DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

B413426040

FACILITY: BARRETT PAVING MATERIALS INC	**SRN / ID:** B4134
LOCATION: 2040 BARRETT RD, TROY	**DISTRICT:** Southeast Michigan
CITY: TROY	**COUNTY:** OAKLAND
CONTACT:	**ACTIVITY DATE:** 07/18/2014
STAFF: Iranna Konanahalli **COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: FY 2014 level-2 scheduled annual inspection of Barrett Paving Materials, Inc.	
RESOLVED COMPLAINTS:	

BARRETT PAVING MATERIALS, INC. (B4134)
2040 Barrett Road
Troy, Michigan 48084-5373

ROP Opt-out Permit-to-Install No.: 485-73H dated January 30, 2006 (485-73F dated May 9, 2001 voided on April 22, 2004 and revised to 485-73G dated April 16, 2004 to burn RUO, 485-73G voided on January 30, 2006 and revised to 485-73H to revise sulfuric acid limit)

Consent Order: AQD No. 24-2000 dated September 29, 2000.

NSPS: 40 CFR, Part 60, Subpart I, Standards of Performance for Hot Mix Asphalt Facilities. Category II fee subject facility.

Phone: 248-362-0850; Fax: 248-362-1894

On July 18, 2014, I conducted a level-2 scheduled annual inspection of Barrett Paving Materials, Inc. ("Barrett" or "the company") located at 2040 Barrett Road, Troy, Michigan 48084-5373. The inspection was conducted to determine compliance with Federal Clean Air Act; Article II, Air Pollution Control, Part 55 of Act 451 of 1994; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; federal NSPS (40 CFR, Part 60, Subpart I, Standards of Performance for Hot Mix Asphalt Facilities); Consent Order: AQD No. 24-2000; and PTI No. 485-73H.

During the inspection, Mr. Kevin Cece (Phone: 248-362-0850; Fax: 248-362-1894), Plant Superintendent, assisted me

Ms. Danielle Hampsher, (Phone: 734-483-4775, Cell: 734-216-6284) Safety and Environmental Officer, and Mr. Mike Davis (Phone: 734-483-4775, Cell: 734-646-4269), Regional Plant Manager, were not present.

Mr. Robert B. Downie (Phone: 734-483-4775, Cell: 313-304-0814, fax: 734-483-4774), General Superintendent of all Barrett's Michigan plants, retired about 2012. Mr. Charlie Sweet (Phone: 734-483-4775), who used to be Plant Superintendent at Troy, replaced Mr. Downie as General Superintendent.

Asphalt cement (bitumen)

Asphalts (also known as bitumen) are high molecular weight, high boiling point fractions of crude oil. It may be noted that all crude oils do not produce asphalt; it depends upon crude

assay. Asphalts are high molecular weight complex molecules, black in color, soluble preferably in aromatic solvents and carbon disulfide. Asphalts do not have general representative formula. They contain 35-50% oil, 5-20% resins, 20-30% asphaltenes up to 10% acids (and others). Asphalts may contain up to 85% carbon with molecular weight over 1,000.

Bitumen is the residual product obtained from crude distillation. It is solid at ambient temperatures and has very high viscosity. Asphalt is bitumen in oil. Bitumen obtained from crude distillation unit is poor in quality; therefore, it is processed by blowing hot (200-210° C for 10-15 hours) air to obtain suitable grades. Its quality is specified by **softening point** and **penetration index**. Softening point is determined using Ball (steel ball weighing 3.5±0.05 grams; 9.53 mm dia) and Ring test. As bitumen is heated softening occurs and the softening temperature is measured per the method. Penetration index is measured by standard needle test under 100 grams load at 25° C for 5 seconds. **Ductility**, measured using Ductilometer, is a property needed for road applications. API gravity may also be specified.

Degrees API = (141.5/ρ) - 131.5
ρ = specific gravity of petroleum product (asphalt) at 15.6° C / 15.6° C
Degrees API of water (specific gravity of water ρ =1) = 10

From the above definition, heavy crudes have lower API index and likewise lighter crudes have higher API index.

Hot mix asphalt (HMA) paving materials are a mixture of size-graded, high quality aggregate (which can include reclaimed asphalt pavement [RAP]), and liquid asphalt cement, which is heated and mixed in measured quantities to produce HMA. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture.

Barrett Paving Materials, Inc. is located amid light industrial and office buildings. The Company is a bituminous concrete hot-mix manufacturing facility. The plant produces asphalt products for driveways, parking lots and other non-highway applications. Occasionally, it supplies the hot mix for municipal road paving. Production, over the years has fluctuated between 70,000 to 150,000 tons of asphalt per year. The facility generally operates 10 hours per day, 5 days per week, and about 30 to 35 weeks per year. Raw materials consisting of sand, aggregate, stone, and R.A.P. and end-cut roof shingles (started using since CY2007) are stored on site in piles. A contract crusher comes in once or so during a paving year to crush RAP to specification size; the crusher was here in July 2014. Per my recommendations, the portable crushing plant is located (on site for couple times a year) away from neighboring businesses and evergreen plants are grown as a sight and dust barrier.

End-Cut Shingles

Barrett started using end-cut shingles as RAP since CY2007 at the Troy facility. While tear-off shingles are "used shingles" removed from roof after decades of weathering under sun's UV radiation, snow, rain, etc., end-cut shingles are end-cuts as result of trimming shingles to desired size from freshly manufactured batch. Hence, while tear-off shingles contain contaminants such as paper, plastic, wood, nails, etc., end-cuts do not contain these contaminants. Both types of shingles contain about 30 percent asphalt cement. Shredding of end-cut shingles takes place in Burton (near Flint) Plant. End-cuts were obtained free of cost in CY 2008 from asphalt shingles manufacturers in Ohio; Barrett paid for transportation. Now (CY2009-2014), Barret pays for the end-cut shingles. During CY2007, Barrett conducted

stack test at Burton for SO2, CO, PM, HCl, BTEX. Pending sufficient production, Barrett was expected to conduct in CY2008 further tests at Burton for acrolein, arsenic, formaldehyde, lead, manganese, naphthalene, nickel, and sulfuric acid mist, etc. End-cut shingles were / will be used in product mix during the stack testing. At this time (CY2008-14) Barrett has decided against using tear-off shingles. On May 7, 2008, AQD collected a sample of shredded shingles.

During conference call of March 24, 2008, Mr. Jerry Avery, Field Operations Supervisor, stated that MDEQ-AQD must treat shingles as RAP and that a letter of violation be sent if VE readings indicate change in method of operation. However, if Rule 201 permit is needed stack test will be required.

Bill Presson Memo dated March 17, 2010, states that Recycled Asphalt Shingles (RAS) should be treated as Reclaimed Asphalt Pavement (RAP); i.e., RAS ≠ RAP but RAS should be treated as RAP for the purpose of permit reviews.

It may be noted that Barrett started (CY 2007 at Troy) using shingles without informing MDEQ-AQD's SEMI DO although it informed Lansing DO and Permit Section. During 2008-14, Barrett continued to use the shingles.

Super-pave job that requires addition of polymers to hot mix is not done at this facility. However, a polymer mix may be prepared per a customer's spec. Super-pave mix has not been done at Troy since 2007.

Pursuant to PTI No. 485-73F (revised to 485-73G to burn RUO and 485-73G is in turn revised to 485-73H to extend stack height in exchange for sulfuric acid emission limit increase), about 2001, Barrett replaced existing 300 tons per hour co-current, or parallel-flow, hot mix drum dryer with brand new 300 tons per hour counter-current, or counter-flow, Triple-drum-dryer (CMI Corporation). The Triple-drum has precisely-designed zones for heating virgin materials and RAP. The radiating combustion zone, where fuel is fired, transfers some heat to RAP through a metal barrier wall, which separates RAP from hot combustion gases. The burner is equipped with electronic combustion control (ECC) system to achieve complete combustion. ECC is computerized automatic system that precisely controls air-to-fuel ratio. Virgin aggregates are superheated by the hot combustion gases. All moisture is driven off RAP in a separate zone (outer drum, where RAP dehumidification occurs) ensuring that moisture does not mix with combustion gases. If moisture mixes with combustion gases, it has a quenching effect; about 1,000 BTU is absorbed by one pound of evaporating water. Therefore, RAP does not seek heat from superheated virgin aggregates for drying (dehumidification) but only for melting. While RAP, which does not come in direct contact with the combustion gases, moves in the outer drum by gravity, virgin aggregates, which come in direct contact with combustion gases, move in the inner drum by gravity as well. At the end of the drum, dehumidified RAP (hot, solid and moisture-free) and superheated virgin aggregates join and exchange heat to melt RAP; superheated aggregates give up some heat to RAP to bring about its melting. Asphalt oil (300 degrees Fahrenheit) is added to obtain the hot-mix asphalt product (350 degrees Fahrenheit). Because RAP and asphalt oil never come in contact with combustion gases, odor from the stack emissions is assumed to be negligible or nonexistent. However, there may be intermittent odor from the load-out area, which is not controlled. The load-out emissions are often referred to as "blue smoke".

The Triple-drum's burner is capable of firing 100,000 scf of natural gas (1,000 BTU per scf) or 725 gallons per hour of No. 2 Distillate oil (138,000 BTU per gallon); 100 million BTU per hour. With the approval of 485-73G, which is revised to 485-73H as of January 30, 2006, to

increase sulfuric acid limit in exchange for the stack height increase to 40 feet from 35 feet, while recycled used oil (RUO) is a principal fuel, No. 2 fuel oil is used only during start-up and shutdown. During the shut down No. 2 fuel oil is used to flush the lines of RUO in order to minimize gunk deposits in fuel lines and burners. At any rate, natural gas was only fuel burnt during CY 2006 because stack height increase was not built yet. Barrett started burning natural gas only (October 2005) due to failing a sulfuric acid emission limit (PTI No. 485-73G, SC1.1s limit : 2.5 E-03) during the August 2005 stack test. However, Barrett started burning RUO again since May 14, 2007, upon extending stack from 35 feet to 40 feet; the PTI No. 485-73H (SC 1.28) required stack extension was accomplished by May 7, 2007, after obtaining the non-conforming waiver from City of Troy. Again in CY2009, Barrett switched back to NG-only mode due low natural gas prices. Barrett continued in NG mode in 2010 thru 2014 as well; i.e. no RUO usage.

Startup and shutdown procedure

The plant computer controls startup and shutdown. Based upon operator inputs (mix design, tons per hour product, number of tons), the computer will start cold feed bins and asphalt cement (hot) such that all materials meet at the correct time at the drum. Some startup product is sent to recycle pile as does not meet the quality requirements.

When shutting down the plant, the computer strops cold feed bins first. Material that is in the process is allowed to complete the production cycle. Compute stops asphalt cement supply upon sensing that cold materials is not coming through.

In addition, there are procedures for hot starts, hot stops, malfunction stops.

Asphalt hot-mix product

The Barrett Paving Materials facility was operational during some of my visits, producing at or around 120-200 tons per hour of hot asphalt mix. Although design capacity is 300 tons per hour, the plant produced a maximum of 230 tons per hour. At the time of inspection, the production was 178 tons per hour (07/18/2014) at 330 degrees Fahrenheit. Design capacity of 300 tons per hour can be achieved only under ideal conditions such as all materials are dry or moisture-free; during inspections moisture content of the materials was 3-5% (on 07/18/2014, RAP = 5.3% moisture and Aggregates = 4.2% moisture). Product temperature was 350 degrees Fahrenheit. About 40-45 percent RAP (Recycled Asphalt Product) in the final product is used (on 07/18/2014: 48% RAP). In addition, end-cut shingles (up to 3-4%), which may be considered RAP per Mr. Jerry Avery, is also used, to save on asphalt cement (AC) costs; shingles are assumed to contain 30% AC. Asphalt cement from petroleum refinery costs about $700 per ton (July 2008). Recently (CY2009-2014), asphalt prices have come down as crude oil prices dropped from $140 to $60 per barrel (42 gallons). Hence, use of a ton of end-cut shingle saves about $100. Crude prices have stabilized around $100 per barrel.

Baghouse

While old hot mix drum was replaced with the-state-of-the-art Triple-drum-dryer and the original baghouse (Aeropulse Model 936-10) is still being used. There are 936 bags in 14 compartments. Each bag has dimension of 4 inches diameter and 14 feet height. In the spring of 2006, Barrett replaced all bags with brand new bags; since then and until July 2011, the bags are not replaced. In CY2014 (beginning of paving season) all bags, except 3 bags, were found in good condition upon black light inspection. The dust on bag surface is cleaned using a pulse-jet of compressed air of duration 400 milliseconds, every 20 seconds (changed

from 10 seconds to 25 seconds due to new bags and again from 25 sec to 20 sec in CY 2008 upon some aging of bags. CY 2014 pulse rate is 1 every 11 sec). There are three product silos. There are three 1500-gallon asphalt oil tanks. Asphalt oil is maintained at 300 degrees Fahrenheit. Natural gas is used to heat a heat transfer fluid and it coils through asphalt to maintain the production temperature (300 °F). There is one 10,000-gallon fuel oil tank which is used as RUO tank; one 500-gallon is used for fuel oil which is used during start-up and shut-down when operating in RUO mode.

Crude Glycerin

During 2014 inspection, I observed visible emissions from southernmost silo (upto 50% opacity). Visible emissions may be due to Crude Glycerin that is added to prevent shingles asphalt clumps. Louis Dreyfus Commodities' (Crude Glycerin 13085-13, Tank 13 containing 81.6 % glycerin) formulation is added to RAP.

Additional inspections will determine if Rule 336.1301 opacity violation is warranted.

Cyclone

One cyclone, which collects relatively large particles, was installed during the winter of CY 2006 to reduce the dust load on the baghouse. Pre-cleaning with the cyclone saves the bags from wear and tear because large particles of high momentum are collected in a cyclone rather than impinging on bag walls. Approximately, 50% dust (large particles) is collected by the cyclone and the rest 50% dust (fine particulates) that escapes through the cyclone uncollected due light weight is collected by the baghouse.

2001 & 2003 Stack Tests (PTI No. 485-73F)

On October 18 & 19, 2001, Barrett conducted stack sampling for particulate matter, multi-metals, formaldehyde, BTEX (benzene, toluene, ethyl-benzene, and xylene) and acrolein (SC 19,SC 21). Multi-metal and BTEX sampling results were rejected (see Interoffice Communication dated February 15, 2002 by Ms. Susan Kilmer) and the letter of violation dated March 15, 2002, was issued. However, particulate matter (0.0347 grains per dscf and 7.64 pounds per hour) and naphthalene (24.7 micrograms acf and 0.0032 pounds per hour) results were accepted (SC 1.1a (4 in Old PTI) limit: 0.04 grain of PM per scf & SC 19). BTEX sampling was again performed on June 25, 2003, by Applied Science Technology, Inc. (ASTI). ASTI reported (AQD received on August 25, 2003) <39 micrograms per actual cubic meters emissions for benzene, ethyl benzene and toluene and < 78 micrograms per actual cubic meters for xylenes.

Based upon October 2001 tests and approximately 250 tons of hot-mix per hour production, particulate matter (7.64 pounds per hour => 0.031 Vs PTI 485-73H 1.1b limit 0.04 pound per ton) and naphthalene (0.0032 pounds per hour => 0.0000128 Vs PTI 485-73H 1.1n limit 0.001 pound per ton) emission rates in pounds per ton of hot-mix asphalt product are in compliance with the permit limits. BTEX emission rates (June 25, 2003, stack test) are reported in micrograms per actual cubic meters ($\mu g/m^3$) and are below detection limits. It is difficult to compare these units with the PTI No. 485-73H (1.1j, 1.1k, 1.1l, 1.1m) emission limit rates. Because the reported BTEX emission rates are below detection limits, the reported rates are deemed in compliance.

The original multi-metal test (October 18 & 19, 2001) was rejected by AQD (see Interoffice Communication dated February 15, 2002 by Ms. Susan Kilmer). Retest sampling for multi-

metals (MM) and BTEX / naphthalene was performed on November 7 & 8, 2002 and for formaldehyde / acrolien was conducted on October 2, 2001. According to Interoffice Communication dated February 3, 2003, by Ms. Susan Kilmer, formaldehyde, acrolein and multi-metals results are acceptable to AQD-TPU and may be used for compliance determination. However, due to laboratory problems, November 7 & 8, 2002, sampling results for BTEX were not acceptable. At any rate, June 25, 2003, BTEX sampling results are acceptable as stated above. Stack test (November 2002) reported emission rates in pounds per hour of formaldehyde (0.15 pounds per hour), acrolein (0.0018 pounds per hour), Arsenic (0.00095 pounds per hour), Manganese (0.029 pounds per hour), Nickel (0.0019 pounds per hour) and Lead (0.00063 pounds per hour) may be used for compliance determination. Approximately 250 tons per hour of hot-mix product was produced during the test. Calculated emission rates in ponds per ton of hot-mix are: formaldehyde (0.15 pounds per hour => 0.0006 Vs limit 0.01 pound per ton), acrolein (0.0018 pounds per hour => 0.0000072 or 7.2E-06 Vs limit 4.5E-05), Arsenic (0.00095 pounds per hour => 0.0000038 or 3.8E-06 Vs limit 2.0E-06), Manganese (0.029 pounds per hour => 0.000116 or 11.6 E-05 Vs 3.85E-05), Nickel (0.0019 pounds per hour => 0.0000076 or 7.6E-06 Vs. 6.3E-06) and Lead (0.00063 pounds per hour => 0.00000252 or 0.25E-05 Vs1.5E-05). Repeat MM stack test results were missing in AQD' files for some time.

Mr. Dave Riddle of AQD-Permits looked into marginally excessive emission rates for Arsenic (Ar), Manganese (Mg) and Nickel (Ni). He would take into account stack extension from 35 feet to 40 feet tall and remodel the stack test emission rates for ambient impact. Mr. Riddle said in CY2008 may revise PTI No. 485-73H limits for Arsenic, Manganese and Nickel.

Per September 2, 2008, e-mail from Mr. Riddle, the contemporary limits fro asphalt plants were:

MM	2008 PTI limits	Stack test emission rates	PTI 485-73H limits	Remarks
Ni	1.0 E-04	7.6 E-06	6.3 E-06	In compliance with 2008 limits
Mg	5.0 E-05	11.6 E-05	3.85 E-05	Stack ht increase from 35' to 40' results in PAI of 0.039 µg/m3, which is 77% of ITSL for Manganese.
Ar	1.0 E-06	3.8 E-06	2.0 E-06	Stack ht increase from 35' to 40' results in PAI of 0.000065 µg/m3, which is 33% of ITSL for Arsenic

Due to increase in stack height from 35 feet to 40 feet as a result of the sulfuric acid deal, Predicted Ambient Impacts (PAIs) for both Manganese and Arsenic are still below corresponding ITSLs. So, either PTI 485-73H limits for Ar and Mg must be revised or the stack tested emission rates may be deemed to be in compliance with PTI 485-73H limits. By 2011, the stack test results are deemed to be in compliance due to stack height increase.

2005 Stack Tests

During August 2-3, 2005, NTH Consultants conducted sampling for H2SO4 and HCl (485-73G, SC 1.13). Per the test results, sulfuric acid mist and hydrogen chloride emissions were 1.15 E-02 or 0.0115 (485-73G, SC 1.1s limit = 2.5 E-03) and 1.98 E-03 (485-73G, SC 1.1u limit = 6.0 E-03) pounds per ton of asphalt produced, respectively. PTI No. 485-73H revised the sulfuric acid limit to 0.013 pound per ton of asphalt produced (485-73H 1.1s) in exchange for increasing the stack height to 40 feet from 35 feet. Revised PTI No. 485-73H (SC1.13) requires stack test to be performed again to show compliance with 485-73H SC1.1s (0.013 pounds of H2SO4 per ton of product). AQD may deem that August 2005 stack test (0.0115 pounds of H2SO4 per ton of product) is sufficient for compliance with SC 1.13 and that repeat test is not necessary. MDEQ-AQD's Tom Maza observed August 2005 stack sampling for hydrogen chloride (HCl) and Sulfuric Acid Mist (H2SO4) and his findings are reported in Activity Report dated August 11, 2005.

Recycled used oil (RUO) – not used since 2009

With the approval of 485-73G, while recycled used oil (RUO) is a principal fuel, No. 2 fuel oil is used only during start-up and shutdown (PTI No. 485-73H, SC 1.2); in recent years (2009-2014) only NG used due to low prices. During the shut down No. 2 fuel oil is used to flush the lines of RUO in order to minimize gunk deposits in fuel lines and burners. Warner Petroleum supplies RUO (4,000 ppm halogen), which is mostly crank case oil with this supplier. RUO need not be heated to pump i.e. viscosity at ambient conditions is not too high. However RUO is heated to facilitate atomization; heated RUO helps generate smaller particles for enhanced combustion. In the interim, until stack height was increased to 40 feet from 35 feet, only fuel burned was natural gas. However, upon increasing stack height from 35 ft to 40 ft (PTI No. 485-73H, SC 1.28), Barrett once again started firing RUO since May 7, 2007. Hazardous waste is not burned (PTI No. 485-73H, SC 1.3). During CY 2008, RUO costs $1.90 versus $3.90 for No.2 fuel oil. Asbestos containing materials are not used (PTI No. 485-73H, SC 1.4). Up to 50 percent RAP is used in hot mix product (PTI No. 485-73H, SC 1.5). Use of RAP makes economic and environmental sense. While RAP is free with $2.00 per ton cost for crushing, aggregates cost $10-18 per ton. Asphalt cement costs about $700.00 per ton (July 2008); price has come down in CY2009. Crude oil prices are about $100 per barrel; asphalt price depends on crude price. RAP contains 4-5 percent asphalt cement providing additional savings and benefit for using RAP. For May 2014, Barrett produced 22,686 tons per month (June 2014: 13,831 tons per month) and 125,506 tons per year (CY2013) of hot-mix asphalt product (PTI No. 485-73H, SC 1.6 limit: 600 tpy). Barrett produces about 150-200 tons per hour (July 18, 2014: 180 tons per hour) of hot mix asphalt (PTI No. 485-73H, SC 1.7 limit: 300 tons per hour of hot mix asphalt (HMA) materials). Design capacity of 300 tons per hour can be achieved under ideal conditions such as all materials are dry or moisture-free; during inspections moisture content of the materials was 4-5%. The production records are kept via daily sheet. It may be noted that due to low natural gas prices, Barrett burned only natural gas during 2009-14.

Compliance Monitoring Plan (CMP) –NG only mode 2009-2014

Compliance Monitoring Plan (CMP) per Appendix C is implemented (PTI No. 485-73H, SC 1.8). Mr. Sweet, Cece collects two samples from each delivery truck or load or batch. Mr. Sweet / Cece also conducts total halogen test using Chlo-D-Tect kit. Warner Petroleum Corporation (248-386-4350) of Clare, Michigan, also gives Mr. Sweet a Certificate of Analysis with each batch or load of RUO (4,000 ppm halogen) supply. Once a month, Mr. Downie / Sweet picks a random sample from the month's sample collections and sends it to a testing laboratory (Midwest Analytical Services, Inc. of Ferndale 248-591-6600) for analysis with

respect to parameters specified in PTI No. 485-73H, SC 1.3. Appendix A fugitive dust plan is implemented (PTI No. 485-73H, SC 1.9). 5 mph speed limits are posted. Haul vehicle traffic areas are paved. Paved roads are swept once a week (Tuesdays or Wednesday; 1 / wk in 2011 due to low production); water is applied on as needed basis on the paved areas. CaCl2 (once in July 2014, 07/16/2014) is applied on unpaved travel surfaces; water is not applied on theses areas. Dust control activities are noted on daily sheets. Combustion Services, Inc. (440-572-0329) of Strongsville, Ohio, conducts burner tune-up every 500 hours of operation; one such tune-up was done on May 20, 2014 (PTI No. 485-73H, SC 1.10, 1.15). Barrett has submitted malfunction abatement plan (MAP) about July 21, 2014 (PTI No. 485-73H, SC 1.11). Ms. Hampsher submitted a revised MAP about July 21, 2014. The baghouse was operating properly as indicated by less than 5 percent opacity and pressure drop of 4.5 (7/18/2014) inches of water (PTI No. 485-73H, SC 1.12); the pressure drop monitoring device (magnehelic) is replaced every year during the first month of the season (PTI No. 485-73H, SC 1.17). The pressure drop display is moved to the computer screen in the control room as required by the Consent Order AQD No. 24-2000(Para. 10.A.2). CMP is not necessary for CY 2014 because RUO is not used this year (CY2014) due to low natural gas prices. As matter of fact, only NG is used during the recent years (2009-2014).

There is the computer display in the control room for aggregates; RAP & asphalt cement (AC) feed rates, RAP & aggregate moisture contents, RAP %, AC %, AC temperature, hot mix product temperature, etc. While the hourly, daily and monthly information can be printed from the computer, the annual information is calculated (PTI No. 485-73H, SC 1.14, SC 1.23). RUO usage rate is recorded on a daily sheet (PTI No. 485-73H, SC 1.18); RUO is not used this year (CY2014) due to low natural gas prices. Only NG is used during 2009-2014.

Criteria and non-criteria pollutants emission calculations per PTI 485-73H emissions factors are done (PTI No. 485-73H, SC 1.19, 1.20, 1.24). Barrett set up a spreadsheet for these calculations; NTH Consultants reviewed the spreadsheet and the cell formulae. Plant and baghouse maintenance information is kept on a daily sheet. Amount (gallons) of No. 2 Fuel Oil & RUO used is kept on fuel usage sheet; RUO certification and analysis is kept in a folder; tons of hot mix produced is tabulated (PTI No. 485-73H, SC 1.22, 1.27). Pounds of CO per ton of HMA information is there on the spreadsheet but the ratio is not calculated (PTI No. 485-73H, SC 1.26).

RUO Samples

During 2009-2014, only natural gas (NG) and not RUO is used due to low NG price.

On August 5, 2008, I sent two RUO samples to MDEQ's Environmental Laboratory for analysis for Arsenic, Cadmium, Chromium, Lead, %Cl, BTU, %S, etc. RUO is not used during CY2009-2011. The DEQ Laboratory reported not-detected for the sample for most pollutants. The Lab reported 18,400 & 18,700 BTU per pound of RUO, 0.42% &0.58% sulfur (PTI No. 485-73H, SC1.3 limit: 1.0 % sulfur by weight) for the samples RUO-B4134-06-05-08 (AB20717)and RUO-B4134-11-16-07 (AB20718), respectively.

Load-out control is not required and is not installed. Load-out area may be a potential source of intermittent fugitive odor that is insignificant and not likely to cause Rule 901 violation. Stack odor emissions are practically non existent because the process uses counter-current drum and combustion gases never come in contact with asphalt or RAP. However, there is no odor complaint at this time.

Appendix A: Management Plan for the Control of Fugitive Dust.

Pressure drop across bags is monitored continuously and recorded on a daily-sheet. ΔP is maintained between 4.5 and 5.5 inches of water; ΔP = 4.9 inches water on 07/18/2014. Inlet and outlet temperature alarms for baghouse are set at 350° (inlet) and 375° F (outlet). The dust from the baghouse is returned to hot mix drum. Per April 2014 Northville smoke school, Mr. Charlie Sweet, and Ms. Danielle Hampsher, (Phone: 734-483-4775, Cell: 734-216-6284) safety environmental officer, are certified opacity observers. Mr. Cece is not certified in 2014. In the beginning of each season, black light inspections are conducted and the problems are corrected before starting up the plant. Spare bags (about 50) are kept on site and inspection records are maintained.

Paved roads are swept once per week (Tuesdays or Wednesdays). Speed limit posted is 5 miles per hour and the signs are conspicuously posted. Frequently traveled yard areas are paved. Calcium chloride is applied (once every 3-4 weeks; 07/16/2014) on unpaved areas. Piles are not watered.

Additional area of the yard was paved during June-July 2007 to improve dust control. Entire paved area is swept once a week.

An Automated system pumps odor neutralizer known as ECOSORB into AC tank. ECOSORB continued to be used as of June 2011.

Appendix B:

Pressure drop across bags is maintained at 3.5-5 inches of water. Temperature set-points for bags are 350 (inlet) and 400 (outlet) degrees Fahrenheit. Black light inspections are performed at the beginning of each paving season; 3 bags were replaced in 2014. Two boxes of bags are kept as inventory; 30 bags per box. Zero bags were installed during CY2007-2011 since none was found defective. Barrett replaced all bags in CY2006.

Black light inspection was done in Apr 2014 and 3 bags were replaced. Raw material piles stones, sand, aggregates and crushed RAP present on the site. Once every 6-8 weeks, RAP crusher comes to the Troy site. Two separate piles of RAP are maintained: one with end-cut shingles and the other without. Max. 5% shingles allowed in RAP by Barrett's own policy due to quality requirements.

FG-Facility

8.9 (PTI No. 485-73H, SC 3.1a: single HAP) and 22.4 (PTI No. 485-73H, SC 3.1b: Aggregate HAPs) tons per year HAP limits are not exceeded.

Consent Order AQD No. 24-2000 dated September 29, 2000.

Consent Order resolved the violations cited the letter of violation dated November 2, 1999. In brief, AQD confirmed violation of PTI No. 485-73E and Rule 336.1301, observed excessive visible emissions due to dust from ill-maintained baghouse ductwork and asphalt hot-mix plat in general. There used to be large number of complaints for decades regarding dust. As a part of solution to the dust problems and complaints, Barrett replaced old plant with brand new triple-drum counter-current plant; same old baghouse continues to be used. However, Barrett replaced all bags in CY2006.

Malfunction Abatement Plan

About July 21, 2014, Barrett submitted Malfunction Abatement Plan (MAP). Please, refer to the attached MAP. AQD reserves the right to require revision (s) to the plan if found deficient based upon inspections and / or complaints.

Conclusions

Berrett appeared to be in compliance with Permit-to-Install No. 485-73H and Consent Order AQD No. 24-2000. Marginally excessive emission rates for Arsenic, Manganese and Nickel (Multi-Metals [MM]) were found during the repeat stack test. AQD did NOT revise PTI No. 485-73H for multi-metals limits and the stack test rates are to be in compliance due to increased stack height (35 ft → 40 ft) and PAI << ITSL per revised modeling.

NAME J Allenandall DATE 07/23/2014 SUPERVISOR CTE