State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-AN160760002-24

July 9, 2024

Lonnie Allen
MegaDiamond
275 West 2230 North
Provo, UT 84604
LAllen2@slb.com

Dear Mr. Allen:

Re: Approval Order: Minor Modification to Approval Order DAQE-AN160760001-22 to Add Equipment and Update Potential to Emit
Project Number: N160760002

The attached Approval Order (AO) is issued pursuant to the Notice of Intent (NOI) received on August 22, 2023. MegaDiamond must comply with the requirements of this AO, all applicable state requirements (R307), and Federal Standards.

The project engineer for this action is **Dungan Adams**, who can be contacted at (385) 290-2474 or dunganadams@utah.gov. Future correspondence on this AO should include the engineer's name as well as the DAQE number shown on the upper right-hand corner of this letter. No public comments were received on this action.

Sincerely,

Bryce C. Bird
Director

BCB:DA:jg

cc: Utah County Health Department

STATE OF UTAH
Department of Environmental Quality
Division of Air Quality

APPROVAL ORDER
DAQE-AN160760002-24
Minor Modification to Approval Order DAQE-AN160760001-22 to Add Equipment and Update Potential to Emit

Prepared By
Dungan Adams, Engineer
(385) 290-2474
dunganadams@utah.gov

Issued to
MegaDiamond - Drill Bit Manufacturing Plant, South Facility

Issued On

July 9, 2024

Issued By

Bryce C. Bird
Director
Division of Air Quality

TABLE OF CONTENTS

GENERAL INFORMATION

CONTACT/LOCATION INFORMATION

Owner Name
MegaDiamond

Source Name
MegaDiamond - Drill Bit Manufacturing Plant, South Facility

Mailing Address
275 West 2230 North
Provo, UT 84604

Physical Address
2185 Tracy Hall Parkway
Provo, UT 84606

Source Contact
Name: Lonnie Allen
Phone: (281) 881-9223
Email: LAllen2@slb.com

UTM Coordinates
446,504 m Easting
4,450,470 m Northing
Datum NAD83
UTM Zone 12

SIC code 3544 (Special Dies & Tools, Die Sets, Jigs & Fixtures, & Industrial Molds)

SOURCE INFORMATION

General Description
MegaDiamond is the owner/operator of a drill bit manufacturing plant in Provo, Utah County. MegaDiamond designs, manufactures, and markets ultra-hard materials that are used in cutting tools, construction, oil and gas drilling, and mining applications. Electrically powered, multidirectional hydraulic presses are used to produce polycrystalline diamond and cubic boron nitrate-cutting heads under high-pressure conditions. Abrasive blasting cabinets are used for surface preparation and finishing operations. Each cabinet vents to a baghouse filter. MegaDiamond operates a granite cutter and multiple grinders for product shaping and finishing.

NSR Classification
Minor Modification at Minor Source

Source Classification
Located in Southern Wasatch Front O3 NAA, Provo UT $PM_{2.5}$ NAA
Utah County
Airs Source Size: B

Applicable Federal Standards
MACT (Part 63), A: General Provisions
MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Project Description
MegaDiamond is requesting the following modifications to its Approval Order (AO):

1. Add two (2) abrasive blasting units to the blaster grinder room.
2. Update the abrasive blasting process.
3. Increase abrasive blast media usage to 13,016 tons per year.
4. Update the solvent cleaning process.
5. Remove three (3) Centor furnaces (listed as Equipment ID 11.A.10 in AO DAQE-AN160760001-22).
6. Update site-wide emission calculations and potential to emit.

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO_2 Equivalent	3249.58	3361.00
Carbon Monoxide	2.26	2.37
Nitrogen Oxides	2.67	2.80
Particulate Matter - PM_{10}	9.93	12.88
Particulate Matter - $PM_{2.5}$	3.58	5.97
Sulfur Dioxide	0.02	0.02
Volatile Organic Compounds	-1.05	1.73

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Generic HAPs (CAS #GHAPS)	102	106
	Change (TPY)	**Total (TPY)**
Total HAPs	-1.15	0.05

SECTION I: GENERAL PROVISIONS

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of two (2) years. [R307-401-8]

I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]
I.8	The owner/operator shall submit documentation of the status of construction or modification to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18]

SECTION II: PERMITTED EQUIPMENT

II.A THE APPROVED EQUIPMENT

II.A.1	**MegaDiamond - South Facility**
II.A.2	**Three (3) Abrasive Blasting Cabinets (Two (2) New)** Blaster Grinder Room Control: Blaster Grinder Baghouse, 4,000 acfm Manufacturer: Kelco
II.A.3	**One (1) Abrasive Blasting Cabinet** Glass Bead Blaster Control: Glass Bead Baghouse, 250 acfm Vents Internally
II.A.4	**Three (3) Abrasive Blasting Cabinets** Asphalt Finishing Control: Asphalt Finishing Baghouse Manufacturer: Guyson Vents Internally
II.A.5	**Granite Cutter** Control: Baghouse, 4,500 acfm
II.A.6	**Grinding Operations** Various Grinders Control: Two (2) Baghouses, 4,000 acfm each One (1) Vents Internally

II.A.7	**Solvent Cleaning Process (New)** Isopropanol is used for cleaning and surface preparation. Vents Internally
II.A.8	**One (1) Solvent-Based Parts Washer**
II.A.9	**Emergency Generator** Rating: 10 kW (13.4 hp) Fuel: Natural Gas Manufacturer Date: 1999
II.A.10	**Various Comfort Heaters** Fuel: Natural Gas Rating: All less than 5 MMBtu/hr
II.A.11	**Cubic Presses** Electric Hydraulic Presses ***Listed for informational purposes only.

SECTION II: SPECIAL PROVISIONS

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	**Site Wide Requirements**
II.B.1.a	The owner/operator shall not allow visible emissions to exceed the following limits: A. All baghouse and fabric filter systems - 10%. B. Natural gas emergency generator - 10%. C. All other points - 20% opacity. [R307-305-3, R307-401-8]
II.B.1.a.1	Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-401-8]
II.B.2	**VOC Requirements**
II.B.2.a	The owner/operator shall not emit any HAPs from evaporative sources (painting, printing, coating, and/or cleaning) on site. [R307-401-8]
II.B.2.b	The owner/operator shall not emit more than the following from evaporative sources on site: 1.20 tons per rolling 12-month period of isopropanol. 1.57 tons per rolling 12-month period of all VOCs combined. [R307-401-8]

II.B.2.b.1	The owner/operator shall calculate a new 12-month total by the 20th day of each month using data from the previous 12 months. The owner/operator shall use a mass-balance method to calculate emissions from evaporative sources. The owner/operator may use the following equations with applicable units to comply with the mass-balance method: VOCs = [% VOCs by Weight/100] x [Density] x [Volume Consumed]. [R307-401-8]
II.B.2.b.2	The owner/operator shall use a mass-balance method to quantify any amount of VOCs reclaimed. The owner/operator shall subtract the amount of VOCs reclaimed from the quantities calculated above to provide the monthly total emissions of VOCs. [R307-401-8]
II.B.2.b.3	The owner/operator shall keep records each month of the following: A. The name (as per SDS) of the VOC-emitting material. B. The maximum percent by weight of VOCs in each material used. C. The density of each material used. D. The volume of each VOC-emitting material used. E. The amount of VOCs emitted from each material. F. The amount of VOCs reclaimed and/or controlled from each material. G. The total amount of VOCs emitted from all materials (in tons). [R307-401-8]
II.B.2.c	The owner/operator shall comply with all applicable rules in R307-304. Solvent Cleaning and R307-335. Degreasing. [R307-304, R307-335]
II.B.3	**Abrasive Blasting, Grinding, and Granite Cutting Requirements**
II.B.3.a	The owner/operator shall not conduct the following operations for more than the following: A. Granite cutting operations for more than 1,700 hours per rolling 12-month period. B. Grinding operations for more than 6,600 hours per rolling 12-month period. C. The press debris process for more than 2,400 hours per rolling 12-month period. D. All blasting operations for more than 3,440 hours per rolling 12-month period. [R307-401-8]

II.B.3.a.1	The owner/operator shall: A. Determine hours of operation by monitoring and maintaining an operations log for each process. B. Record hours of operation each day for reach process. C. Use the hours of operation to calculate a new rolling 12-month total by the 20th day of each month using data from the previous 12 months for each process. D. Keep hours of operation records for all periods the plant is in operation for each process. [R307-401-8]
II.B.3.b	The owner/operator shall not use more than 13,016 tons of abrasives per rolling 12-month period in the six (6) abrasive blasting cabinets in the blaster grinder room and asphalt finishing room. [R307-401-8]
II.B.3.b.1	The owner/operation shall: A. Determine consumption by receipts, records, or other method acceptable to the Director. B. Record consumption on a monthly basis. C. Use the consumption data to calculate a new rolling 12-month total by the 20th day of each month. D. Keep records of consumption for all periods the plant is in operation. [R307-401-8]
II.B.3.c	The owner/operator shall comply with all applicable rules in R307-306. PM_{10} Nonattainment and Maintenance Areas: Abrasive Blasting. [R307-306]
II.B.3.d	The owner/operator shall use a baghouse to control particulate emissions from the blasting cabinets. The baghouse shall meet a PM_{10} removal efficiency of no less than 90%. [R307-401-8]
II.B.3.d.1	To demonstrate compliance with the above condition, the owner/operator shall maintain records of the manufacturer's emissions guarantee for the installed abrasive blasting baghouse. [R307-401-8]
II.B.3.e	The owner/operator shall use a baghouse to control particulate emissions from the grinding and granite cutting operations. [R307-401-8]
II.B.3.f	The owner/operator shall keep a record of the manufacturer’s specifications and maintenance recommendations for the baghouses that vent to the atmosphere. [R307-401-8]
II.B.3.g	The owner/operator shall install a manometer or magnehelic pressure gauge to measure the static pressure differential across each baghouse. [R307-401-8]
II.B.3.g.1	The pressure gauge shall be located such that an inspector/operator can safely read the indicator at any time. [R307-401-8]
II.B.3.g.2	The pressure gauge shall measure the static pressure differential in 1-inch water column increments or less. [R307-401-8]

II.B.3.h	During the operation of each baghouse, the owner/operator shall maintain the static pressure differential within the range recommended by the manufacturer for normal operations. [R307-401-8]
II.B.3.h.1	The owner/operator shall record the static pressure differential at least once per operating day while the baghouse is operating. [R307-401-8]
II.B.3.h.2	The owner/operator shall maintain the following records of the static pressure differential: A. Unit identification; B. Manufacturer recommended static pressure differential; C. Date of reading; D. Daily static pressure differential readings. [R307-401-8]
II.B.3.i	At least once every 12 months, the owner/operator shall calibrate the pressure gauge in accordance with the manufacturer's instructions or replace the pressure gauge. [R307-401-8]
II.B.3.i.1	The owner/operator shall maintain records of the pressure gauge calibrations and replacements. [R307-401-8]
II.B.4	**Emergency Engine Requirements**
II.B.4.a	The owner/operator shall not operate the emergency engine on site for more than 100 hours per rolling 12-month period during non-emergency situations. There is no time limit on the use of the engines during emergencies. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.4.a.1	To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the 20th day of each month using data from the previous 12 months. Records documenting the operation of each emergency engine shall be kept in a log and shall include the following: A. The date the emergency engine was used. B. The duration of the operation in hours. C. The reason for the emergency engine usage. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.4.a.2	To determine the duration of operation, the owner/operator shall install a non-resettable hour meter for the emergency engine. [R307-401-8]
II.B.4.b	The owner/operator shall only use natural gas as fuel in the emergency engine. [R307-401-8]

PERMIT HISTORY

This Approval Order shall supersede (if a modification) or will be based on the following documents:

Supersedes	AO DAQE-AN160760001-22 dated February 18, 2022
Is Derived From	NOI dated August 22, 2023
Incorporates	Additional Information dated January 8, 2024
Incorporates	Additional Information dated February 7, 2024
Incorporates	Additional Information dated April 18, 2024

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by Environmental Protection Agency to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - Title 40 of the Code of Federal Regulations Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal Division of Air Quality use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - Title 40 of the Code of Federal Regulations 52.21 (b)(49)(i)
GWP	Global Warming Potential - Title 40 of the Code of Federal Regulations Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds