criteria for a Prevention of Significant Deterioration Major Source.

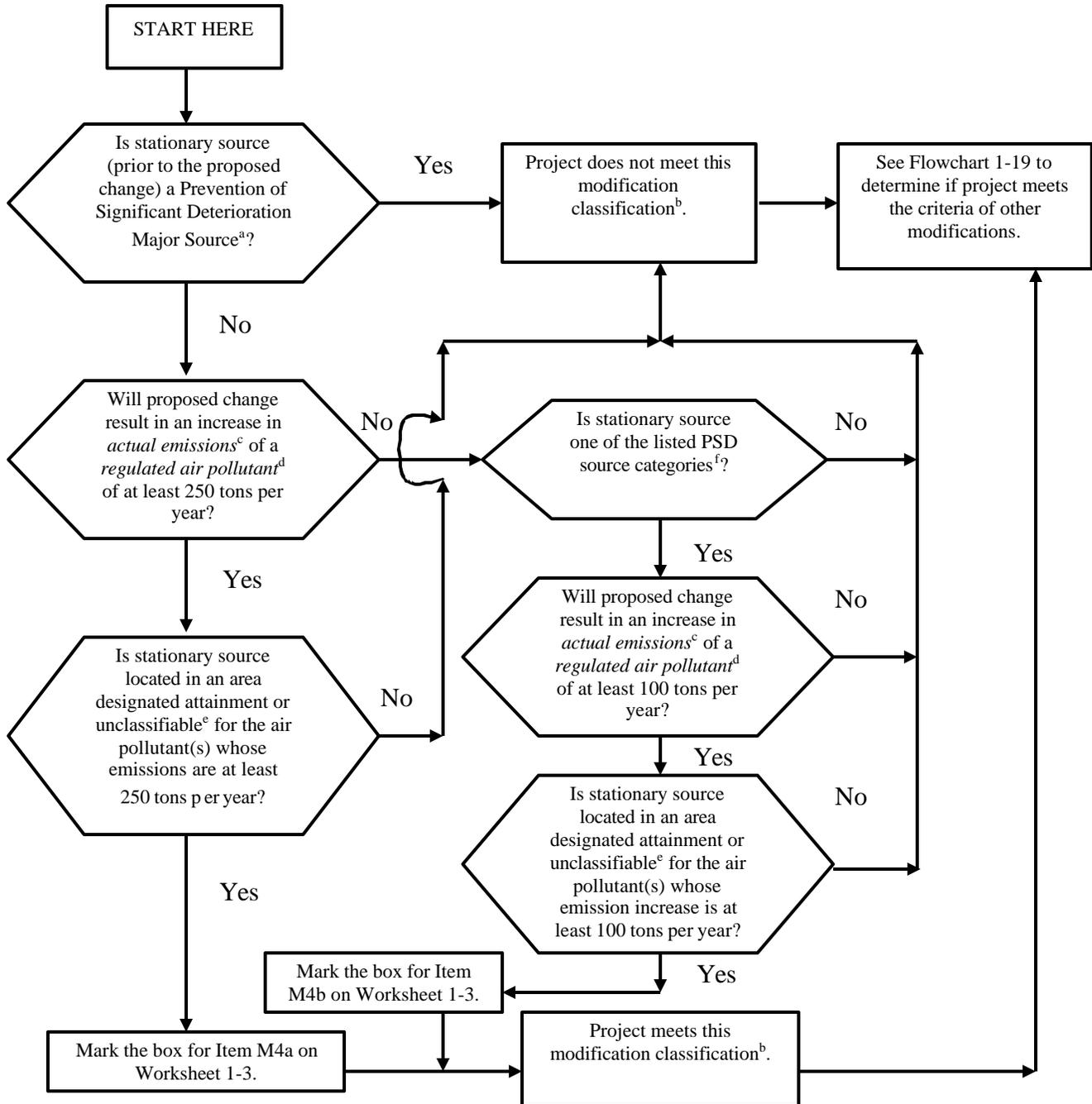
^b As specified in 18 AAC 50.300(h)(3).

^c As defined in 18 AAC 50.910.

^d The Prevention of Significant Deterioration Sign ificance Thresholds are provided in 18 AAC 50.300(h)(2) and in Table 1-5 of this document.



Flowchart 1-18 MODIFICATIONS M4a AND M4b PSD MAJOR MODIFICATION



^a Section 1.2.2 describes the criteria for Prevention of Significant Deterioration Major Source. Additionally, Flowcharts 1-8 and 1-9 can be used to determine if your existing stationary source meets the criteria for a Prevention of Significant Deterioration Major Source.

^b As specified in 18 AAC 50.300(h)(4)(B)(i).

^c As defined in 18 AAC 50.910.

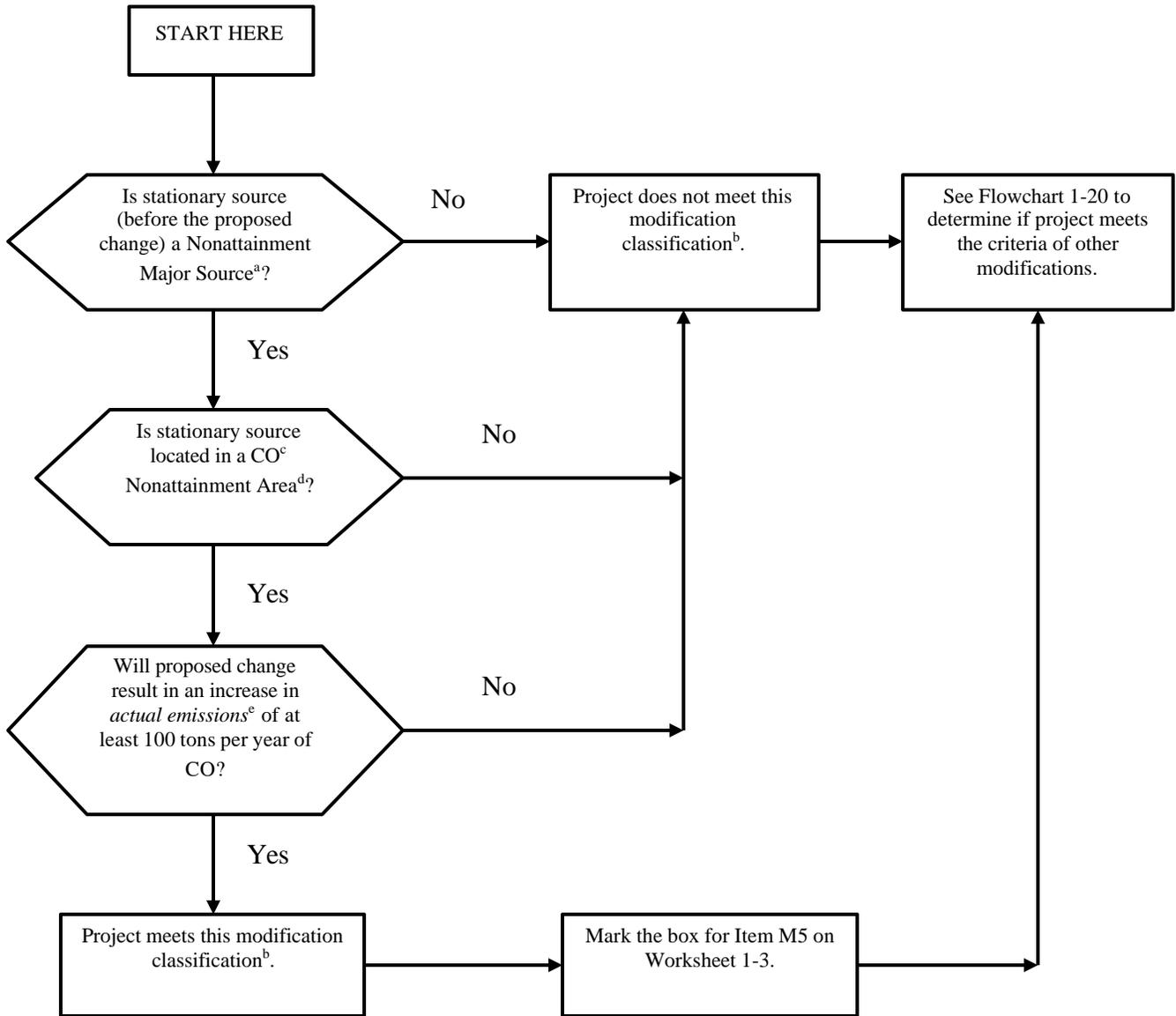
^d As defined in 18 AAC 50.990(80). See Table 1-3 for a list of PSD *regulated air pollutants*.

^e Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^f The listed source categories are found in 18 AAC 50.300(c)(2) and in Table 1-2 of this document.



Flowchart 1-19 MODIFICATION M5 NONATTAINMENT MAJOR MODIFICATION



^a Section 1.2.3 describes the criteria for Nonattainment Major Source. Additionally, Flowchart 1-10 can be used to determine if your existing stationary source meets the criteria for a Nonattainment Major Source.

^b As specified in 18 AAC 50.300(h)(5).

^c CO = carbon monoxide

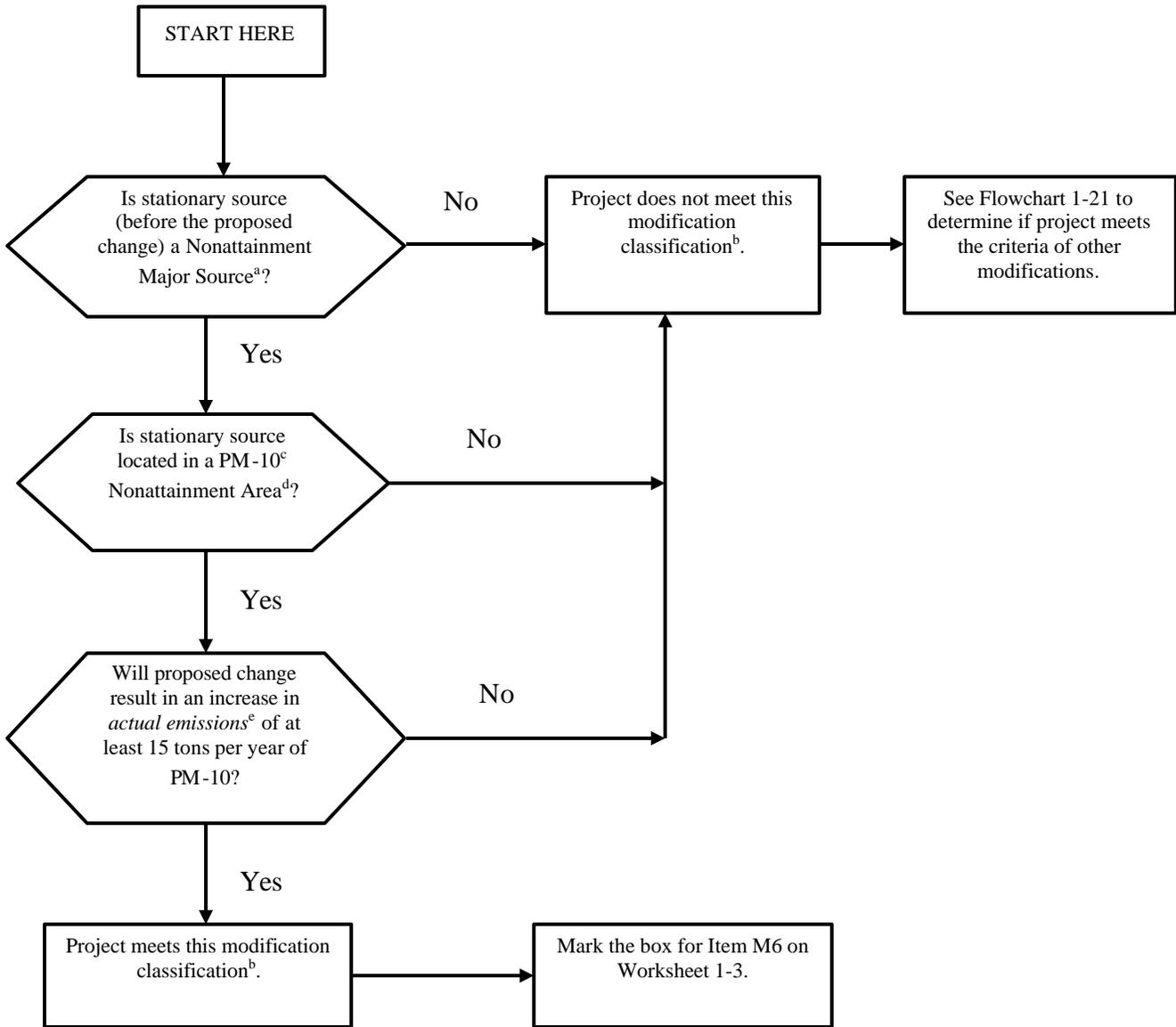
^d Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^e As defined in 18 AAC 50.910.



Flowchart 1-20

MODIFICATION M6 NONATTAINMENT MAJOR MODIFICATION



^a Section 1.2.3 describes the criteria for Nonattainment Major Source. Additionally, Flowchart 1-10 can be used to determine if your existing stationary source meets the criteria for a Nonattainment Major Source.

^b As specified in 18 AAC 50.300(h)(6).

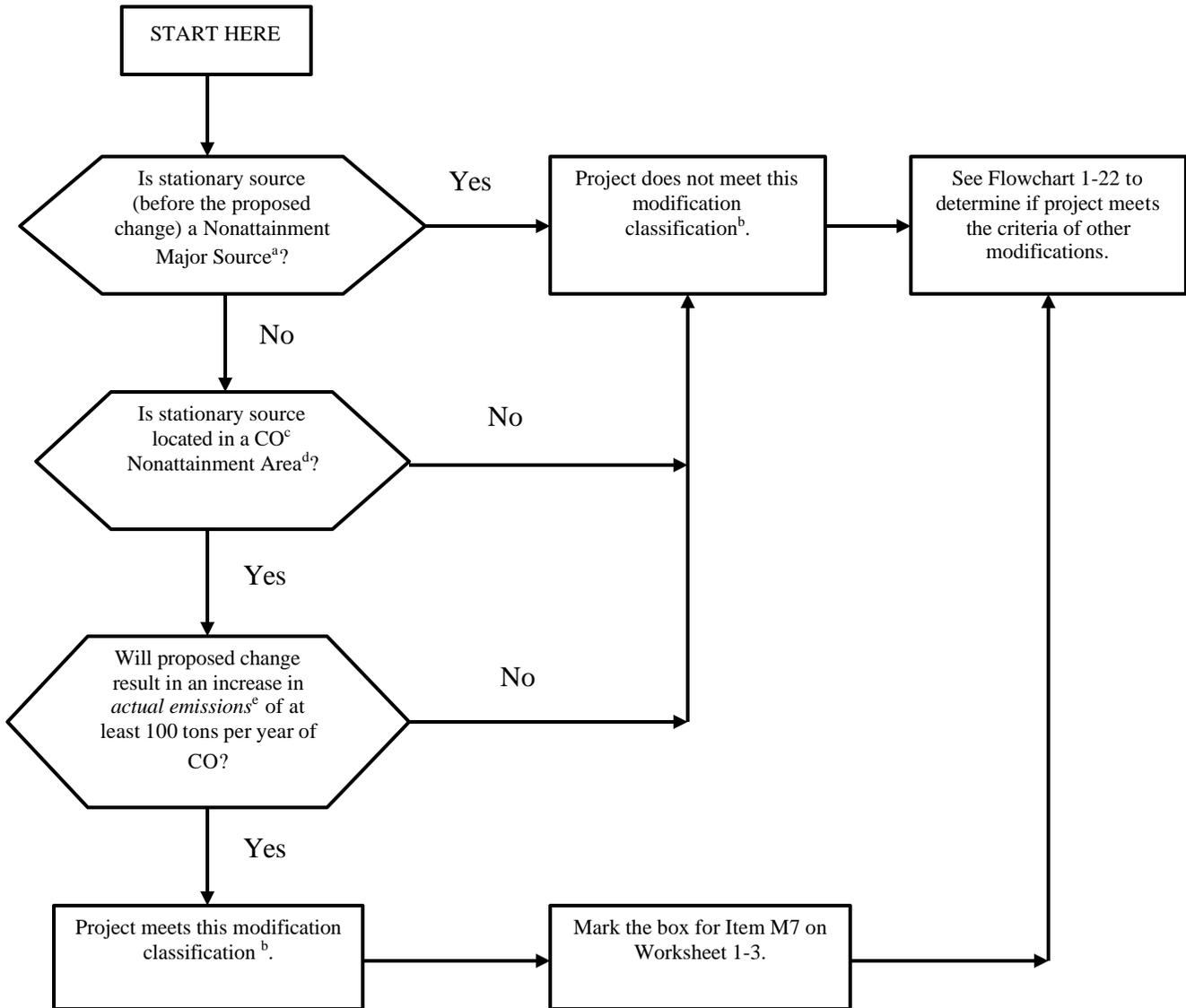
^c PM-10 = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^d Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^e As defined in 18 AAC 50.910.



Flowchart 1-21 MODIFICATION M7 NONATTAINMENT MAJOR MODIFICATION



^a Section 1.2.3 describes the criteria for Nonattainment Major Source. Additionally, Flowchart 1-10 can be used to determine if your existing stationary source meets the criteria for a Nonattainment Major Source.

^b As specified in 18 AAC 50.300(h)(7).

^c CO = carbon monoxide

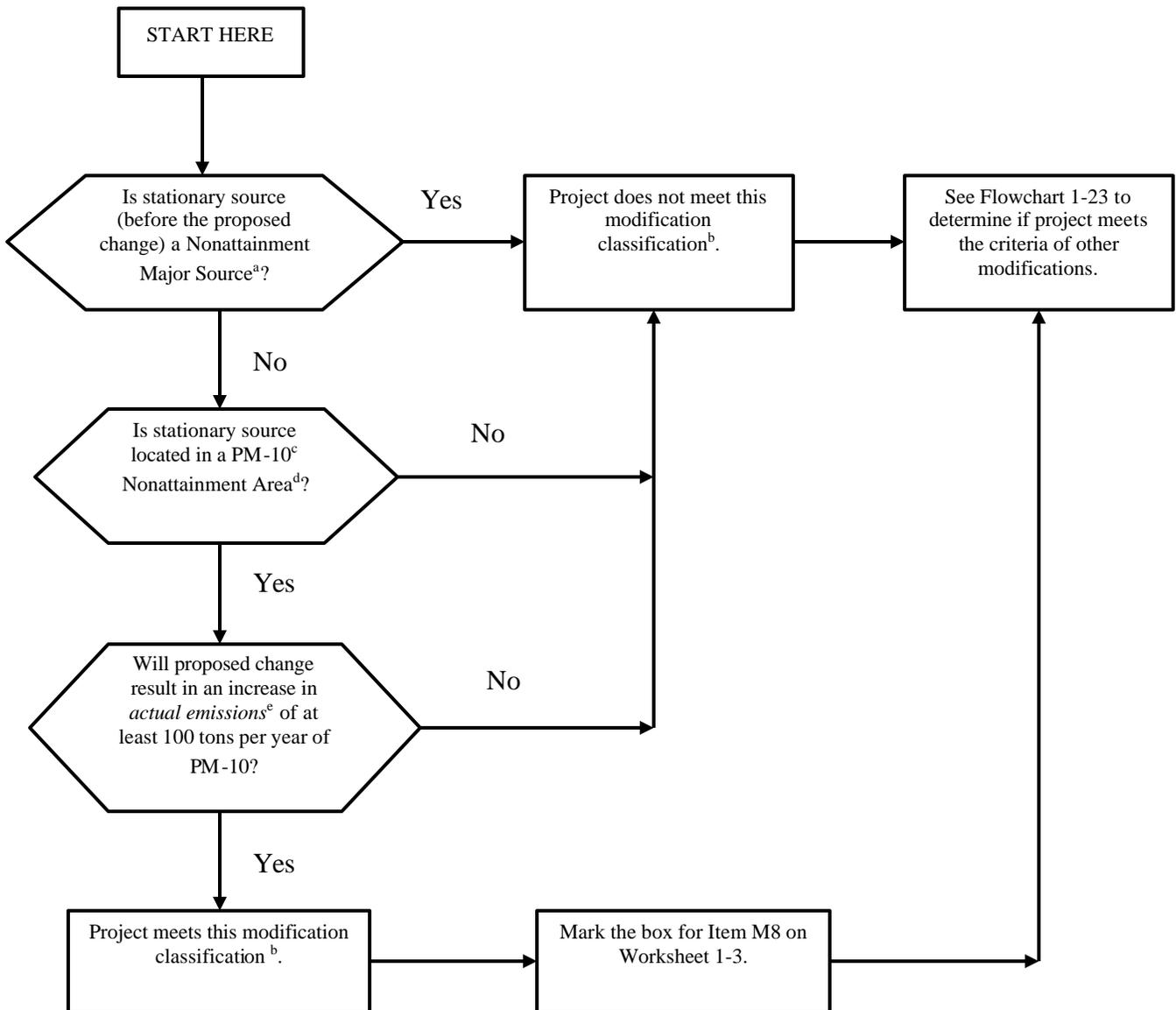
^d Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^e As defined in 18 AAC 50.910.



Flowchart 1-22

**MODIFICATION M8
NONATTAINMENT MAJOR MODIFICATION**



^a Section 1.2.3 describes the criteria for Nonattainment Major Source. Additionally, Flowchart 1-10 can be used to determine if your existing stationary source meets the criteria for a Nonattainment Major Source.

^b As specified in 18 AAC 50.300(h)(8).

^c PM-10 = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

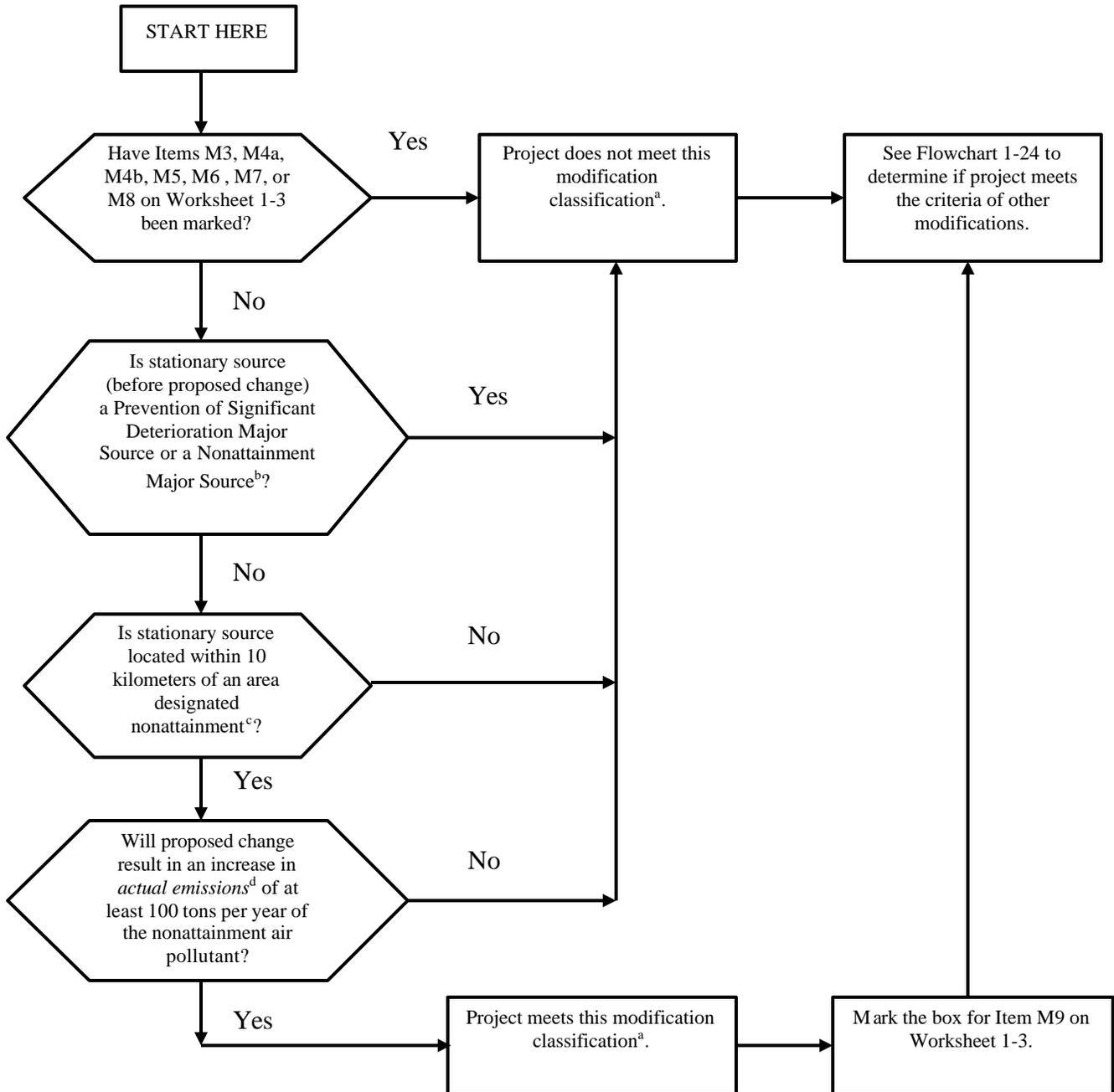
^d Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^e As defined in 18 AAC 50.910.



Flowchart 1-23

MODIFICATION M9 MAJOR MODIFICATION NEAR A NONATTAINMENT AREA



^a As specified in 18 AAC 50.300(h)(9).

^a Sections 1.2.2, and 1.2.3 describe the criteria for Prevention of Significant Deterioration Major Source and Nonattainment Major Source, respectively. Additionally, Flowcharts 1-8 and 1-9 (for PSD Major Source) and Flowchart 1-10 (for Nonattainment Major Source) can be used to determine if your existing stationary source meets either of these source classifications.

^c Area designations are listed in 18 AAC 50.015 and in Section 1.1.3 of this document.

^d As defined in 18 AAC 50.910.