UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

IN THE MATTER OF	)	PETITION FOR OBJECTION
Clean Air Act Title V Permit (Significant Permit Modification) No. 089-43173-00453	)	
Issued to BP Products North America Inc.	)	Permit Number SPM 089-43173-00453
Issued by the Indiana Department of Environmental Management	)	

PETITION REQUESTING THAT THE ADMINISTRATOR OBJECT TO THE ISSUANCE OF PROPOSED TITLE V PERMIT NO. SPM 089-43173-00453 FOR BP PRODUCTS NORTH AMERICA INC.'S WHITING REFINERY

Pursuant to section 505(b)(2) of the Clean Air Act, 42 U.S.C. § 7661d(b)(2), and 40 C.F.R. § 70.8(d), the Environmental Integrity Project and the Hoosiers Chapter of the Sierra Club (collectively, "Petitioners") respectfully petition the Administrator of the U.S. Environmental Protection Agency ("Administrator" or "EPA") to object to the Title V Significant Permit Modification Number 089-43173-00453 ("SPM 43173")[1] issued by the Indiana Department of Environmental Management ("IDEM") on June 2, 2021 to the Whiting Refinery owned and operated by BP Products North America, Inc. ("BP") in Lake County, Indiana. As required, Petitioners are filing this Petition with the Administrator via the Central Data Exchange, and providing copies via both e-mail and certified U.S. mail to IDEM and BP.

EPA must object to SPM 43173 because it is not in compliance with the requirements of the Clean Air Act. Specifically, SPM 43173 eliminates the hourly emission limit of 0.010 pounds per million British thermal units ("lbs/mmBtu") for particulate matter smaller than 10 microns

[1] A full copy of final SPM 43173, including its supporting materials, is available online on IDEM's Air Quality Permit Database: https://permits.air.idem.in.gov/43173f.pdf

("PM_{10}") applicable to each of the five boilers (and its respective duct burner and selective catalytic reduction system) that comprise Whiting Refinery's No. 3 Stanolind Power Station (collectively, "3SPS Steam Plant"), replaces it with an alternative rolling 12-month "tons per year" limit that is unenforceable as a both a legal and practical matter, violates the federally enforceable State Implementation Plan ("SIP") for the State of Indiana, and allows BP to significantly increase emissions of PM_{10} from the 3SPS Steam Plant for no discernible reason except to limit BP's liability for its repeated violations of the 0.010 lbs/mmBtu PM_{10} limit at the 3SPS Steam Plant, which the U.S. District Court for the District of Northern Indiana has recently determined have been ongoing since at least August 3, 2015.[2]

I. PETITIONERS

The Environmental Integrity Project is a non-profit, non-partisan watchdog organization founded to advocate for the effective enforcement of environmental laws, with a specific focus on the Clean Air Act and large stationary sources of air pollution such as Whiting Refinery. EIP has three goals: (1) to illustrate through objective facts and figures how the failure to enforce and implement environmental laws increases pollution and harms public health; (2) to hold federal and state agencies, as well as individual corporations accountable for failing to enforce or comply with environmental laws; and (3) to help local communities obtain protections guaranteed by environmental laws. The Environmental Integrity Project is headquartered in Washington, D.C., and has additional offices and programs in Austin, Texas.

Sierra Club is a national nonprofit organization with 67 chapters and over 780,000 members, including in Indiana, dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and

[2] Opinion and Order, N.D. Indiana 2:19-cv-00337-PPS-JEM (Apr. 14, 2021) [DE 48].

resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. This mission includes protecting air quality and preventing the adverse human health impacts associated with particulate matter pollution. The Indiana Chapter of the Sierra Club, known as the Hoosier Chapter, has approximately 10,300 members, including members who live, work, and recreate in areas affected by air pollution from BP's Whiting Refinery.

On September 6, 2019, EIP filed a complaint on behalf of the Hoosier Chapter of the Sierra Club in the U.S. District Court for the Northern District of Indiana alleging that BP had repeatedly violated the emission limits and retesting requirements for PM_{10} at the units comprising the 3SPS Steam Plant since at least August 3, 2015, and that BP remained in continuing violation of the PM_{10} emission limits. On April 14, 2021, the District Court granted Sierra Club's Motion for Partial Summary Judgment in full, holding that "[t]he Sierra Club has shown there is no genuine dispute of material fact and it is entitled to judgment as a matter of law as to emissions violations at three of BP's stacks and the retesting requirements as well."[3]

II. SUMMARY OF OBJECTIONS

This Petition addresses IDEM's issuance of Title V Significant Permit Modification No. 089-43173-00453, which eliminates the hourly PM_{10} emission limits that are the subject of Sierra Club's ongoing citizen suit and replaces them with a new rolling 12-month limit of 494.99 tons for the combined PM_{10} emissions from (1) the 3SPS Steam Plant; (2) Fluidized Catalytic Cracking Units 500 and 600 ("FCUs 500 and 600"); and (3) Claus Offgas Treaters TGUs A and B ("TGUs"). IDEM adopted the changes proposed in SPM 43173 with only minor revisions that do not address the substantive issues Petitioners raised with "reasonable specificity" in their

[3] Opinion and Order (Apr. 14, 2021) at pgs. 1-2, *supra* footnote 2.

comments. *See* Exhibit 1, Petitioners' Comments on Proposed SPM No. 089-43173-00453 (Dec. 21, 2020) ("Comments"). Petitioners' most specific objections are summarized here:

1) SPM 43173 does not include Lake County SIP requirements that limit PM_{10} emissions from each of the five stacks serving each boiler at BP's 3SPS Steam Plant to 0.0075 lbs/mmBtu and 4.28 lbs/hour. 326 IAC 6.8-2-6(a). Under any reasonable interpretation, the SIP limits at 326 IAC 6.8-2-6(a) apply to stack emissions from each boiler *and* its associated duct burner and SCR device and must be incorporated in any Title V permit. *See* Comments 1-8, Ex. 1 at pgs. 2-4.

2) As shown in Appendix A to the Technical Support Document for SPM 43173, the rolling 12-month PM_{10} limit is based in part upon a calculated potential to emit of 130.18 tons for the 3SPS units. This calculation assumes that boilers and duct burners can operate at their maximum design firing rates year-round, which IDEM represents as 26,036,482 mmBtu. But the 3SPS Steam Plant is not physically capable of achieving that firing rate, as indicated by the evidence provided in Petitioners' Comments. *See* Comments 9-13, Ex. 1 at pgs. 4-5.

- The maximum firing rate for all five boilers and duct burners combined has never exceeded 17.81 million mmBtu over any twelve-month period between 2007 and the end of 2020, which is less than 70% of the annual firing rates IDEM used to calculate the potential to emit of these units.
- The projected actual emissions tables BP provided in support of its application for a significant permit modification in 2018, which IDEM approved, indicated that the 3SPS units combined are not physically capable of exceeding an annual firing rate of 20 million mmBtu without boiler tube replacements to reduce the number of days the boilers must be shut down for repairs.
- The aging boilers must be regularly shut down for repairs and outages can last for months, according to BP's own testimony and records attached to Petitioners' Comments. The Indiana SIP requires that calculations of potential to emit, "take into account the hours of operation each year." 326 IAC 1-2-55.
- Stack tests to measure compliance have all been conducted when boilers and duct burners are well below maximum capacity. According to IDEM, testing at or near the so-called maximum firing rate would be unsafe.

3) The methodology used to quantify PM_{10} emissions from the 3SPS boilers is flawed and substantially understates actual emissions measured through stack testing. Specifically, SPM 43173 will rely upon "F-Factor" emission rates (in pounds per hour) to quantify PM_{10} emissions, which can undercount actual emissions by as much as 25%. *See* Comment 18, Ex. 1 at pgs. 6-7.

4) SPM 43173 does not require that stack testing (which is limited to once every five years) be conducted under representative testing conditions or identify what test methods will be used to determine compliance. IDEM acknowledges that ammonia slip and higher levels of sulfur in the refinery fuel gas burned at the 3SPS Steam Plant can have a significant impact on PM_{10} emissions. But SPM 43173 includes no requirements to determine the

how changes in these operating variables on an hourly, monthly, or annual basis will affect the amount of PM_{10} released the 3SPS Steam Plant, or to require continuous monitoring of these ammonia slip or sulfur content at 3SPS either during or in between stack tests. Because SPM 43173 includes no methods to accurately quantify PM_{10} on a monthly or annual basis, it cannot assure compliance with the new permit limits for this pollutant. *See* Comments 15-17 and 19-21, Ex. 1 at pgs. 6-7.

SPM 43173: Impact on PM_{10} emissions from Boilers

SPM 43173 would authorize more than a hundred tons of additional PM_{10} above the amount allowed under the permit conditions that it is replacing. For example, between 2007 and 2020, the total annual firing rate from all five boiler boilers and duct burners combined has never exceeded more than 17.81 million mmBtu over any 12-month period.[4] Similarly, 12-month coke burn rates have been no higher than 412,245,690 pounds at FCU 500 and 319,202,817 pounds at FCU 600 over the same nine-year period.[5] The table below compares total PM_{10} emissions allowed under Significant Permit Modification 089-32033-00453 (Dec. 3, 2012), the Title V permit in effect since 2012 ("2012 Permit"), to the amounts authorized under SPM 43173.

Table 1

Units	**2012 Permit**				**SPM 43173**
	PM_{10} Limit	Highest 12-month Throughput	Maximum Allowable PM_{10} (tons)	Maximum Allowable PM_{10} (tons)	Maximum Allowable PM_{10} (tons)
3SPS Steam Plant	0.010 lbs/mmBtu	17,811,660 mmBtu	89.01	386.21	490.26[6]
FCU 500	0.9 lb/1,000 lbs coke burn	412,245,690 lbs of coke burn	185.5		
FCU 600	0.9 lb/1,000 lbs coke burn	319,202,817 lbs of coke burn	111.7		

[4] Petitioners' Comments stated that the total firing rate between 2007 and 2018 had never exceeded 16.53 million mmBtu. *See* Comment 10, Ex. 1 at pgs. 4-5. Based on further analysis, the highest firing rate for any 12-month rolling period between 2007 and 2020 is 17.81 million mmBtu.
[5] Petitioners' Comments did not include information about the highest 12-month coke burn rates for the FCUs.
[6] This excludes the 4.73 tons attributable to TGUs A and B. *See* SPM 43173 TSD, Appendix A.

III. PROCEDURAL BACKGROUND

On August 19, 2020, BP filed an application for a significant permit modification seeking to eliminate the hourly PM_{10} emission limits (that are the subject of Sierra Club's ongoing citizen suit) and replace them with a new rolling 12-month limit of 494.99 tons for the combined PM_{10} emissions from the 3SPS Steam Plant, FCUs 500 and 600, and TGUs A and B.[7]

IDEM published notice of the initial draft of SPM 43173, which proposed to grant BP's request, on November 6, 2020 along with its Technical Support Document ("TSD"). *See* Exhibit 2, TSD for SPM 43173.[8] The public comment period for draft SPM 43173 ended on December 20, 2020 (which fell on a Sunday). Petitioners timely filed public comments on draft SPM 43173 on December 21, 2020, the following business day. *See* Ex. 1 at 1. Petitioners provided five attachments with their Comments, which included: Petitioners' Jan. 10, 2020 Comments on Proposed SPM 41980 (Dec. 9, 2019)[9] ("Exhibit 3"); Petitioners' Apr. 8, 2020 Comments on Revised Draft SPM 41980 (Mar. 9, 2020) ("Exhibit 4"); Excel on PSD Permitting Applicability for 3SPS Boiler Re-tubing ("Exhibit 5"); a Dec. 17, 2020 Joint Status Report, N.D. Indiana, 2:12 CV 207 ("Exhibit 6"); and the Aug. 21, 2020 Magistrate's Findings, Report, and Recommendation, N.D. Indiana, 2:19 CV 337 ("Exhibit 7").

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[7] BP simultaneously withdrew its prior application for Title V Significant Permit Modification 089-41980-00453 ("SPM 41980"), which was highly similar to SPM 43173 in that it also proposed to replace the hourly PM_{10} emission limits applicable to the 3SPS Steam Plant with a 12-month rolling basis mass limit. SPM 41980's proposed limit encompassed only the 3SPS Steam Plant, however, and did not include emissions from the FCUs and TGUs.

[8] Though many of Petitioners' exhibits are already in the permit record, Petitioners have provided them as separate exhibits for ease of reference (as SPM 43173 does not provide title pages or page numberings for any of the attachments to the ATSD).

[9] As Petitioners' Comments specifically noted, Petitioners attached and incorporated their prior comments on SPM 41980 to their comments on SPM 43173 precisely because IDEM had not only failed to address any of the deficiencies previously raised by Petitioners with regards to SPM 41980, but in fact exacerbated those deficiencies by expanding the proposed annual limit to include the FCUs and TGUs in addition to the 3SPS Steam Plant. Ex. 1 at 2. Petitioners further noted that IDEM had never provided any response to those comments, and specifically requested that IDEM provide a full response to the concerns that Petitioners had raised in their prior comments and which Petitioners believed were plainly equally applicable to SPM 43173. *Id.*

On April 14, 2021—hours after the District Court for the Northern District of Indiana issued its order finding BP liable for violations of the PM_{10} emissions limits and retesting requirements at the 3SPS Steam Plant—IDEM provided notice of the proposed permit and forwarded the proposed permit to EPA for review. IDEM incorporated full copies of Petitioners' Comments, as well as all five attachments to the Comments, into the administrative record for SPM 43173 as Attachments A through F to IDEM's Addendum to the Technical Support Document (which consisted largely of IDEM's responses to Petitioners' Comments). *See* Exhibit 8, Addendum to the Technical Support Document for SPM 43173 ("ATSD").

While IDEM addressed several of Petitioners' Comments, IDEM did not make any actual changes to the initial draft permit in response aside from minor clerical and typographical revisions. Despite incorporating Petitioners' prior comments on SPM 41980 into the permit record, *see* ATSD Atts. B and C, IDEM expressly declined to address any of the concerns raised in them on the asserted grounds that they "have no bearing on the present action." ATSD at 1.[10]

IDEM forwarded the proposed permit to EPA for review on April 14, 2021, and EPA's 45-day review period ran from April 14, 2021, to May 29, 2021. EPA did not object to SPM 43173, and IDEM issued SPM 43173 on June 2, 2021. Because EPA failed to object to SPM 43173 during its review period, members of the public have 60 days from the end of EPA's review period to petition EPA to object to SPM 43173. The deadline for such petitions is July 28, 2021; accordingly, this Petition is timely filed.

IV. WHITING REFINERY

BP owns and operates Whiting Refinery, which is an oil and gas refinery located at 2815 Indianapolis Boulevard in the City of Whiting, Lake County, Indiana 46394. Whiting is one of

[10] Petitioners note several conditions proposed in SPM 43173 are identical to conditions previously proposed in SPM 41980, and that IDEM relies upon some of the same calculations in SPM 43173 as it did for SPM 41980.

the largest refineries in the United States and the largest refinery operated by BP globally. Whiting Refinery's 3SPS Steam Plant is comprised of five industrial boilers which were originally constructed between 1948 and 1951. Each boiler is equipped with its own flue gas stack, fired by a combination of refinery gas and natural gas in order to produce steam needed at process units throughout the plant, and rated with a nominal maximum heat input capacity of 575 million British thermal units per hour ("mmBtu/hour"). *See* SPM 43173, Condition D.24(x). In 2010 and 2011, BP modified the boilers to equip each with a direct-fired duct burner, each rated at 41 mmBtu/hour, and a Select Catalytic Reduction ("SCR") device to reduce emissions of nitrogen dioxide required by a 2001 federal consent decree. *Id.*

Whiting Refinery is among the ten largest sources of PM_{10} emissions in the state of Indiana, and virtually all of the PM_{10} pollution from the 3SPS Steam Plant is assumed to be smaller than 2.5 microns in diameter ("$PM_{2.5}$"). EPA and numerous peer reviewed studies have found that these finer particles contribute to both acute and long-term health effects, including asthma attacks and heart and lung diseases that lead to premature death.[11] In 2018, EPA estimated that on average, the annual public health cost of $PM_{2.5}$ particles directly emitted from refineries ranges from $350,000 to $790,00 per ton.[12] President Biden has promised that, "Environmental justice will be at the center of everything we do."[13] According to EPA's ECHO database, 75% of the 51,385 people living within three miles of Whiting Refinery are African-American American or Hispanic, while more than half live on limited incomes.[14]

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[11] *See generally* U.S. EPA. *Final Rule: Revisions to the NAAQS for Particulate Matter.* 52 Fed. Reg. 24,634 (July 1, 1987); U.S. EPA. *Final Rule: NAAQS for Particulate Matter.* 78 Fed. Reg. 3086 (Jan. 15, 2013).
[12] U.S. EPA, Office of Air and Radiation. "Technical Support Document: Estimating the Benefit per Ton of Reducing $PM_{2.5}$ Precursors from 17 Sectors." February 2018. Available at: https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf
[13] *See* January 27, 2021 Remarks by President Biden.
[14] "Demographic Profile of Surrounding Area," Detailed Facility Report, Environmental Enforcement and Compliance History Online (ECHO). Available at: https://echo.epa.gov/detailed-facility-report?fid=110000398338 (last checked June 30, 2021).

V. (RELEVANT) TITLE V PERMITTING HISTORY OF WHITING REFINERY

Summary of Relevant Title V Permit Requirements/Revisions

Permit		SPM 25488 ("2008 Permit")	SPM 32033 ("2012 Permit")	SPM 43173
Emission Limits	SIP Limit (PM_{10})	0.0075 lbs/mmBtu D.24.1.1	0.0075 lbs/mmBtu Revised to exclude duct burners/SCRs D.24.1.1	0.0075 lbs/mmBtu D.24.1
	Boiler/SCR Stack Limit (PM_{10})	0.0087 lbs/mmBtu D.24.4(g)	0.010 lbs/mmBtu D.24.4(b)(3)	494.99 tons per 12-month rolling basis for combined emissions from 3SPS Steam Plant, FCUs 500 and 600, and TGUs A and B D.02.1(a)
	Duct Burners Only (PM)	0.03 gr/dscf D.24.2	0.03 gr/dscf D.24.2	0.03 gr/dscf D.24.2
Annual Firing Rate Limits	Boilers	24,303,535 mmBtu D.24.4(d)	24,303,535 mmBtu D.24.4(a)(2)	24,303,535 mmBtu D.24.4(a)(2)
	Duct Burners	1,732,947 mmBtu D.24.4(e)	1,732,947 mmBtu D.24.4(a)(3)	1,732,947 mmBtu D.24.4(a)(3)
Compliance Determination and Continuous Monitoring	SIP Limit (PM_{10})	None	None	Tests to be performed "in conjunction" with tests to demonstrate compliance with 494.99-ton limit. D.02.3(b)
	Boiler/SCR Stack Limit (PM_{10})	Initial test for **one** stack w/in 180 days of startup/completion of modifications, repeat every 3 years. No other requirements to test. D.0.3(d)	Initial tests for 50% of units w/in 3 years of WRMP completion, all units w/in 5 years. No other requirements to test. D.0.4	Each stack must be tested once every 5 years to determine PM_{10} emission rate in lbs/mmBtu. Initial test required for one stack combination w/in 180 days of issuance; one stack to be tested per 12-months thereafter. D.02.3(a)[15] Rolling 12-month total for each stack calculated by multiplying most recent emission rate by firing rate for preceding 12 months. Initial rates used based on results of tests performed in October 2018 and April 2019. Results added to total PM_{10} emissions from FCUs and TGUs to determine compliance. D.02.3(a)
	Duct Burners Only (PM)	None	None	None

[15] If PM_{10} emissions obtained during the first stack test for a boiler/duct/burner combination are more than 20% higher than the most recent performance test for that stack, BP must test each of the other stacks within two-and-a-half years. Condition D.02.3(a)(4). SPM 43173 contains no continuous monitoring requirements to ensure actual emission rates on a monthly or rolling 12-month basis do not exceed the rates measured in the most recent stack test.

A. SPM 089-25488-00453 (June 16, 2008) ("2008 Permit")[16]

On June 16, 2008, IDEM issued a significant permit modification authorizing construction and modification of a substantial number of units at Whiting Refinery as a part of the Canadian Extra Heavy Crude Project ("CXHO Project"), now identified as the Whiting Refinery Modernization Project ("WRMP"), to enable Whiting Refinery to process heavy crude oil from the Canadian tar sands region.[17] *In the Matter of BP Products North America, Inc.*, *Whiting Business Unit, Lake County, IN.* (Oct. 16, 2009) ("2008 BP Order") at 1. This included the modification of the 3SPS boilers to install the direct-fired duct burners and SCR devices. *Id.*

1. Emission Limitations

Condition D.24.4(g) limited PM_{10} emissions "from each boiler/SCR stack" to 0.0087 lbs/mmBtu. This limit applied to combined emissions from each boiler, its duct burner, and SCR device, and was based on BP's own estimates regarding the potential impact that ammonia slip from the SCR devices would have on the formation of condensable fine particles.[18]

Condition D.24.1.1 separately limited PM_{10} emissions "from each stack serving No. 3 power station boilers #1, #2, #3, #4 and #6" to 0.0075 lbs/mmBtu and 4.28 lbs/hour. 326 IAC 6.8-2-6(a).[19] These are emission limits prescribed by 326 IAC 6.8-2-6(a) of the Indiana SIP, which Condition D.24.1.1 explicitly incorporated.[20] These PM_{10} SIP emission limits apply to the

[16] The 2008 Permit revised Whiting Refinery's Title V permit to incorporate conditions from a preconstruction permit IDEM had separately issued on May 1, 2008. *See* Significant Source Modification 089-25484-00453 (May 1, 2008). As these permits involved the same proposed changes and shared the same TSD, ATSD, and supporting materials, this Petition will cite to the June 16, 2008 permit as the "2008 Permit" for the sake of clarity.
[17] The CXHO Project was also previously known as the Operation Canadian Crude project.
[18] IDEM's response to comments claims that the 2008 Permit's limits accurately accounted for the PM_{10} impact of the duct burner and SCR devices. Ex. 8 at 10 (stating that the "original potential to emit calculations for the 2008 SSM No. 089-25584-00453 included the reaction in the potential to emit of the SCR process" and that IDEM "considered that the 2008 calculations represented the potential to emit of the ammonia slip pathway accurately.")
[19] 3SPS boilers 1, 2, 3, 4, and 6 were renamed boilers 31, 32, 33, 34, and 36 (respectively) in Title V Operating Permit Renewal 089-30396-00453 (Dec. 8, 2014), which became effective on January 1, 2015.
[20] Section 326 IAC 6.8-2-6 was approved by EPA and published in the Code of Federal Regulations as a part of Indiana's federally enforceable SIP on April 30, 2008. 73 Fed. Reg. 23356 (April 30, 2008).

sum of filterable and condensable particulate matter emissions. 326 IAC 6.8-2-6(d). The SIP expressly clarifies that emission limitations apply to "[e]ach stack of multiple stacks serving multiple facilities when the facility description notes 'each stack serving.'" 326 IAC 6.8-2-2(2).

Condition D.24.2 stated that pursuant to 326 IAC 6.8-1-2, the duct burners are subject to a particulate matter ("PM")[21] emission limit of 0.03 grains per dry standard cubic feet ("gr/dscf"). Condition D.24.2 stated this emission limit applies only to PM emissions from the duct burners. This confusing fragmentation of emission limits reflects IDEM's decision to treat the duct burners and the SCR devices installed at each boiler to control NOx as separate PM_{10} emission sources (or "facilities")[22] distinct from the boilers, rather than modifications to the boilers themselves. *See* 2008 Permit, Conditions A.3(x) and D.24(x) (listing the "five (5) direct-fired duct burners… equipped with low NOx burners and controlled by a Selective Catalytic Reduction (SCR) system" as separate units from the boilers); *see also* Exhibit 9, "3 SPS SCR Project Emission Increases," Appendix E to IDEM's ATSD for the 2008 Permit (stating "3SPS potential emissions are presented below only for reference for determining the particulate emissions from the SCR. The 3SPS boilers will not be modified for this project since the SCR will be an add-on control").

Finally, Condition D.24.4 stated that in order to avoid triggering major New Source Review requirements, the 12-month firing rate for all five boilers and all five duct burners combined may not exceed 24,303,535 mmBtu and 1,732,947 mmBtu, respectively. 2008 Permit,

[21] Particulate matter includes "any airborne finely divided solid or liquid material, excluding uncombined water, with an aerodynamic diameter smaller than one hundred (100) micrometers." 326 IAC 1-2-52.
[22] The 0.03 gr/dscf PM limit in 326 IAC 6.8-1-2(a) applies only to "facilities constructed after applicable dates… or not limited by" other subsections of 326 IAC 6.8-1-2.

Conditions D.24.4(d) and (e).[23] These 12-month firing rates are based on all five boilers and duct burners operating at their maximum rated heat input capacity for 8,760 hours per year.

2. Compliance Determination and Testing Requirements

Condition D.0.3(d) required BP to conduct testing on one of the five "SCR stacks" in order to demonstrate compliance with the 0.0087 lbs/mmBtu limit within "180 days of the startup of New Coker (#2 Coker) and the re-start of the No. 12 Pipestill (after the completion of the permitted modifications), whichever occurs later," and to repeat this testing at least once every three years. The 2008 Permit did not include any other requirements that BP conduct performance tests, initial or otherwise, at the 3SPS Steam Plant to demonstrate compliance with any of the PM or PM_{10} emission limits in Conditions D.24.1.1, D.24.2, or D.24.4(c) and (g).[24]

Condition C.19 stated that upon any stack test results showing noncompliance with any condition of BP's Title V permit, BP must (a) submit a description of response actions taken to IDEM within 30 days of BP's receipt of the test results, and (b) perform a retest to demonstrate compliance within 120 days of receipt of the test results.

3. Monitoring and Compliance Assurance

The 2008 Permit did not include any provisions for continuous monitoring of either emissions or operating parameters to assure continuous compliance with these limits.

B. EPA Objection to the 2008 Permit and the 2012 Consent Decree

On August 19, 2008, the Environmental Law and Policy Council ("ELPC"), Natural Resources Defense Council ("NRDC"), and the Sierra Club petitioned EPA to object to the issuance of the 2008 Permit. *See* 2008 BP Order at 1. On October 16, 2009, EPA responded by

[23] These firing rate limits were retained as Conditions D.24.4(a)(2) and (3) in the 2012 Permit and SPM 43173.
[24] Table D.0.2 under Condition D.0.3 of the 2008 Permit, which describes initial testing requirements for pollutants by groups of emission units, explicitly excludes the 3SPS boilers from the testing groups for PM emissions.

granting some of the objections raised, including several regarding the inadequacy of IDEM's netting analysis for the 2008 Permit, and ordered IDEM to revise the permit to address these deficiencies (including re-evaluating its netting analysis). *Id.* at 6-11, 16, 19-20. This prompted IDEM and BP to enter into negotiations with EPA and the citizen groups, during the course of which it became clear that both the baseline PM_{10} emissions and projected future emissions of PM_{10} used by the 2008 Permit were inaccurate, due (in part) to the failure to include condensable particulates in the emission factors for use for FCUs 500 and 600 and the under-estimation of PM_{10} emissions from the 3SPS boiler stacks following installation of duct burners and SCR.

These issues were ultimately resolved through a consent decree entered by Judge Philip Simon on November 6, 2012, which required BP to meet certain emission limits and comply with specific monitoring and operating conditions at Whiting Refinery. *See* Consent Decree, N.D. Indiana 2:12-cv-00207-PPS-APR (Nov. 6, 2012) [DE 10] ("2012 Consent Decree"). In return, the 2012 Consent Decree resolved all claims in the 2008 petition and violations alleged in several Findings and Notices of Violation that EPA issued to BP between 2007 and 2010.

EIP, the Sierra Club, ELPC, and NRDC joined the 2012 Consent Decree as Intervenors. In ¶ 198 of the 2012 Consent Decree, Intervenors agreed not to object to any "Source Modification Permit" needed to implement the 2012 Consent Decree or to support any legal action alleging that the WRMP was constructed or is operating without required permits. The 2012 Consent Decree specified, however, that this release:

> …shall not apply if the terms and conditions of any such permit differ in material respects from the terms and conditions of the draft terms and conditions that have been provided to Citizen-Intervenors prior to the date hereof and Citizen Intervenors have not consented to such differences.

2012 CD, ¶ 198a.ii.

Before the 2012 Consent Decree was filed, Intervenors had the opportunity to review the terms of the 2012 Permit (SPM 089-32033-00453) and did not object to its provisions. But the terms IDEM now seeks to adopt nearly a decade later in SPM 43173 are much less stringent than those that were agreed upon and approved in the 2012 Permit, and Petitioners very much object to them. In particular:

- The 2012 Permit limited PM_{10} emissions from each boiler stack to 0.010 lbs/mmBtu. Under that scenario, PM_{10} emissions could be no greater than 0.010 x the actual firing rate of each boiler. As explained further on pages 25-30 of this Petition, actual firing rates at the 3SPS Steam Plant are consistently far lower than the "maximum" hourly and annual firing rates used to set the new "ton per year" limits in SPM 43173.
- The new limit in SPM 43173, which requires quantifying and then aggregating emissions from the 3SPS Steam Plant, FCUs 500 and 600, and TGUs A and B based on stack tests conducted five years apart and at different times under different conditions, will be much harder to enforce than the limits approved in the 2012 Permit. (*See* below at pgs. 35-45).

Petitioners had agreed not to challenge the PM_{10} limits for the 3SPS Steam Plant approved by IDEM in 2012 based on the understanding that they would not be altered. As IDEM is expressly seeking to revoke those emission limits in SPM 43173, Petitioners are released from that bargain and free to raise the objections that were waived in 2012. That includes, for example, objecting to IDEM's failure to require each boiler stack to meet the 0.0075 lbs/mmBtu and 4.28 lbs/hour PM_{10} emission limits established by 326 IAC 6.8-2-6(a) of the Indiana SIP.

C. SPM 089-32033-00453 (Dec. 3, 2012) ("2012 Permit")

As described above, on December 3, 2012, IDEM approved a significant modification to BP Whiting's Title V permit which responded to the objections raised by EPA and incorporated the terms of the 2012 Consent Decree between EPA, IDEM, and citizen-intervenors.

1. Emission Limitations

The 2012 Permit revised Condition D.24.1.1 to specify that the 0.0075 lbs/mmBtu and 4.28 lbs/hour PM_{10} emission SIP limits "are specific to the boilers and do not apply to the duct

burners or collateral emissions associated with selective catalytic reduction (SCR)." Though the 2012 Permit is the first time in which this new language appears, the inclusion of this language is not identified as a proposed change in the permit record accompanying the 2012 Permit.[25]

Condition D.24.4(b)(3) replaced the 0.0087 lbs/mmBtu PM_{10} limit previously applicable to each boiler stack under the 2008 Permit with a new limit of 0.010 lbs/mmBtu.[26] The 0.010 lbs/mmBtu limit applied to combined emissions from the boiler, duct burners and SCR devices, and was based on BP's own estimates regarding the potential impact that ammonia slip from the SCR devices would have on the formation of condensable fine particles.

2. Compliance Determination and Testing Requirements

Condition D.0.4 revised the initial testing provisions to require that BP perform initial tests for fifty percent of the emission units listed in Table D.0.4 no later than three years after the completion of the WRMP, and for all remaining units by no later than five years after completion of the WRMP. Units listed in Table D.0.4 include all five 3SPS boilers (individually), and all five of the 3SPS duct burners (combined as one group). Condition D.0.4 does not reference the 3SPS "stacks" or SCRs, and neither are listed as emission units. The 2012 Permit did not include any requirement that BP conduct performance tests at the 3SPS Steam Plant to specifically demonstrate compliance with the PM or PM_{10} emission limits in Conditions D.24.1.1, D.24.2, or D.24.4(b)(2) and (3).

[25] Petitioners have reviewed all permit revisions issued from 2008 to 2012 available on IDEM's permit database and Virtual File Cabinet and have been unable to identify any permit prior to the 2012 Permit including this language, or any permitting action in which IDEM proposed revising Whiting Refinery's permit to include this language.
[26] The 0.010 lbs/mmBtu PM_{10} limit in Condition D.24.4(b)(3) of the 2012 Permit remained effective in Whiting Refinery's Title V permit up until the issuance of SPM 43173, which replaced it with the 494.99-ton limit.

Condition C.19 was revised to require BP to (a) submit a description of response actions to IDEM within 75 days of the date of any stack test demonstrating noncompliance, and (b) to perform a retest to demonstrate compliance within 180 days of the stack test date.

3. Monitoring and Compliance Assurance

The 2012 Permit did not include any provisions for continuous monitoring of either emissions or operating parameters to assure continuous compliance with its PM or PM_{10} limits.

D. SPM 089-38641-00453 (Oct. 4, 2017)

On October 4, 2017, IDEM revised the Title V permit to include Condition D.24.11(b), which for the first time required BP to conduct performance tests at each 3SPS stack at least once every five years to demonstrate compliance with the 0.010 lbs/mmBtu PM_{10} emission limits that apply to combined emissions from the boiler and duct burners. This revision did not include any provisions for continuous monitoring to assure continuous compliance with this limit.

E. SPM 43173 (June 2, 2021)

IDEM issued SPM 43173 on June 2, 2021. SPM 43173 made numerous significant changes to the PM_{10} emission limits and compliance demonstration requirements:

1. Emission Limitations

SPM 43173 eliminated Condition 24.4(b)(3), which limited total PM_{10} emissions from each boiler, duct burner and SCR to 0.010 lbs/mmBtu. Instead, as stated in Condition D.02.1(a), total PM_{10} emissions from (1) all five 3SPS Boilers; (2) FCUs 500 and 600; and (3) TGUs A and B would be subject to a new rolling 12-month limit of 494.99 tons.

Condition D.24.1 retains the Lake County PM_{10} SIP limits of 0.0075 lbs/mmBtu and 4.28 lbs/hour for each boiler, while reiterating that these limits do not apply to the "duct burners or collateral emissions associated with selective catalytic reduction." As before, emissions from the

duct burners may not exceed 0.03 gr/dscf. Condition D.24.2. No emission limits apply to the specific "collateral" emissions from the SCR under SPM 43173.

The total 12-month firing rate for the boilers and duct burners remain capped at 24,303,535 and 1,732,947 mmBtu, respectively. Conditions D.24.4(a)(2) and (3). As before, these 12-month totals assume full time operation of all five boilers and duct burners at their maximum hourly firing rates. Condition D.24(x)(1).

2. Compliance Determination and Testing Requirements

Condition D.02.3(a) requires BP to perform a stack test to determine PM_{10} emission rate in lbs/mmBtu at each 3SPS stack at least once every five years. Condition D.02.3(b) states that BP shall perform tests to demonstrate compliance with the SIP limits "in conjunction" with the tests required under paragraph (a)—but does not explain how "boiler" emissions will be isolated. Condition D.02.3 does not specify the methodology to be used to calculate total emissions of PM_{10}.[27] Condition D.02.3(4) states that if PM_{10} emissions obtained during the first stack test for a boiler/duct/burner combination are more than 20% higher than the most recent performance test for that stack, BP must test each of the other 3SPS stacks within two-and-a-half years.

Condition D.02.2 states that the rolling 12-month total for each stack will be determined by multiplying the PM_{10} emission rate measured during the most recent performance test by the firing rate for the preceding 12 months. The results are averaged with emissions from the FCUs and TGUs, which are also derived from stack testing, to determine compliance with the mass limit of 494.99 tons for each 12-month period. *Id.*

SPM 43173 did not revise the response action and retesting requirements in Condition C.19. However, IDEM has stated testing required by SPM 43173 "is not expected to demonstrate

[27] Condition D.02.3(b) states tests shall be conducted "utilizing methods as approved by the Commissioner," while Condition D.02.3(c) incorporates the requirements of 326 IAC 3-6 (Source Sampling Procedures) by reference.

a violation calling for retesting, except to the extent that compliance determination calculations using the test result may establish a violation of the limits in Condition D.02.1." ATSD at 10.

3. Monitoring and Compliance Assurance

SPM 43173 does not establish continuous monitoring of emission limits or operating parameters that would assure compliance during the five years between each 3SPS stack test or identify any method of assuring that stack tests are representative or that emission rates do not vary from those measured during the most recent stack tests during the months and years that follow each stack test. In other words, SPM 43173 assumes that the emission rate (in lbs/mmBtu) achieved during a stack test will not vary over the next five years, regardless of changes in the sulfur content of the fuel gas, ammonia slip, or other factors known to affect PM_{10} levels.

Condition D.02.2(a)(2) states that in order to document compliance with the 494.99-ton limit, BP "shall submit a quarterly summary" of the total PM_{10} emissions from the 3SPS Steam Plant, the FCUs 500 and 600, and TGUs A and B "for each month of the quarter." While Condition D.02.4 generally requires BP to "maintain records" of monthly and 12-month emissions, and monthly firing rates for the 3SPS Steam Plant that "shall be complete and sufficient to establish compliance," it does not explain what this means or specify how BP shall "maintain" these records.

SPM 43173 identifies no testing or monitoring requirements to determine whether the duct burners are meeting the 0.03 gr/dscf limit in Condition D.24.2. Collateral PM_{10} emissions from SCR devices are not limited, tested, or monitored under SPM 43173.

VI. STANDARD OF REVIEW FOR TITLE V PETITIONS

Title V permits, which must list and assure compliance with all federally enforceable requirements that apply to each major source of air pollution, are the primary method for

enforcing and assuring compliance with the Clean Air Act's pollution control requirements for major sources. 57 Fed. Reg. 32250, 32258 (July 21, 1992). One of the primary purposes of Title V is to "enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements. Increased source accountability and better enforcement should result." *Id.* at 32251.

It is the Title V permitting authority's responsibility to ensure that a proposed permit "'set[s] forth'" conditions sufficient "'to assure compliance with all applicable requirements'" of the Clean Air Act. *In the Matter of Sandy Creek Services, LLC, Sandy Creek Energy Station, McLennan County, TX*, Order on Petition No. III-2018-1 (June 30, 2021) ("Sandy Creek Order") at 12 (quoting 42 U.S.C. § 7661c(c)). The permitting authority's rationale for any proposed permit conditions must be clear and documented in the permit record, 40 C.F.R. § 70.7(a)(5), and "permitting authorities have a responsibility to respond to significant comments" received on a proposed permit. *In the Matter of CITGO Refining and Chemicals Co., L.P., West Plant, Corpus Christi, Tx*., Order on Petition No. VI-2007-01 (May 28, 2009) ("CITGO Order") at 7.

EPA must object to any Title V permit that fails to include or assure compliance with all applicable requirements of the Clean Air Act. 40 C.F.R. § 70.8(c). "Applicable requirements" include any requirements of a federally enforceable SIP and any preconstruction requirements that are incorporated into the Title V permit. *In the Matter of Pac. Coast Bldg. Prods., Inc.*, *Permit No. A00011, Clark County, NV* (Dec. 10, 1999) ("Pac. Coast Order") at 7 ("applicable requirements include the requirement to obtain preconstruction permits that comply with preconstruction review requirements under the Act, EPA regulations, and State Implementation Plans."). If EPA does not object to a Title V permit, "any person may petition the Administrator within 60 days after the expiration of the Administrator's 45-day review period to make such

objection." 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d). The Administrator "shall issue an objection" if the petitioner demonstrates "that the permit is not in compliance with the requirements of [the Clean Air Act], including the requirements of the applicable implementation plan." 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(c)(1). The Administrator "shall grant or deny such petition within 60 days after the petition is filed." 42 U.S.C. § 7661d(b)(2).

VII. GROUNDS FOR OBJECTION

A. Proposed SPM 43173 Fails to Assure Compliance with 326 IAC 6.8-2-6(a) of the Indiana State Implementation Plan, Which Applies to All PM_{10} Emissions from Each Boiler Stack.

1. Applicable Requirements

Each Title V permit must include all federally-enforceable requirements that apply to a major source and conditions as well as any provisions that are necessary to assure compliance with all applicable requirements, which include any requirements of a federally enforceable SIP. 42 U.S.C. § 7661c(a); Pac. Coast Order at 7. State permitting authorities may not use Title V permits to modify applicable requirements in a SIP that apply to any stationary source. 42 U.S.C. § 7410(i); 40 C.F.R. § 70.6(b)(2). In calculating a source's potential to emit ("PTE"), IDEM may not assume emissions greater than would be allowed by the SIP. *See* 326 IAC 2-2-1(d) (stating "allowable emissions" must be calculated using "the most stringent" federally enforceable emission limit applicable, including those with future compliance dates).

Section 326 IAC 6.8-2-6(a) of the Indiana SIP (entitled "BP Products North America, Inc.-Whiting Refinery)" limits emissions of particulate matter "from each stack serving No. 3 power station, boilers 1, 2, 3, 4, and 6"[28] (emphasis added) to 0.0075 lbs/mmBtu and 4.28 pounds per hour. These limits apply to the "sum of the filterable (front half) and condens[a]ble

[28] Boilers 1, 2, 3, 4, and 6 were renamed boilers 31, 32, 33, 34, and 36 (respectively) in 2015. *See supra* footnote 19.

(back half) particulate matter." 326 IAC 6.8-2-6(d). The SIP also specifies that the language "each stack serving" specifically means that an emission limitation applies to "[e]ach stack of multiple stacks serving multiple facilities.'" 326 IAC 6.8-2-2(2).

2. Specific Grounds for Objection

Each boiler at the 3SPS Steam Plant is equipped with duct burners and SCR controls designed to limit nitrogen oxides and is served by a stack through which all emissions (including PM_{10}) associated with these units are vented to the atmosphere. Condition D.24.1 of SPM 43173 erroneously states that the SIP PM_{10} limits at 326 IAC 6.8-2-6(a) "are specific to the boilers and do not apply to the duct burners or collateral emissions associated with selective catalytic reduction." But the limits clearly apply to all "stack" emissions for the following reasons:

a) As 326 IAC 6.8-2-6(a) actually refers to emissions from individual stacks "serving" the power station, not emissions from the boilers, it strains logic to suggest that this language was meant to exclude emissions from any pollution controls later added to the 3SPS Steam Plant's boilers that contribute to the combined emissions vented through those stacks.

b) The table at 326 IAC 6.8-2-6(a), which lists emission limits applicable to numerous specific units at Whiting Refinery, distinguishes emission limits that apply to "stacks" from those that apply directly to units (*e.g,* heaters) with no reference to stacks. For example, 326 IAC 6.8-2-6(a) imposes the same PM_{10} emission limit of 0.0075 lbs/mmBtu on: (1) the Number 4 ultraformer, F-7 furnace; (2) "Each stack serving the cat feed hydrotreating unit F-801 A/B F-801C"; and (3) the "Stack serving number 1 CRU, F-102A heater." The distinction is meaningless if there is no practical or legal difference between a limit that applies to a stack and one that applies to a unit. This language is not meaningless—326 IAC 6.8-2-2 states that each limit "applies to one (1) stack serving one (1) facility unless otherwise noted," and precisely

defines “stack serving” to mean “One (1) stack serving multiple units,” and “each stack serving” to mean “Each stack of multiple stacks serving multiple facilities.”

c) The duct burners and SCR controls were installed to limit nitrogen oxide emissions from each boiler and cannot (and do not) operate when the boiler is not in service. It is nonsensical to treat the duct burners and SCR controls as separate “new” emission units; their installation clearly modified the boilers, regardless of whether the modification was significant enough to trigger major NSR requirements.

d) The installation of duct burners and SCR controls resulted in collateral increases of PM_{10}, in part because ammonia injection can enhance the formation of condensable particles. But the U.S. Court of Appeals for the District of Columbia made clear in 2005 that pollution control projects are among the “physical and operational” changes that may be subject to federal New Source Review requirements if they result in a significant net increase in emissions of a regulated pollutant. *New York v. EPA*, 413 F.3d 3, 32-33 (D.C. Cir. 2005). The first step in NSR review requires determining whether the action in question amounts to a physical or operational change, and the D.C. Circuit ruled unambiguously sixteen years ago that pollution control projects must be included in this category.

e) When calculating the new PM_{10} emission limits in SPM 43173, IDEM determined that maximum potential emissions from the 3SPS Steam Plant could not exceed 130.18 tons, based on an emission rate of 0.010 lbs/mmBtu and a combined annual firing rate for all five boilers and duct burners of 26,036,482 mmBtu. Because the potential to emit cannot exceed any amounts allowed under applicable SIP requirements, maximum PM/PM_{10} emissions from the 3SPS Steam Plant cannot exceed 97.7 tons, obtained by multiplying the SIP stack emission limit of 0.0075 lbs/mmBtu (from 326 IAC 6.8-2-6(a)) by the maximum annual firing rate. *See* 326 IAC 2-2-1(d).

3. Issue Raised in Public Comment

Petitioners raised these issues in Comments 1-8, Ex. 1 at 2-4. Specifically, Comments 1-6 raised numerous concerns that SPM 43173 failed to incorporate or assure compliance with a number of the Lake County SIP limits and requested that IDEM clarify how compliance with these limits would be determined/assured; Comment 7 disputed and requested that IDEM clarify its decision to treat the SCR devices as separate emission "sources" from the boilers; and Comment 8 noted that the SIP limits apply to "each stack serving" the boilers, and requested IDEM clarify why it did not believe emissions from the SCRs were included in "stack emissions" and why IDEM's new "stack" emission rates were not reflected in the SIP.

4. Analysis of IDEM's Response

IDEM's response began by claiming that neither the duct burners nor the SCR devices are a modification of the boilers, since they were installed "downstream" of the boilers and no physical changes were made to the boilers themselves:

> "SCR is a control device downstream of the boilers and is not a modification of the boilers themselves. Duct burners are required for the SCR system to operate properly, specifically so that the inlet temperature to the SCR process will be high enough for the NOx control reaction to occur. Duct burners are also downstream of the boiler exhaust and are not physical modifications of the boilers."

ATSD, Response to Comment 7 and 8, Ex. 8 at 4.

Petitioners do not understand IDEM's response or believe it is a correct interpretation of the law. IDEM has not explained why the addition of duct burners or SCR devices "downstream" from a boiler—but before the stack that vents combined PM_{10} emissions from each boiler **and** its associated duct burner and SCR device—should not be considered a modification. IDEM offers no legal justification for this interpretation, and there is no language in the federal Clean Air Act or Indiana SIP to support its conclusion.

The Clean Air Act plainly defines "modification" to mean "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." 42 U.S.C. § 7411(a)(4). Similarly, the Indiana SIP defines modification as, "an addition to a facility or any physical change or change in the method of operation of any facility which increases the potential or legally allowed emissions[.]" 326 IAC 1-2-42. A facility is broadly defined to include "any one structure, piece of equipment or operation which emits or has the potential to emit any air contaminant[.]" 326 IAC 1-2-27. These definitions do not exclude pollution control equipment that reduces emissions of one pollutant (NOx) while increasing emissions of another. The U.S. Court of Appeals for the District of Columbia made clear in 2005 that pollution control projects are among the "physical and operational" changes subject to federal New Source Review if they result in a significant increase of a regulated pollutant. *New York v. EPA,* 413 F.3d at 32-33. IDEM's own permitting analyses have consistently projected or assumed that installing duct burners and SCR devices would increase PM_{10} emissions from the 3SPS boilers. *See, e.g.*, Ex. 9; *see also* Appendix A to the TSD, Ex. 2 at 51. This alone establishes that adding these new controls amounted to a modification, which by definition is any addition or physical or operational change that increases emissions.

IDEM's response also does not address the fact that regardless of whether a modification has occurred, PM_{10} emissions from each boiler, duct burner and SCR device all exit through the same stack, which Petitioners contend is the point at which the emission limit at 326 IAC 6.8-2-6(a) plainly applies. IDEM states that "IDEM, OAQ considers that the distinction between boiler emissions subject to the 326 IAC 6.8-2-6(a) limit and emissions of the duct burners and SCR subject to 326 IAC 6.8-1-2(a) has always been clear." ATSD at 4. The public is entitled to rely

upon the plain language of a SIP—which in this case specifically limits PM_{10} emissions from *each stack serving* the 3SPS units—and cannot guess what IDEM may or may not have intended. Notably, while IDEM has consistently determined that the SCR controls accounted for most of the PM_{10} emission increases from the 3SPS boilers, it has never identified PM_{10} limits that would apply only to SCR controls. It would be impossible to do so, since these devices do not and cannot operate independently from the boilers. IDEM insists that the SIP limits at 326 IAC 6.8-2-6 apply only to facilities or units as they were configured on the date that SIP became effective. ATSD at 4. Petitioners disagree that where a facility or unit is subject to a specific SIP emission limit, any subsequent increase in emissions resulting from a later modification must be exempt from that limit and IDEM offers no authority to support its position.

B. The 494.99 Ton PM_{10} Limit in SPM 43173 Is Based on Maximum Firing Rates for the 3SPS Boilers and Duct Burners That Cannot Be Achieved in Practice.

1. Applicable Requirements

"[A]pplicable requirements include the requirement to obtain preconstruction permits that comply with preconstruction review requirements under the Act, EPA regulations, and State Implementation Plans." Pac. Coast Order at 7. EPA is obligated to object to Title V conditions that violate SIP or federal NSR requirements. *Sierra Club v. EPA,* 964 F.3d at 899. The Indiana SIP states that "[p]otential emissions from a facility shall take into account the hours of operation per year[.]" 326 IAC 1-2-55. The Indiana SIP also requires sources to conduct stack tests at a minimum of 95% of the unit's permitted maximum capacity, "under conditions of worst case emissions," or under other conditions approved by IDEM. 326 IAC 3-6-3(b)(1).

2. Specific Grounds for Objections

Condition D.02.1(a) states that total PM_{10} emissions from the 3SPS Steam Plant, FCUs 500 and 600, and TGUs A and B are subject to a new rolling 12-month limit of 494.99 tons.

IDEM improperly relied upon mistaken calculations of the current PTE for PM_{10} for all of the units in determining that this limit is appropriate. More specifically, Appendix A to the TSD for SPM 43173 presents data on the annual throughput limits which IDEM used to calculate total PTE for the 3SPS Steam Plant, which assumes a total annual firing rate of 26.3 million mmBtu from all five boilers and duct burners combined. The total annual capacity assumes that all five boilers and duct burners can operate at their maximum hourly rates all 8,760 hours a year.

Petitioners' Comments presented evidence that the 3SPS boilers, which were built between 1948 and 1953, are not physically capable of achieving the design-based firing rates used to set PM_{10} emission limits. For example:

a) As BP acknowledges, the boilers cannot operate continuously and must be shut down for repairs. According to data from BP (which Petitioners attached to their Comments), between 2012 and 2016, boiler outages totaled 13% of operating time—or a mean average of 1,139 hours per boiler per year over the five-year period. *See* Exhibit 5 (Excel).

b) Petitioners' Comments noted that the total annual firing rate for the 3SPS Steam Plant had not exceeded 16.53 million mmBtu between 2007 and 2018. Based on updated information, the highest annual firing rate between January of 2012 and December of 2020 was 17.8 million mmBtu (for the 12-month period ending on April 30 of 2018). Based on this data, the annual firing rate at the 3SPS Steam Plant has never exceeded 68% of its supposed maximum capacity during any 12-month period over the last 14 years.

c) In 2018, IDEM approved BP's application for a Title V significant permit modification authorizing the Whiting Enhancement Project ("WEP"). *See* SPM No. 089-38868-00453 (Jan. 29, 2018) ("WEP Permit"). In the netting analysis provided in BP's application (and which IDEM relied upon in granting the WEP Permit), BP projected that future firing rates could not

exceed 20.44 million mmBtu without boiler tube replacements to reduce the frequency and duration of outages.

d) Petitioners' Comments raised concerns that stack tests to determine compliance with the PM_{10} emission limits that apply to these units have always been conducted well-below the minimum 95% firing rate (capacity factor) that is required by the Indiana SIP. 326 IAC 3-6-3(b)(1). Based on more complete data, firing rates (for boilers and duct burners combined) have ranged from 484 to 548 mmBtu during the eight stack tests for which Petitioners were able to obtain such information,[29] which represents 78.6 to 89% of the theoretical maximum hourly rate. The Indiana SIP requires sources to conduct stack tests at "at a minimum of 95% of capacity" or (B) "under conditions of worst-case emissions," or at other capacities or conditions as in an applicable requirement or approved by IDEM. 326 IAC 3-6-3(b)(1).

3. Issue Raised in Public Comment

Petitioners raised the inability of the 3SPS boilers to achieve the annual firing rates used to calculate permit limits in Comments 9-13. Ex. 1 at pgs. 4-5. These Comments included specific citations to, and discussion of, the emission analyses IDEM had relied upon in granting BP the 2018 WEP Permit. *Id.*, *citing* Table C.15, Appendix A of the Technical Support Document for the WEP Permit ("Exhibit 10"). Petitioners also attached operational data reported by BP showing that the 3SPS Steam Plant had never exceeded 16.53 million mmBtu between 2007 and 2018 in support of their Comments. *Id*; *see also* Ex. 5 (Excel). As Petitioners' Comments noted, Petitioners also previously raised this issue at length, and provided data in

[29] Four stack tests did not include any information on boiler or duct burner firing rates. An IDEM OAQ compliance memorandum accompanying two tests (performed at boilers 32 and 36 on August 3 and 5, 2015, respectively), listed boiler firing rates of 350 and 356 mmBtu—or 61-62% of the boilers' maximum hourly rate of 575 mmBtu.

support, in their comments on SPM 41980 regarding this exact same issue[30]—to which IDEM had never responded. *See* Ex. 3 at pgs. 4-7 (Comments 1-4).

4. Analysis of IDEM's Response

IDEM's response either misunderstands or mispresents Petitioners' Comments.

IDEM states that the design heat rates are "not relevant" to SPM 43173. ATSD, Ex. 8 at 6. Petitioners disagree. SPM 43173 retains the maximum design-based heat rates as enforceable conditions of the permit. *See* SPM 43173, Conditions D.24.4(a)(2)-(3). These firing rates were clearly used by IDEM to estimate the potential to emit of the 3SPS Steam Plant, which in turn was used to calculate the new rolling 12-month emission limit of 494.99 tons established under Condition D.02.1(a). *See* TSD, Ex. 2 at pgs. 16, 51 (Appendix A).

IDEM did not respond to evidence that the maximum annual firing rates have never come close to the "maximum" capacity of 3SPS boilers or that regular outages for maintenance work make it impossible for all boilers to operate continuously at maximum firing rates throughout the year. The Indiana SIP requires that hours of operation be taken into account when determining potential emissions, but IDEM has not done so in SPM 43173. 326 IAC 1-2-55.

IDEM dismissed as irrelevant the projected actual firing rates for the 3SPS Steam Plant used to calculate projected actual PM_{10} emissions for the WEP. *See* Ex. 10. Commenters offered that information to show that both BP and IDEM understood that the boilers and duct burners were simply not capable of achieving the maximum firing rates assumed in SPM 43173.[31] IDEM notes that BP has not undertaken the modifications anticipated at the time the netting tables were approved. IDEM misses the point, which is that BP's netting analysis for the WEP Permit

[30] For proposed SPM 41980, IDEM had made an identical determination that the PTE for the 3SPS Steam Plant was 130.18 tons, using the same method it uses for SPM 43173 (multiplying 0.010 lbs/mmBtu and 26,036,482 mmBtu).
[31] The projected actual firing rate of 10.4 million mmBtu was based on the capacity that BP "could have accommodated" without modifications to the boilers.

represented that the boilers and duct burners would not be physically capable of exceeding an annual firing rate of 20.44 million mmBtu without further modifications—representations which IDEM relied upon in approving the WEP Permit.

IDEM states that it "does not consider replacement of tubes in the No. 3 SPS boilers to be a modification of the source that requires preconstruction approval." ATSD at 6. However, BP's own permit application shows the company was well aware that EPA does not consider boiler tube replacements to be among the "routine repairs" that are normally exempt from New Source Review and that BP expected the tube replacements to increase potential PM_{10} emissions by more than 8 tons a year. *See* Ex. 5 (PSD permitting applicability for 3SPS boiler re-tubing).

IDEM's response concedes that operating constraints may explain why stack tests have never been conducted at (or anywhere near) 95% of each boiler's supposed maximum firing rate. For example, IDEM says that "[i]n a typical application, operating a duct burner at its full rated capacity may not be possible because the downstream process is intolerant of high inlet temperatures that could, for example, damage catalysts." ATSD at 6. Similarly, IDEM concedes that "the day-to day-state of maintenance, or design output greater than the capacity of downstream processes," may make testing at nameplate rates impossible. *Id.* If operating constraints, whether upstream or downstream, make it impossible to for the 3SPS boilers to run at or near 95% of capacity during a three-hour stack test, then IDEM should revise the maximum firing rates used to determine "potential to emit" under SPM 43173.

IDEM's response notes that the inability to maintain a 95% firing rate during a three-hour stack test is not expected to affect determination of emission rates based on lbs/mmBtu. That is not necessarily true. There are many complex factors that may affect PM_{10} emissions, and there is certainly not a perfectly linear relationship between mmBtu and PM_{10} emissions as IDEM

appears to be implying. EPA has previously noted, for example, that emission levels of NOx in particular can "vary considerably with the type and size of combustor and with operating conditions (particularly combustion air temperature, load, and excess air level" in natural-gas fired boilers.[32] Similarly, in the case of fuel-fired boilers, AP-42 notes that operating at higher loads can generate significantly more NOx emissions and that NOx emissions "may be reduced from 0.5 to 1 percent for each percentage in load from full load operation."[33] Higher NOx emissions would naturally require higher ammonia injection rates—which is well-known to potentially increase the likelihood of PM_{10} formation. But even if higher firing rates had no effect on PM_{10} emission rates, IDEM has not addressed Petitioners' other concerns that the stack testing required under SPM 43173 will not and cannot reliably predict actual PM_{10} emissions, either during the actual test itself or in the months and years that follow each test.

C. The Emission Rates Used to Quantify PM_{10} Emissions from the 3SPS Boilers Are Flawed and Understate Actual Emissions by Up to 25%.

1. Applicable Requirements

To "effectively restrict a facility's PTE under the relevant major stationary source threshold, a permit's emission limits must apply at all times to all actual emissions, and all actual emissions must be considered in determining compliance with the respective limits." *In the Matter of: Yuhuang Chemical Inc. Methanol Plant St. James Parish, LA, Order on Petition No. VI-2015-03* (August 31, 2016) ("Yuhuang Order") at 14 (internal citation omitted). The Clean Air Act requires that "[e]ach permit issued under [Title V] shall set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the

[32] U.S. EPA. AP-42, Fifth Edition, Vol. 1: 1.4: Natural Gas Combustion," at 2. Available at: https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf
[33] U.S. EPA. "AP-42 Vol. 1: 1.3: Fuel Oil Combustion," at pg. 1.3-3.
Available at: https://www.epa.gov/sites/default/files/2020-09/documents/1.3_fuel_oil_combustion.pdf

permit terms and conditions." 42 U.S.C. § 7661c(c). "It is [IDEM's] responsibility, as the title V permitting authority, to ensure that the title v permit 'set[s] forth' monitoring to assure compliance with all applicable requirements." Sandy Creek Order at 12 (quoting 42 U.S.C. § 7661c(c)). The permitting authority's rationale must be clear and documented in the permit record, 40 C.F.R. § 70.7(a)(5), and it is obligated to respond to significant comments—including comments on the adequacy of monitoring. CITGO Order at 7.

2. Specific Grounds for Objection

Condition D.02.2 requires BP to quantify PM_{10} from each boiler stack by first calculating the emission rate, in lbs/mmBtu, based on a three-hour performance test to be performed once every five years. Condition D.02.3 states that BP's compliance with the rolling 12-month PM_{10} limit of 494.99 tons established under Condition D.02.1(a) will then be determined by multiplying (for each stack) the recorded emission rate by the total heat input (or firing rate) recorded by BP's continuous monitors for each succeeding month. As Petitioners noted in Comment 18, however, the lbs/mmBtu emission rates reported on BP's prior stack tests assume firing rates that are much higher than the actual heat input reported by BP's continuous monitors during those same tests. Ex. 1 at pgs. 6-7. As a result, the emission rates that BP will use to quantify PM_{10} emissions do not reflect stack test results and allow up to 25% of actual PM_{10} emissions to remain uncounted. *Id.*

3. Issue Raised in Public Comment

Petitioners raised concerns in Comment 18 about BP's use of "F-Factor" emission rates substantially lower than rates based on actual heat input, citing 2016 stack test results at Boiler 32 to illustrate the problem. Ex. 1 at pgs. 6-7. Comment 18 further noted that the baseline and projected firing rates used in the netting analyses for the WEP Permit had calculated baseline and

projected firing rates using continuous monitor data. *Id.*; *see also* Ex. 10. Comment 18 further stated that Petitioners did not believe it was appropriate to different methodologies for purposes of netting calculation and compliance demonstration, and requested that IDEM to explain whether reliance upon the F-Factor would yield firing rates different from those used to project baseline or actual emissions.[34]

4. Analysis of IDEM's Response

IDEM explains how Method 19 works, but not why BP's application of that method assumes a firing rate much higher (and a correspondingly lower emission rate) than the heat input data used to determine baseline emissions or permit limits. IDEM also did not respond to Petitioners' question about why the PM_{10} emission rates based on heat input during a stack test are so much higher than the F-Factor rates supposedly based upon such tests.

PM_{10} emissions are quantified under SPM 43173 by multiplying the F-Factor emission rate identified through the most recent stack tests by the monthly heat input that is continuously recorded by BP's monitors. But the F-Factor emission rates are based on a much higher emission rate than the heat input recorded by BP's monitors during stack testing. For example, as noted in Comment 18, BP calculated a PM_{10} emission rate of 0.0198 lbs/mmBtu for the stack test conducted at Boiler 32 on January 28, 2016. PM_{10} emissions during that stack test averaged 11 pounds an hour, while the hourly firing rate recorded by BP's monitors during the test for the boiler and duct burner combined averaged 487.55 mmBtu. If the F-Factor emission rate that BP reported is accurate, then the actual firing rate during the test would have to be 555.55 mmBtu,

[34] Petitioners indicated that the alternative method consistently resulted in lower firing rates during stack testing. The F-Factor actually assumes a higher firing rate and a correspondingly lower emission rate. While awkwardly worded, Comment 18 makes clear that Petitioners were concerned about the difference between F-Factor firing rates used during stack testing and asked IDEM to explain how that differed from the heat input data used to develop permit limits and what impact the difference would have on PM_{10} emissions.

or about 14% higher than the heat input reported by BP's monitors during the same stack test: 11 lbs/hour divided by 0.0198 lbs/mmBtu = 555.55 mmBtu. Conversely, if the monitored heat input data is accurate, the PM_{10} emission rate must be 0.0226 lbs/hour, not the 0.0198 rate that BP cited: 11 lbs/hour divided by 487.55 mmBtu/hour = 0.0226 lbs/mmBtu. As Petitioners stated in Comment 18, both cannot be right—and a difference of 0.0034 lbs/mmBtu (representing 34% of an emissions limit of 0.010 lbs/mmBtu) is quite a significant one. Ex. 1 at 7.

Because IDEM's "response" was so completely unresponsive, Petitioners conducted a further review of the F-Factor emission rates identified in SPM 43173 (which are based on the most recent stack tests at each stack) that will be used to quantify monthly and annual emissions. The results are presented in the table below.

Table 2

Unit	Date of Test	Reported Firing Rate (mmBtu/hour)	PM_{10} lbs/mmBtu (based on F-Factor Emission Rate)	PM_{10} lbs/hour (F-Factor x Test Firing Rate)	PM_{10} lbs/hour: Actual Test Results
Boiler 31	10/8/2018	528	0.0154	8.13	9.32
Boiler 32	10/9/2018	492	0.0163	8.02	10.01
Boiler 33	10/11/2018	517	0.0151	7.81	9.01
Boiler 34	10/12/2018	548	0.0114	6.25	7.38
Boiler 36	4/16/2019	520.45	0.0109	5.67	6.85
Total PM_{10} lbs/hour				**35.88**	**42.57**

Table 2 includes the average heat input reported by BP's monitors during each of the three-hour stack tests. The next to last column shows the total pounds per hour obtained when the F-Factor emission rate for each test is multiplied by the heat input reported by BP's monitors for that test. The last column shows the actual PM_{10} hourly emissions for each test, which are calculated from stack gas sample results measured in in grains per dry standard cubic foot. As is immediately apparent, the total amount of PM_{10} actually measured during each of these stack

tests ranges from 15% to 25% greater than the amount obtained by multiplying the F-Factor emission rate by the reported heat input for these units.

This distortion of stack test results allows BP to report significantly less PM_{10} than is actually emitted over the five-year intervals between these tests. For example, under SPM 43173, a firing rate averaging 492 mmBtu/hour for Boiler 32 for a 12-month period following the stack test identified in Table 2 would be multiplied by the F-Factor emission rate as follows: 492 mmBtu x 0.0163 = 8 lbs/hour PM_{10} x 8760 = 70,080 lbs. or 35.04 tons for the 12-month period. But that outcome conflicts with the actual results of the stack test, which measured 10 lbs/hour of PM_{10} at the same firing rate. To accurately reflect test results, the total mass (10 lbs/hour) should have been divided by the reported heat input (492 mmBtu) to obtain an emission rate of 0.0205 lbs/mmBtu (492 x 0.0205 = 10.1 lbs/hour, or a 12-month PTE of nearly 44 tons per year).[35]

SPM 43173 establishes a new mass-based limit and then establishes a method for quantifying emissions that consistently underestimates hourly PM_{10} emissions when compared to the actual, measured results from stack tests. The differences in Table 2 add up and would leave nearly 7 pounds an hour and 30 tons per year uncounted and unreported (assuming the average monthly and annual firing rates at each boiler/duct burner are about the same as they were during the preceding stack test). While the gap could be greater or smaller based on firing rates during and after stack testing, the method that BP is using to identify emission rates and quantify PM_{10} emissions will substantially undercount emissions.

The two factors in the equation that will be used to quantify PM_{10} under Condition D.02.2(i)—an emission rate based on the F-factor multiplied by the heat inputs continuously

[35] The analysis assumes full time, around the clock operation of these units at maximum hourly rates, since that is the method IDEM used to determine PTE. But the problem Petitioners identify will persist at lower firing rates, *i.e.*, the methodology BP is using to determine emission rates do not reflect actual stack test results and substantially understate emissions.

reported by each unit—do not accurately reflect stack test results and cannot be used to determine ongoing compliance. If the heat input derived from Method 19 fuel-based emission factors are more accurate than the measured heat input obtain from BP's own monitors, how can the monitored heat input values be used to quantify emissions? Petitioners do not understand IDEM's lack of concern about this issue. The question is not whether the use of F-Factors is allowed under Method 19, but whether they can be multiplied by the heat input data reported by BP's monitoring system to accurate predict the quantity of PM_{10} that is being released on an hourly, monthly, or annual basis. Clearly, they cannot.

D. SPM 43173 Fails to Establish Testing, Monitoring, or Reporting Requirements Adequate to Determine or Assure Compliance with Applicable Requirements, Including the Proposed 12-Month PM_{10} Limit.

1. Applicable Requirements

"Each permit issued under [Title V] shall set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c). It is IDEM's responsibility "to ensure that the title v permit 'set[s] forth' monitoring to assure compliance with all applicable requirements." Sandy Creek Order at 12 (quoting 42 U.S.C. § 7661c(c)). This includes ensuring that the permit includes "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." 40 C.F.R § 70.6(a)(3)(i)(B). If there is some periodic monitoring, but that monitoring is not sufficient to assure compliance with permit terms and conditions, permitting authorities must supplement monitoring to assure such compliance. 40 C.F.R § 70.6(c)(1).

Further, any emission limit in a Title V permit must be enforceable as both a legal and practical matter. In order for a limit to be enforceable as a practical matter, a proposed permit

must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit. *See, e.g., In the Matter of Hu Honua Bioenergy Facility, Pepeekeo, HI*, Order on Petition No. IX-2011-1 (Feb. 7, 2014) at 10. This requires that any proposed emission limits "be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold… whether by restricting emissions directly or through restricting specific operating parameters," and supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action." *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Order on Petition No. II-2001-05 (Apr. 8, 2002) at 7.

"In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record." CITGO Order at 7-8 (granting petition because permitting authority "did not articulate a rationale for its conclusions that the monitoring requirements… are sufficient to assure compliance"); *see also* 40 C.F.R. § 70 .7(a)(5). Further, "permitting authorities have a responsibility to respond to significant comments." CITGO Order at 7.

2. Specific Grounds for Objection

Conditions D.02.2 and D.02.3 require BP to measure PM_{10} emissions at each 3SPS stack at least once every 5 years to determine PM_{10} emission rate in lbs/mmBtu. The rolling 12-month total for each stack is determined by multiplying the PM_{10} emission rate measured during the most recent performance test by the firing rate for the preceding 12 months. The results are then combined with total emissions from the FCUs and TGUs (also derived from stack testing) to determine compliance with the mass limit of 494.99 tons for each 12-month period. If PM_{10} emissions obtained during the first stack test for a boiler/duct/burner combination after approval

of SPM 04173 are more than 20% higher than the most recent performance test for that stack, the other 3SPS stacks must be tested within two-and-a-half years of that test. Condition D.02.3(4). Finally, Condition D.02.2(a)(2) states that BP shall document its compliance with the 494.99-ton limit by submitting a "quarterly summary" of the total PM_{10} emissions of all the 3SPS Boilers, the FCUs 500 and 600, and TGUs A and B.

Both the law and EPA's prior decisions granting petitions to object have made the following abundantly clear that:

- Stack tests that measure emissions once every few years must be representative of normal operations, or they cannot be used to demonstrate that emission limits are being met.
- There must be some method to continuously assure compliance with federally enforceable Title V limits. Occasional stack tests are not enough.
- Parametric limits (e.g., specific operating conditions such as limitation on fuel sulfur or ammonia slip) will suffice, so long as the relationship between the parameters selected and corresponding emission levels have been demonstrated through stack testing or some other method.
- "Record-keeping" alone is not enough, i.e., cannot substitute for the regular monitoring of emissions or operating parameters that is needed to assure compliance.

The conditions of SPM 43173 do not assure that the monitoring or recordkeeping requirements selected are, as a legal or practical matter, sufficient to ensure compliance with the 494.99-ton emission limit.

a) The requirement to perform one stack every five years is insufficient to demonstrate compliance with an annual limit—let alone an annual limit that applies to combined emissions from multiple units—and IDEM provides no justification in the permit record for why it believes it is sufficient. Since BP is only required to perform a stack test once per 5 years, this effectively allows BP to "demonstrate compliance" with its annual limit on the basis of old stack test data that may not reflect current operations. As Petitioners noted in their comments, when reviewing

other Title V petitions EPA has expressly stated that a requirement to conduct a stack test once every five years, standing alone, is not sufficient to assure compliance with an annual "tons per year" limit applicable to several emission units intended to restrict a facility's PTE—such as the one proposed here. *See, e.g.,* Yuhuang Order at 17-19 (finding that a requirement to perform a single stack test once every 5 years was insufficient to assure compliance with proposed TPY limits for CO and VOCs).

b) Petitioners raised specific concerns about whether the stack tests conducted on the 3SPS boilers to date were representative of actual operating conditions. *See* Comments 15-17, Ex. 1 at 6. For example, as IDEM concedes, elevated concentrations of sulfur in fuel gas or high levels of ammonia slip can increase the formation of condensable particles that are a byproduct of combustion. There are no provisions in SPM 43173 to require that fuel gas sulfur or ammonia slip during stack testing reflect normal operating levels, or to keep ammonia and fuel sulfur levels at or below the levels recorded during the most recent stack test. To the contrary, as Petitioners noted in Comment 17, IDEM's stack test guidance advises regulated sources to conduct practice runs to identify the conditions that will help them "pass" an official stack test, regardless of whether these reflect real operating conditions. That kind of advice risks turning "performance tests" into farce.

c) As noted in our comments, IDEM assumes, without explanation, that the emission rates (in lbs/mmBtu), however they are established in stack testing, will remain constant during the five years until the next test and can be multiplied by the heat input recorded by BP's monitors to quantify PM_{10} emissions on a monthly or rolling 12-month basis. Comments 15, 19, Ex. 1 at pgs. 6-7; *see also* Ex. 3 at pgs. 7-13 (Comments 5-7). We have explained in detail above that although these emission factors are supposedly derived from stack tests, they cannot even accurately

quantify PM_{10} emissions during those same stack tests, much less for the subsequent months and years for which SPM 43173 includes no monitoring requirements. *Id.* Even assuming BP emerged from stack testing with a more accurate lbs/mmBtu emission factor, *i.e*., one that matched the actual test results, that rate could not reliably predict future emissions. Total PM_{10} cannot be obtained by multiplying a static stack test emission factor by a monthly or annual firing rate, because varying levels of parameters such as fuel sulfur or ammonia slip can also significantly affect emissions.

3. Issue Raised in Public Comment

Petitioners raised the inadequacy of the requirement to stack test once every five years, as well as their concerns about the non-representativeness of these test results, in Comments 15-17, Ex. 1 at 6. Petitioners further discussed IDEM's failure to set forth monitoring requirements that can assure compliance with the emission limit in SPM 43173 or to provide a rationale for its decisions, the inability of SPM 43173's monitoring requirements to yield reliable and representative data, and the unenforceability of the proposed monitoring conditions as a practical and legal matter in Comments 19-21, Ex. 1 at 7. As several of these Comment noted, Petitioners also raised and discussed these same concerns at length in both rounds of their prior comments on SPM 41980—neither of which ever received any response from IDEM.[36] *See* Ex. 3 at pgs. 7-13 (Comments 5-7); Ex. 4 at pgs. 3-8 (Comments 1-3).

4. Analysis of IDEM's Response

IDEM provides no indication in the record that it actually evaluated whether SPM 43173's monitoring and stack testing requirements are sufficient to assure compliance with the terms and conditions in the permit, as required by section 504(c) of the Clean Air Act. Similarly,

[36] SPM 41980 proposed the same requirement to stack test once every five years to demonstrate compliance with the proposed annual mass limit for the 3SPS Steam Plant as IDEM proposes in SPM 43173.

the permit record does not include an explanation as to how the permit's "recordkeeping" and "monitoring" requirements—or more accurately, the lack thereof—are "sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." 40 C.F.R. § 70.6(a)(3)(i)(B).

In general, the State concedes that fuel gas sulfur and ammonia slip from boilers equipped with SCR can increase the formation of ammonium sulfate, or condensable particles, and that "practical methodologies include reducing sulfur in the fuel and control of ammonia injection" to reduce excess PM_{10} emissions. Petitioners agree. The problem is that SPM 43173 does not actually include any requirements to manage either the sulfur content or the ammonia injection rate during stack testing, and IDEM does not explain how SPM 43173 will address these variables, which can vary widely and drive actual PM_{10} emissions well above the levels measured during stack tests conducted once every five years.

In several places, IDEM states that "record keeping" or existing monitoring requirements will somehow assure compliance or help to keep ammonia slip and fuel sulfur content under control. *See, e.g.*, ATSD at 10. IDEM also states that it "considers that operating procedures for SCR, including control of the ammonia injection rate, also monitor representative operating conditions under a general obligation to operate the source in accordance with good air pollution control practices." *Id.* There are two problems with IDEM's response. First, SPM 43173 does not actually require BP to monitor or maintain records of some of the key operating variables—like ammonia injection and ammonia slip—that IDEM concedes may increase PM_{10} emission levels.[37] Second, and more significantly, EPA has consistently maintained that neither record-

[37] IDEM refers to "operating procedures for the SCR, including the ammonia injection rate," but does not say what these are, and does not require that these parameters be monitored, or establish any procedures to determine the relationship between these operating procedures and PM_{10} emission levels.

keeping nor monitoring, standing alone, are enough—the Title V permit must identify specific and **enforceable** parametric limits that must be met to keep emissions below allowable levels. *In the Matter of Northeast Maryland Waste Disposal Authority, Montgomery Co. Resource Recovery Facility, Montgomery County, MD*, Order on Petition No. III-2019-2 (Dec. 11, 2020) at 10 (finding monitoring provisions that appear to "simply present the Permittee with information that may be used to guide its behavior" but do not amount to an enforceable permit violation are insufficient to assure compliance, and that "nothing in the permit suggests how these results guide the Permittee's behavior."). IDEM's statement that it "considers that operating procedures for SCR" and the "general obligation to operate the source in accordance with good air pollution control practices" to constitute a monitoring "requirement" at all, let alone an **enforceable** one, is especially puzzling given that IDEM acknowledges these "operating procedures" and "practices" are "not expressly incorporated" in SPM 43173. ATSD at 10.

Adding to the confusion, IDEM claims that the 2008 Permit anticipated that installation of SCR would increase PM_{10} and adjusted emission limits accordingly, "All parties considered that the 2008 calculations represented the potential to emit of the ammonia slip pathway accurately." ATSD at 10. But the 2008 Permit's assumption that ammonia slip would increase the potential to emit to 0.0087 lbs/mmBtu was in fact incorrect. The permit limit had to be increased to 0.010 lbs/mmBtu in 2012, when initial testing indicated that fuel sulfur and ammonia slip had increased PM_{10} emissions more than expected.[38] The 3SPS boiler stacks have never successfully managed to meet this limit either, failing 12 out of 12 performance tests between 2015 and 2019 with emission rates ranging from 0.0109 to 0.0226 lbs/mmBtu.

[38] Appendix A to the TSD for SPM 43173 assumes that the duct burners and SCR controls increased PM_{10} emissions from the 3SPS boiler stacks by 39.04 tons per year ("present PTE" of 130.18 tons minus "baseline" PTE of 91.14 tons), well above the expectations in the 2008 Permit. Ex. 2 at 51.

While IDEM refers to BP's "good faith" efforts to find out why its PM_{10} emissions limits have been so much higher than its previous permits allowed, ATSD at 9, it does not explain what either BP or IDEM learned or how these insights will be used to minimize PM_{10} emissions under the new permit—which is particularly concerning given that again, BP has failed 12 out of 12 stack tests at the 3SPS Steam Plant since August 3, 2015 to demonstrate compliance with the 0.010 lbs/mmBtu limit, and has in fact never successfully demonstrated compliance with that limit. IDEM repeatedly insists that existing procedures (which are not included in the permit) are adequate to control PM_{10} emissions, without acknowledging the 12 failed stack tests that show they have not done so.[39] Based on its response (and apparent lack of concern over this history of noncompliance), Petitioners are concerned that IDEM does not recognize the difference between identifying conditions that will help minimize PM_{10} emissions **during** stack testing, and assuring that those conditions are actually maintained thereafter during periods of **non-**stack testing. For example, the emission rates that will be used to quantify PM_{10} emissions from boiler stacks 31, 32, 33, and 34 until the next performance tests at each stack are based on the results of stack tests conducted from October 8 to October 12, 2018. *See* Condition D.02.2(i)(1). However, the 2018 stack test results are neither representative nor provide a basis for assuring that the emission rates measured during testing can be maintained over the next five years of operation.

IDEM does not clarify what "good faith" efforts BP made to reduce emissions during those stack tests, and nothing in the available record suggests that BP has actually identified specific operating parameters that can be used to keep PM_{10} emissions at or below the emission rates measured during those tests, or will in fact do so. Petitioners' Comments specifically raised

[39] IDEM's TSD for SPM 43173 stated vaguely that "IDEM is aware that there are pending enforcement actions relating to PM_{10} limits for the No. 3 SPS boilers and PM_{10} limits for the TGU's. IDEM is reviewing these matters and will take the appropriate action." TSD, Ex. 2 at 9. The ATSD for SPM 43173 provides no further details and does not discuss these enforcement actions or BP's extended history of violations.

numerous concerns regarding the potential non-representativeness of these tests and requested that IDEM explain how it would ensure that tests are representative of normal operating conditions. Comments 15-17, 19, Ex. 1 at pgs. 6-7. This is especially important because, as Petitioners have repeatedly pointed out to IDEM, BP is not required to (and does not) report any data on multiple parameters known to potentially affect PM_{10} emissions (such as fuel gas sulfur, ammonia injection rates, or ammonia slip) on its stack tests. IDEM has not provided anything in the record addressing these critical concerns.

While IDEM acknowledges that parameters such as fuel sulfur can affect PM_{10} emissions, it does not explain what steps it has taken to ensure that the 2018 stack test results are representative of normal operating conditions, what steps it has taken to ensure that future tests are representative, why SPM 43173 contains no operating or monitoring requirements that would ensure future tests are representative, and why SPM 43173 does not require BP to, at a minimum, maintain parameters such as fuel gas sulfur or ammonia injection at or below the levels measured during the most recent stack tests to ensure PM_{10} emissions do not simply increase during normal operation. These omissions are particularly puzzling given that IDEM's revised draft of the previously proposed SPM 41980 had acknowledged that fuel sulfur levels might affect PM_{10} emissions and had included a provision that at least attempted to account for potential variability in fuel gas levels during stack tests for compliance demonstration.[40]

[40] While Petitioners' comments on revised SPM 41980 stated Petitioners believed this fuel gas sulfur monitoring requirement was inadequate, they made clear that Petitioners' concerns centered on IDEM's specific implementation—not the decision to monitor fuel sulfur (which Petitioners had recommended in their comments on the first draft, along with other parameters such as ammonia injection and ammonia slip). Specifically, Petitioners noted that the basis for IDEM's decision was unclear because fuel sulfur data was only reported for two stack tests, and these (very) limited data points appeared to contradict rather than support IDEM's decision. Ex. 4 at 2-3. Petitioners had recommended that IDEM consider establishing at least one more parametric control in addition to fuel gas sulfur—or in the alternative, delay its permitting decision until BP had provided additional data on parameters known to potentially affect PM_{10} emissions, such as fuel gas sulfur, ammonia injection rates, or ammonia slip, which BP was not required to (and had not) reported on its stack tests. *Id.* at 8.

Instead, IDEM's response states that IDEM considered monitoring requirements for CO and NOx (required to demonstrate compliance with BP's separate CO and NOx limits) and the requirement "to report excess CO and NOx emissions" under Condition D.24.15(e) "sufficient to demonstrate that the boilers operate at all times in a manner consistent with the most recent test that demonstrates compliance with [the 494.99-ton] emissions limit." ATSD at 10. However, IDEM does not explain (1) how levels of either pollutant correlate to PM_{10}, or (2) how excess emission reports for CO and NOx, which BP is only required to submit for periods of "excess CO and NOx emissions," would (or even could) be used to ensure continuous compliance with the 494.99-ton PM_{10} limit. General requirements to monitor CO and NOx that are not actually related to the PM_{10} limit and do not impose any actual requirements (enforceable or otherwise) relating to PM_{10} emissions cannot reasonably assure compliance with BP's PM_{10} limit.

IDEM dismisses Petitioners' concerns that stack tests may be gamed to generate artificially low PM_{10} emission rates by vaguely referencing its authority to review test protocols. That provides little assurance, given IDEM's own guidance urging regulated sources to identify the conditions that are most likely to produce a successful stack test (regardless of whether these represent real operating conditions) and IDEM's apparent lack of concern at accepting test results it is almost certainly (or at least, **ought** to be) aware are not actually representative as valid for purposes of demonstrating compliance with SPM 43173. *See* Condition D.02.2(i)(1).

Numerous contradictions make IDEM's response difficult to follow. For example, IDEM argues that large gas-fired boilers are not generally required to monitor PM_{10} because they burn cleanly at a consistent emission rate. ATSD at 12. But the 3SPS boilers primarily burn refinery fuel gas, are equipped with SCR, and IDEM elsewhere acknowledges that PM_{10} emissions from these units fluctuate widely depending on the sulfur content of fuel and ammonia slip. *Id.* at 10.

Again, the 3SPS boiler stacks have never successfully demonstrated compliance with the 0.010 lbs/mmBtu PM_{10} limit since 2015, so for IDEM to defend the lack of monitoring requirements in its new permit on the grounds that these units "burn cleanly" is simply disingenuous.

Finally, IDEM several times suggests that the State need not include any monitoring or parametric limits to assure compliance with PM_{10} emission limit in BP's Title V permits because there are no federal rules that explicitly define such requirements for steam boilers equipped with SCR that burn fuel gas. That is untrue. Title V was designed to fill those gaps, and where applicable federal rules do not spell out compliance assurance requirements, they must be established and identified for all federally enforceable limits in each Title V permits. 40 C.F.R. § 70.6(c)(1) (if "monitoring is not sufficient to assure compliance with permit terms and conditions, permitting authorities must supplement monitoring to assure such compliance.").

VIII. Petitioners Respectfully Urge EPA to Exercise Its Discretion to Reopen SPM 43173 for Cause on Two Additional Issues Not Raised in Public Comment.

Petitioners respectfully submit that SPM 43173 violates the requirements of the Clean Air Act in two respects significant enough to warrant a reopening of the permit for cause pursuant to 40 C.F.R. § 70.7(f) and (g). Specifically, (1) baseline emissions for FCUs 500 and 600 represented in Appendix A are calculated using erroneous emission factors from the 2008 Permit that did not include condensable particulates, and which EPA specifically required IDEM to revise for this reason; and (2) IDEM did not evaluate whether SPM 43173 will assure compliance with the 24-hour National Ambient Air Quality Standards ("NAAQS") for either $PM_{2.5}$ or PM_{10} emissions.

Petitioners acknowledge that the specific issues described in this section were not raised with "reasonable specificity" in their Comments, and do not argue that it was impracticable to do so. 42 U.S.C. § 7661d(b)(2). However, Petitioners believe EPA has the discretion to reopen the

permit for cause to address both concerns. *In the Matter of PacifiCorp Energy, Hunter Power Plant, UT,* Order on Petition Nos. VIII-2016-4 & VIII-2020-10 (Jan. 13, 2021) (finding that "[n]otwithstanding" EPA's denial of petitions on grounds that petitioners had failed to raise issues related to PSD during public comment, EPA was obligated to order the states to reopen the permits and re-evaluate PSD requirements for cause, pursuant to *Sierra Club v. EPA*, 964 F.3d 882 (10th Cir. 2020) and 40 C.F.R. § 70.7(f) and (g)); *see also* 40 C.F.R. § 70.7(f)(iii) and (iv) (stating a "permit shall be reopened and revised" for cause if "EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit" or if EPA "determines that the permit must be revised or revoked to assure compliance with the applicable requirements.").

A. The Baseline Emissions for FCUs 500 and 600 Represented in Appendix A Are Calculated Using Erroneous Emission Factors That Do Not Include Condensable Particulates, and Which EPA Specifically Required IDEM to Revise Due to This Error.

Appendix A to the TSD for SPM 43173 presents data on the baseline and post-project emissions which IDEM relied upon in calculating Condition D.02.1(a)'s new rolling 12-month PM_{10} limit of 494.99 tons. More specifically, Appendix A compares annual "baseline" PM_{10} emissions to potential emissions after completion of the WRMP for FCU 500 and 600 as follows:

Table 3

PM_{10} WRMP Baseline Emissions: SPM 43173, App. A			
Unit	Annual Coke Burn (pounds)	PM_{10} Emission Rate (lbs/1,000 lbs coke burn)	PM_{10} Emissions tons/year
FCU 500	505,105,000	0.465	117.2
FCU 600	351,518,000	0.35	56.28

Table 4

PM_{10} Post-Project Potential to Emit: SPM 43173, App. A			
Unit	Annual Coke Burn (pounds)	PM_{10} Emission Rate (lbs/1,000 lbs coke burn)	PM_{10} Emissions tons/year
FCU 500	669,191,100	0.9	301.14
FCU 600	408,802,200	0.7	150.06

The information is incorrect. It does not reflect the calculations used to estimate net emission increases from the WRMP in either the 2008 Permit, or any subsequent Title V permit renewal or modification for BP Whiting. Both the baseline and post-project PM_{10} emissions in the 2008 Permit were calculated using the emission factors listed in Table 3. Consequently, the post-project PTE for both catalytic crackers were presented as follows in Appendix C and E of the Technical Support Document for the 2008 Permit:

Table 5

PM_{10} Post-Project Potential to Emit: SPM 25484, Table C.64			
Unit	Annual Coke Burn (pounds)	PM_{10} Emission Rate (lbs/1,000 lbs coke burn)	PM_{10} Emissions tons/year
FCU 500	669,191,100	0.465	156.6
FCU 600	408,802,200	0.35	75

But the baseline and projected emissions for both FCU's used to set 2008 permit limits included only filterable particles, while the Indiana SIP (in effect in 2008) includes both filterable and condensable particles. 326 IAC 6.8-2-6(d). As discussed previously, on October 16, 2009, EPA specifically granted objections to the 2008 Permit based on the grounds that IDEM's netting analysis had been inadequate and ordered IDEM to re-evaluate its netting analysis and revise the permit to address these deficiencies. *See* 2008 BP Order at pgs. 6-11, 16, 19-20. In subsequent negotiations between Petitioners, EPA, IDEM, and BP, it became clear that

the emission factors used to estimate both baseline and potential emissions increases at FCUs 500 and 600 in the 2008 Permit were impermissibly based on filterable PM_{10} only. Consequently, the parties agreed that the emission factors in Table 4 would fairly represent both filterable and condensable PM, and would be used to calculate *both* post-project PTE shown in Table 4 above *and* the baseline emissions demonstrated in Table 6 below:

Table 6

PM_{10} Baseline Emissions			
Unit	Annual Coke Burn (pounds)	PM_{10} Emission Rate (lbs/1,000 lbs coke burn)	PM_{10} Emissions tons/year
FCU 500	505,105,000	0.9	227
FCU 600	351,518,000	0.7	123

Had the parties not reached this understanding and instead relied upon the mismatched emission factors represented in Appendix A of SPM 43173 and Tables 3 and 4, the post-project potential to emit from FCU 500 and 600 combined would have been 277 tons higher than baseline emissions for both units, making it impossible for BP to keep the net emissions increase from the WRMP project below the significance threshold for major NSR.

Conditions D.02.2(b)(2) and D.02.2(c)(2) state that when calculating total PM_{10} for any 12-month period, PM_{10} emissions from FCU 500 and 600 can be no less than the baseline emissions that appear in Appendix A (see Table 3). *See* TSD, Ex. 2 at 51. For example, when calculating total emissions from the 3SPS Steam Plant, FCUs 500 and 600, and TGUs A & B, the PM_{10} emissions from FCU 500 can be no less than 117.2 tons, and from FCU 600 no less than 52.28 tons, even if emissions measured in the most recent stack tests were lower. But as explained above, the project baseline numbers cited by IDEM are incorrect. If the goal is to avoid crediting any emission reductions below the project baseline, SPM 43173 should require

that any PM_{10} emissions included in the rolling 12-month totals be no lower than 227 tons for FCU 500 and 123 tons for FCU 600 (Table 6). Applying the correct emission factors, BP must assume (regardless of performance test data) that total PM_{10} emissions from FCU 500 and 600 are at least 350 tons when calculating emissions over any rolling 12-month period.

B. SPM 43173 Does Not and Cannot Assure Compliance With the 24-hour Primary and Secondary NAAQS for $PM_{2.5}$ and PM_{10} Emissions.

As criteria pollutants for which EPA is required to establish NAAQS under the CAA, 42 U.S.C. § 7409, emissions of PM_{10} and $PM_{2.5}$ are subject to both long-term (averaged over one year) NAAQS standards **and** short-term (averaged over 24-hours) primary and secondary NAAQS standard—which are currently 35 $\mu g/m^3$ and 150 $\mu g/m^3$, respectively.[41] The PM_{10} limit of 0.0075 lbs/mmBtu under 326 IAC 6.8-2-6(a), which was approved by EPA as a part of Indiana's federally enforceable SIP on April 30, 2008,[42] was a SIP limit designed to ensure that Lake County "achieved and maintained" the PM NAAQS.[43][44] 42 U.S.C. § 7407(a); *see also* 42 U.S.C. § 7410. Similarly, the provisions adopted in 2012 that limited total emissions from each boiler stack to 0.010 lbs/mmBtu effectively capped hourly boiler emissions from each stack to no more than 6.16 pounds per hour (0.010 lbs/hour x 616 mmBtu).

SPM 43173 eliminates all limits that constrain hourly emissions from the 3SPS boiler stacks. IDEM did not evaluate whether that might allow spikes in short term emissions that could affect the ability to meet the 24-hour NAAQS for $PM_{2.5}$ and PM_{10} in Lake County or northwest

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[41] *See generally* US EPA. Final Rule: Review of the National Ambient Air Quality Standards for Particulate Matter. 85 Fed. Reg. 82684 (Dec. 18, 2020)
[42] 73 Fed. Reg. 23356 (April 30, 2008).
[43] Lake County was designated in non-attainment status with the Primary Annual PM-2.5 (1997) NAAQS (level of 15 $\mu g/m^3$) from 2005 until February 6, 2012, when the 1997 $PM_{2.5}$ NAAQS was revoked. In 2018, Lake County's $PM_{2.5}$ NAAQS classification was re-designated from "unclassifiable" to "unclassifiable/attainment." *See* U.S. EPA. *Final Rule: Air Plan Approval; Illinois; Indiana; Revised Designation of Illinois and Indiana 2012 PM2.5 Unclassifiable Areas*. 83 Fed. Reg. 66631 (December 27, 2018).
[44] In 2003, Lake County was re-designated from a "nonattainment" area to a "moderate maintenance" area for the PM_{10} NAAQS. *See* 68 Fed. Reg. 1370 (Jan. 10, 2003).

Indiana. Petitioners respectfully request that EPA reopen the permit to require IDEM to conduct air modeling to determine the impact that SPM 43173 could have on maintaining compliance with these NAAQS requirements.

IX. CONCLUSION

For the reasons discussed above, EPA must object to SPM 43713. As clearly raised in Petitioners' Comments, SPM 43173's rolling 12-month limit for PM_{10} is unenforceable as both a legal and practical matter, fails to assure compliance with and violates provisions of the federally enforceable SIP for the State of Indiana, contains numerous material mistakes, and allows BP to significantly increase emissions of PM_{10} from Whiting Refinery without any justification or explanation from IDEM. Accordingly, Petitioners respectfully request that EPA object to the issuance of SPM 43173, and require Indiana to revise and reissue the permit in a manner that complies with the requirements of the Clean Air Act and Indiana's SIP by correcting the legal deficiencies identified.

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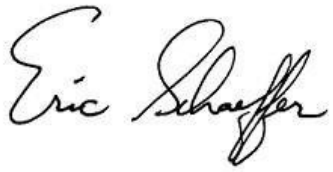
Respectfully submitted,



Eric Schaeffer
Executive Director
Environmental Integrity Project
1000 Vermont Avenue NW, Suite 1100
Washington, D.C. 20005
Phone: 202-263-4440
Fax: (202) 296-8822
Email: eschaeffer@environmentalintegrity.org

On behalf of the Environmental Integrity Project and the Hoosiers Chapter of the Sierra Club