

ArcelorMittal Cleveland
Flat Carbon Steel



ArcelorMittal

April 13, 2010

Certified Mail – Return Receipt Requested

Mr. Erm Gomes
Ohio Environmental Protection Agency
Division of Surface Water
2110 East Aurora Road
Twinsburg, Ohio 44087

Subject: ArcelorMittal Cleveland Inc.
NPDES Permit 3ID00003*OD
Modification Application
Outfall 604 Effluent Limitations

Dear Mr. Gomes:

ArcelorMittal Cleveland Inc. submits the enclosed NPDES permit application to modify the existing Section 301(g) variance effluent limitations of ammonia-N at Outfall 604. All other limitations are requested to remain unchanged. Three copies of the modification application are enclosed. An Antidegradation Addendum with certification is included in the enclosed application. A check in the amount of \$200 is also enclosed as remittance of the application fee.

ArcelorMittal Cleveland respectfully requests that Ohio EPA timely process this application to increase the existing Section 301(g) variance effluent limitations of ammonia-N at Outfall 604, as allowed by applicable regulations and as described in the attached application. Your effort to review this request and revise the permit expeditiously is greatly appreciated. Please contact me at (216) 429-6542, if you have any questions regarding this correspondence.

Sincerely yours,

R. M. Zavoda
Manager, Environmental

cc: Mr. Eric Nygaard
Ohio Environmental Protection Agency
Division of Surface Water
P.O. Box 1049
122 South Front Street
Columbus, OH 43216-1049 (w/attachment)

ArcelorMittal Cleveland Inc.
3060 Eggers Avenue
Cleveland, Ohio 44105

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EXHIBIT 1



ArcelorMittal

ArcelorMittal Cleveland Inc.

3060 Eggers Avenue
Cleveland, OH 44105

NPDES Permit Modification Request

Section 301(g) Variance for Ammonia-N, Outfall 604

NPDES Permit No. 3ID00003*OD; OH0000957

April 13, 2010

Prepared by:

Amendola Engineering, Inc.
Lakewood, OH

EXHIBIT 1

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State of Ohio Environmental Protection Agency

Ohio NPDES Permit Modification Form
Revised 01/07

National Pollutant Discharge Elimination System

Application for Modification of Ohio NPDES Permit

Submit this application to the appropriate district office

District Offices

Northeast District • 2110 East Aurora Road • Twinsburg, Ohio • 44087

Northwest District • 347 North Dunbridge Road • Bowling Green, Ohio • 43402

Central District • P.O. Box 1049 • Columbus, Ohio • 43216-1049

Southeast District • 2195 Front Street • Logan, Ohio • 43138

Southwest District • 401 East 5th Street • Dayton, Ohio • 45402

Division of Surface Water • 50 West Town Street, Suite 700 • P.O. Box 1049 • Columbus, Ohio • 43216-1049

EXHIBIT 1

For Agency Use	Facility Name:	Date Received (yy/mm/dd)
	Ohio EPA Permit Number:	Application Number:



Application for Modification of Ohio NPDES Permit

Division of Surface Water
Permits and Compliance Section

A. Permit number for which modification is being requested: 3 1 D 0 0 0 0 3 * O D

B. Name of organization responsible for facility: ArcelorMittal Cleveland Inc.

C. Address, location, and telephone number of facility producing the permitted discharge:

1. Name: ArcelorMittal Cleveland Inc.

2. Mailing Address: Street: 3060 Eggers Avenue

City: Cleveland State: Ohio Zip: 44105

3. Location: Street: 3060 Eggers Avenue

City: Cleveland Zip: 44105 County: Cuyahoga

4. Telephone (area code & no.): 216-429-6542

D. Describe in detail the provision(s) of the permit the applicant wishes to modify. *(Attach additional pages as necessary)*

ArcelorMittal Cleveland, Inc. requests to modify the Outfall 604 permit limits for 'Nitrogen, Ammonia' at 'Part 1, A. - FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS' (page 24) of the subject NPDES Permit. Refer to 'Summary of Permit Modification Request' and Attachment 1 of this application for further information.

E. Describe in detail the reason(s) a modification is desired. *(Attach additional pages as necessary)*
See Ohio Administrative Code 3745-33-04(D) for grounds for modification.

Refer to Attachment 1 of this application.

F. Name of receiving water or waters:

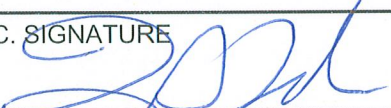
Cuyahoga River

- G.** Describe requested modification in sufficient detail to allow Ohio Environmental Protection Agency to process your request. If a Permit to Install is required under regulation OAC 3745-42, attach a completed application for a Permit to Install and make no other entries in this section. If a Permit to Install is not required and additional space is needed, provide the additional information on attached sheets.

Refer to Attachment 1 of this application.

Certification

I certify that I am familiar with the information contained in this application and that, to the best of my knowledge and belief, such information is true, complete and accurate.

A. NAME AND OFFICIAL TITLE (type or print) T.G. Fedor (General Manager)	B. PHONE NO. (area code & no.) 216-429-6542
C. SIGNATURE 	D. DATE SIGNED 4/12/10

**ArcelorMittal Cleveland Inc.
NPDES Permit Modification Request**

Summary of Permit Modification Request

ArcelorMittal Cleveland Inc. (ArcelorMittal) is requesting increased Section 301(g) variance effluent limits for ammonia-N at Outfall 604. The current Outfall 604 effluent limits and ArcelorMittal's proposed modified effluent limits (PMELs) are presented in the table below.

Internal Outfall 604
Current and Proposed Ammonia-N Effluent Limits
(Section 301(g) Variance Limits)

Season	Current Monthly Average Limit (kg/day)	Current Daily Maximum Limit (kg/day)	ArcelorMittal Proposed Monthly Average Limit (kg/day)	ArcelorMittal Proposed Daily Maximum Limit (kg/day)
Summer	62.4	85.6	224	294
Winter	81.6	211	224	294

The request is being made for the following reasons: (1) upon resumption of blast furnace production operations in September and October 2009, concentrations of ammonia-N in the blast furnace recycle system have exceeded historical levels; (2) the facility is in jeopardy of exceeding the ammonia-N effluent limits at Outfall 604; and, 3) the relevant NPDES permit regulations allow such an increase in limits.

The current NPDES permit effluent limits were established based upon a variance from the generally applicable BAT effluent limitations guidelines for ammonia set out at 40 CFR 420.33 for blast furnace operations. The variance is authorized under Section 301(g) of the Clean Water Act and was approved by Ohio EPA and USEPA and forward through several NPDES permit renewals. This variance allows ArcelorMittal to continue to operate the blast furnace process water treatment and recycle system without recycle system blowdown treatment that would otherwise be necessary to achieve the generally applicable BAT effluent limits for ammonia-N, while being protective of ambient water quality in the lower Cuyahoga River.

Sections 1 and 2 below explain the basis for the permit modification request; address the pertinent requirements of Section 301(g) of the Clean Water Act; and, address the relevant Ohio Antidegradation and Antidegradation regulations.

ArcelorMittal believes this request should be granted based upon the following considerations:

- The requested increased limits are allowed by the applicable Ohio NPDES permit regulations and will conform to the requirements of Section 301(g) of the Clean Water Act:
 - The requested effluent limits are more stringent than both the effluent limits derived from the generally applicable BPT effluent limitation guidelines at 40 CFR Part 420.32 and the applicable Cuyahoga River wasteload allocation for ammonia-N for

ArcelorMittal. Thus, the requested effluent limits satisfy those pertinent provisions of Section 301(g) of the Clean Water Act.

- For this case, the Antibacksliding regulation does not prohibit establishing less stringent effluent limits than contained in the prior permit because: (1) effluent limits established under Section 301(g) of the Clean Water Act are specifically excluded from consideration by the antibacksliding regulation at OAC 3745-33-05(E)(1); and, (2) information is now available that was not available at the time of permit issuance which would have justified less stringent effluent limits at that time (see OAC 3745-33-05(E)(1)(b)).
- The requested increase can be approved under the Ohio Antidegradation regulation. The requested increase is a 'de-minimis' increase as set out at OAC 3745-1-05 (D)(1)(b)(i). The Cleveland facility meets the requirements of 3745-1-05 (C)(2) related to required treatment facilities, and the requirements of OAC 3745-1-5(C)(6) related to 'set asides to limit lower water quality'.
- No significant adverse environmental impacts can reasonably be anticipated from the allowable increase in effluent limits, as evidenced by the classification of the increase as 'de-minimis' under the Ohio Antidegradation regulation. The applicable wasteload allocation for ammonia is approximately 8 to 11 times greater than the proposed modified effluent limits.
- If the request is denied, ArcelorMittal would be compelled to install and operate costly treatment facilities for ammonia-N. Such cost considerations are a major reason why Section 301(g) was included in the Clean Water Act for non-conventional pollutants (i.e., to avoid 'treatment for treatment's sake').

Attachment 1 - Requested Modifications to NPDES Permit and Basis for Request

ArcelorMittal Cleveland Inc. (ArcelorMittal) requests modifications of the Outfall 604 effluent limits for ammonia-N set out on page 24 of the NPDES permit (Ohio NPDES Permit No. 3ID00003*OD Part 1, A – Final Effluent Limitations) .

Description of Outfall 604

Outfall 604 contains blowdown from the common gas cooling and scrubber process water treatment and recycle system for the No. C5 and C6 blast furnaces. The treatment and recycle system includes clarifiers for removal of particulates removed from the blast furnace gas, a mechanical draft cooling tower for cooling the recirculating water and ancillary pump stations and sludge dewatering equipment. A portion of the recirculating water is used for cooling slag generated from the blast furnaces and a low-volume blowdown is discharged through Outfall 604. The discharge from Outfall 604 is combined with non-contact cooling water, storm water and groundwater and is discharged via Outfall 005 to the Cuyahoga River.

Current Outfall 604 Ammonia-N Effluent Limits and Outfall 604 Ammonia Discharges

The current ammonia-N effluent limits are based upon a Section 301(g) variance from the Best Available Technology (BAT) Effluent Limitations Guidelines for Ironmaking at 40 CFR Part 420.33(a). The variance is authorized under Section 301(g) of the Clean Water Act and was applied for by ArcelorMittal's predecessors and has been incorporated into prior NPDES permits and the current NPDES permit¹. The current limits are presented below:

Table 1-1
Internal Outfall 604
Current Ammonia-N Effluent Limits
(Section 301(g) Variance Limits)

Season	Monthly Average Limit (kg/day)	Daily Maximum Limit (kg/day)
Summer	62.4	85.6
Winter	81.6	211

The numerical limits listed in Table 1-1 above were derived by Ohio EPA from an analysis of Outfall 604 ammonia data from 1995 to 1998². These limits were based on then current discharges from Outfall 604 and do not reflect application of treatment technology to the discharge for ammonia-N. ArcelorMittal does not add ammonia-N to the blast furnaces as a raw material or process additive, but some is present in blast furnace coke charged to the furnaces. The amount of ammonia-N contained in coke is minute in concentration but, because of the large amounts of coke used, a significant amount of ammonia can be liberated within the blast furnace and captured by the gas cleaning system. While

¹ See Undated Letter from George Elmaraghy (Ohio EPA) to Peter Swensen (USEPA) and page 24 of NPDES Permit No. 3ID00003*OD containing recommended ammonia limits for Outfall 604.

² April 11, 2001 Fact Sheet Addendum and 301(g) Public Notice. Note that the winter monthly average limit predates this analysis (it is from the 1994 Ohio EPA Director's Final Findings and Orders containing 301(g) limits).

purchase specifications attempt to prevent the coke from containing measurable concentrations of contaminants, the amount of ammonia contained within the coke that Cleveland purchases on the open market is beyond its reasonable control due to the minute concentration issue. Any ammonia that may be generated in the blast furnace itself is also beyond the reasonable control of the Cleveland facility.

The Cleveland facility has historically maintained compliance with the Section 301(g) limits for ammonia-N listed in Table 1-1. In October 2008 the C5 and C6 blast furnaces were idled because of the severe economic contraction. In September 2009 the C5 furnace resumed production and in October 2009 the C6 furnace resumed production. When production resumed, ammonia-N concentrations of the recirculating process water treatment system and blowdown initially approached historical concentrations, as expected, but then continued to increase through February 2010. A graph of Outfall 604 ammonia concentrations from 2004 to February 2010 is attached as Figure 1. ArcelorMittal was able to achieve compliance with the current limits by minimizing blowdown flow. Operation at reduced blowdown flows for an extended period of time is undesirable because fouling and scaling will occur in the recycle system, causing operation and maintenance problems and shortening equipment life. Graphs of Outfall 604 ammonia-N loadings from 2004 to February 2010 and the current limits are presented as Figure 2. As can be seen, had production resumed in summer instead of winter, the Cleveland facility would have exceeded the current NPDES permit effluent limits, even at reduced blowdown rates.

The quality of coke charged to the furnaces has been identified as a possible factor affecting ammonia concentrations in the recycle system. Had coke quenched with 'dirty water' been used in the furnaces, high ammonia concentrations would be expected. However, no new coke supplies have been used at the furnaces since production resumed. Coke analysis has not determined the cause of the recent elevated ammonia levels. The Cleveland facility is continuing to investigate the cause of the increased ammonia concentrations in the blast furnace recirculation system but, other than ammonia-N introduced with coke, no new sources have been identified.

The total iron production rate has been in the range of 6,600 tons/day since production resumed. When production increases above this level, to the rate used to establish the Outfall 604 limits for other parameters (9,252 tons/day) for example, ammonia discharges are expected to increase above the current levels.

Proposed Modifications to Internal Outfall 604 Ammonia-N Effluent Limits

Based upon the likelihood of exceeding the current ammonia limits at both current and future increased production rates, and considering allowable effluent limits under Section 301(g) and the implementing NPDES regulations, ArcelorMittal proposes that the Outfall 604 effluent limits for ammonia-N be modified to the following values:

Table 1-2
Internal Outfall 604
Requested Modified Ammonia-N Effluent Limits

Season	Monthly Average Limit (kg/day)	Daily Maximum Limit (kg/day)
Year Round	224	294

The values in Table 1-2 are based upon the USEPA BAT model treatment system blowdown flow for ironmaking blast furnaces of 70 gallons per ton, the production rate used to calculate the Outfall 604 permit limits for other parameters (9,252 tons/day) and the maximum observed monthly average and daily ammonia-N concentrations since production resumed in September and October 2009 (91 mg/l and 120 mg/l, respectively – refer to Figure 1, pages 1 and 2). The requested limits account for the recent elevated ammonia concentrations and for increased ammonia-N discharges expected at higher production rates.

Table 1-3 below is a comparison of the Cleveland facility current and proposed limits to the other Section 301(g) ammonia limits for blast furnace operations in Ohio.

Table 1-3
Section 301(g) Variance Ammonia Limits for Blast Furnaces in Ohio

Facility	Section 301(g) Limits (kg/day)		NPDES Production Rate (tons/day)	Section 301(g) Limits (kg/ton)		Percentage of Severstal Wheeling Limits (kg/ton basis)	
	M. Avg	D. Max		M. Avg	D. Max	M. Avg	D. Max
ArcelorMittal Cleveland – Current Summer Limits	62.4	85.6	9,252	0.0067	0.0093	24%	17%
ArcelorMittal Cleveland – Current Winter Limits	81.6	211	9,252	0.0088	0.0228	32%	41%
ArcelorMittal Cleveland – Requested Limits (year round)	224	294	9,252	0.0242	0.0318	87%	58%
Severstal Wheeling, Inc. – Year Round Limits	113.4	226.8	4,100	0.0277	0.0553	100%	100%
AK Steel Middletown – Year Round Limits	205	410	6,920	0.0296	0.0592	107%	107%

As can be seen from the two right hand columns in the table above, the current Cleveland facility limits are well below the other Section 301(g) limits when normalized to production. The proposed modified effluent limits are still more stringent than the corresponding Section 301(g) variance limits for the other blast furnace facilities in Ohio.

Consideration of Section 301(g) Requirements

Effluent limits established under Section 301(g) must meet certain requirements. These are addressed below.

Section 301(g) Limits in Relation to BPT and Water Quality Based Effluent Limits [Section 301(g)(2)(A)]

Effluent limits established under Section 301(g) of the Clean Water Act must meet the more stringent of Best Practicable Control Technology (BPT) effluent limits and water quality based effluent limits derived from applicable state water quality standards (Section 301(g)(2)(A)). Table 1-4 is a comparison of the following values: ArcelorMittal’s current effluent limits, ArcelorMittal’s proposed modified effluent limits, the generally applicable BPT limits, the generally applicable BAT limits, and Ohio EPA’s wasteload allocation value for the Cleveland facility. The comparison is also presented graphically as Figure 3.

Table 1-4
ArcelorMittal Cleveland, Inc.
Comparison of Requested Limits to Ohio EPA Wasteload Allocation, BPT Limits and BAT Limits

	Ohio EPA Wasteload Allocation		BPT Limits (kg/day)	BAT Limits (kg/day)	Current 301(g) Limits (kg/day)		Requested 301(g) Limits (kg/day)
	Summer	Winter			Summer	Winter	
Monthly Average	NA	NA	451	24.5	62.4	81.6	224
Daily Maximum	3135	2472	1353	73.6	85.6	211	294

As can be seen in Table 1-4 and Figure 3, the proposed modified effluent limits are well below both the generally applicable BPT limits and the applicable wasteload allocation, and thereby meet the requirements of Section 301(g)(2)(A).

Requirements on Other Point or Non-Point Sources [Section 301(g)(2)(B)]

Section 301(g) limits must not result in any additional requirements for other point or non-point sources. This is addressed by the Ohio EPA wasteload allocation for the lower Cuyahoga River, which accounts for other discharges. The PMELs (i.e., proposed modified effluent limits) do not result in additional requirements on other discharges.

Impact on Water Quality That Will Protect Public Water Supplies, Fish, Shellfish, Wildlife and Recreational Activities [Section 301(g)(2)(C)]

Public Water Supplies

Public water supplies in Ohio are protected by drinking water quality standards applicable at the point of water withdrawal. As is the case in most states, there are no applicable drinking water standards for ammonia-N in Ohio. The nearest public water supply is located in Lake Erie, approximately five miles from the mouth of the Cuyahoga River and approximately 10 miles from Outfall 005. As a result of the distance to the nearest public water supply intake, adverse impacts on the nearest public water supply cannot reasonably be anticipated.

Fish, Shellfish, Wildlife

Ohio’s water quality standards applicable to the receiving stretch of the Cuyahoga River address these concerns. Thus, by meeting the wasteload allocation, water quality necessary for protection of fish, shellfish and wildlife will be attained.

Recreational Activities

Recreational activities on the lower Cuyahoga River in the vicinity of Outfall 005 comprise principally recreational boating. Adverse effects on recreational activities from the proposed modified effluent limits cannot reasonably be anticipated.

Evaluation of Unacceptable Risk to Human Health or the Environment [Section 301(g)(C), continued]

The PMEL's must not result in discharges of ammonia that may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute and chronic toxicity, or synergistic propensities.

Bioaccumulation and Persistency

Ammonia is not persistent in the aquatic environment and does not bioaccumulate in aquatic organisms³. Consequently, adverse impacts associated with persistency or bioaccumulation cannot reasonably be anticipated.

Acute and Chronic Toxicity

USEPA guidance⁴ states that state water quality standards can be used as a basis for Section 301(g) variances provided the standards are designed to provide protection for aquatic life and human health concerns. Specifically, the guidance cites protection of human health through designation of recreational and drinking water uses and direct protection of aquatic life. The Ohio water quality standards meet these criteria. Recreational and drinking water use designations are specified; and, chronic and acute toxicity to aquatic life are addressed specifically by the water quality standards for specific pollutants. Accordingly, comparison of the PMELs for ammonia-N with WQBELs derived by Ohio EPA for ArcelorMittal is an appropriate means to evaluate the requested variance.

Because the PMELs are well below the WQBELs established by the Ohio EPA wasteload allocation, adverse impacts associated with acute or chronic toxicity from ammonia-N in the Cuyahoga River cannot reasonably be anticipated.

Synergistic Propensities

Data provided in recent NPDES permit renewal applications for the Cleveland facility show a general absence of toxic organic pollutants and relatively low levels (low ug/L range) of selected toxic metals in the discharge from Outfall 005. As stated in USEPA guidance⁵, there is no information to suggest ammonia-N in combination with any of the pollutants at the levels listed in the NPDES permit application will result in synergistic propensities (i.e., greater toxicity of two pollutants in combination than the toxicity of each pollutant considered separately and then added together).

ArcelorMittal chlorinates intake water withdrawn from the Cuyahoga River for process and non-contact cooling uses for control of zebra mussels and bio-fouling. Sodium hypochlorite is used for this purpose.

³ Pollutant Specific Section 301(g) Guidance Document, Ammonia, USEPA Office of Water Enforcement and Permits, September 1985, page 12.

⁴ Pollutant Specific Section 301(g) Guidance Document, Ammonia, USEPA Office of Water Enforcement and Permits, September 1985

⁵ Pollutant Specific Section 301(g) Guidance Document, Ammonia, USEPA Office of Water Enforcement and Permits, September 1985, page 14.

The NPDES permit requires dechlorination of discharges from Outfalls 005 and establishes a daily maximum effluent limit for residual chlorine of 0.022 mg/L. The dechlorination station is located in the Outfall 005 sewer approximately 200 feet downstream from the point at which the low volume Outfall 604 discharge mixes with approximately 38.5 MGD of non-contact cooling water.

Factors that mitigate against formation of significant amounts of chloramines are as follows:

- During the summer months when the potential for biofouling is higher than at other times of the year, chlorination practice is to apply up to 2,400 ml/min of 12.5% sodium hypochlorite solution to the non-contact cooling water over a period of approximately 135 minutes per day. This amounts to a maximum applied free chlorine concentration of approximately 1.4 mg/L to the non-contact cooling water. Lesser amounts are applied during other times of the year.
- The relative amounts of ammonia and free chlorine present are low. The maximum amount of ammonia-N that would be added with the proposed modified effluent limits at Outfall 604 to the Outfall 005 discharge would be approximately 2.0 mg/l. The maximum amount of free chlorine in the form of sodium hypochlorite applied is in the range of 1.4 mg/L. A portion of the free chlorine is consumed immediately upon reaction with organic material in the non-contact cooling water. Thus, the amount available for reaction with ammonia-N from Outfall 604 is less than 1.4 mg/L.
- The period of time available for ammonia-N added by the Outfall 604 discharge to react with residual free chlorine in the non-contact cooling water is limited to not more than 135 minutes per day during the summer months.
- The pH of the non-contact cooling water discharged from Outfall 005 is typically in the range of 7.9 to 8.0 su. The rate of reaction between ammonia and hypochlorous acid (i.e., the active ingredient of sodium hypochlorite) varies considerably with pH, with the rate decreasing rapidly as the pH is increased or decreased from pH 8.3. su.⁶
- The available reaction time in the Outfall 005 sewer between the point of addition of the Outfall 604 discharge and the Outfall 005 sewer dechlorination station is estimated at less than 20 seconds.

Thus, conditions that favor formation of significant amounts of chloramines in the Outfall 604/Outfall 005 system are not present and formation of significant levels cannot reasonably be anticipated.

When the Section 301(g) variance was approved initially and then continued in subsequent NPDES permits, Ohio EPA and U.S. EPA determined that the potential for synergistic effects from ammonia and chlorine could not reasonably be expected to pose an unacceptable risk. This conclusion is further supported by Ohio EPA's determination made during the latest NPDES permit renewal process in 2008, that the discharge from Outfall 005 did not merit imposition of whole effluent toxicity (WET) effluent limitations or WET monitoring requirements⁷. These determinations were based on available WET monitoring data for Outfalls 005 collected over the previous permit term, which showed no significant acute toxicity attributable to the discharge. Considering that the expected Outfall 005 ammonia concentration based upon the proposed limits will still be low (1.5 mg/l monthly average and 2.0 daily maximum), it appears reasonable to conclude again that synergistic effects from ammonia and chlorine cannot reasonably be expected to pose an unacceptable risk to aquatic life in the lower Cuyahoga River.

⁶ Sawyer, C.N. and McCarty, P.L., *Chemistry for Sanitary Engineers*, McGraw-Hill Book Company, New York, NY, LOC CC No. 67-20179. 1967. (p. 369)

⁷ Fact Sheet for Ohio NPDES Permit No. 3ID00003*OD, page 23, February 5, 2008.

Consideration of Ohio EPA Antibacksliding Regulations

Under OAC 3745-33-05 (E), NPDES permits may not be modified to contain less stringent limits, except under certain circumstances. Two of those circumstances are applicable to this NPDES permit modification request:

OAC 3745-33-05(E)(1)(b) : *Information is available which was not available at the time of permit issuance (other than revised regulations, guidance or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance*

OAC 3745-33-05(E)(1)(e) : *The permittee has received a modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n) or 316(a) of the act or rule 3745-33-04 of the Administrative Code;*

Both of the above circumstances apply in this case. With respect to OAC 3745-33-05(E)(1)(b), the current elevated ammonia concentrations that have been measured in the recirculation system is information which was not available at the time of permit issuance. Based on the methodology followed by Ohio EPA when it established the current NPDES permit effluent limits, ArcelorMittal expects that if the data available from September 2009 to February 2010 were then available, Ohio EPA would have considered those data and provided effluent limits at that time similar to the modified effluent limits being requested by this application. With respect to OAC 3745-33-05(E)(1) (e), ArcelorMittal initially received a variance under Section 301(g) of the Clean Water Act in the 1980's and has maintained the variance since that time. Consequently, the *Antibacksliding* regulation does not prohibit modifying the permit to contain less stringent limits for ammonia at Outfall 604.

Consideration of Ohio EPA Antidegradation Regulation

Antidegradation is addressed in Attachment 2 of this application.



DIVISION OF SURFACE WATER

Antidegradation Addendum

In accordance with Ohio Administrative Code 3745-1-05 (Antidegradation), additional information may be required to complete your application for a permit to install or NPDES permit. For any application that may result in an increase in the level of pollutants being discharged (NPDES and/or PTI) or for which there might be activity taking place within a stream bed, the processing of the permit(s) may be required to go through procedures as outlined in the antidegradation rule. The rule outlines procedures for public notification and participation as well as procedures pertaining to the levels of review necessary. The levels of review necessary depend on the degradation being considered/requested. The rule also outlines exclusions from portions of the application and review requirements and waivers that the Director may grant as specified in Section 3745-1-05(D) of the rule. Please complete the following questions. The answers provided will allow the Ohio EPA to determine if additional information is needed. All projects that require both an NPDES and PTI should submit both applications simultaneously to avoid going through the antidegradation process separately for each permit.

- A. Applicant: ArcelorMittal Cleveland Inc.
- Facility Owner: ArcelorMittal Cleveland Inc.
- Facility Location (city and county): Cleveland, Cuyahoga
- Application or Plans Prepared By: Amendola Engineering, Inc.
- Project Name: Permit Modification Request for Outfall 604 Ammonia Limits
- NPDES Permit Number (if applicable): 3ID00003*OD; OH0000957

B. Antidegradation Applicability

Is the application for? (check as many as apply):

- Application with no direct surface water discharge (Projects that do not meet the applicability section of 3745-1-05(B)1, i.e., on-site disposal, extensions of sanitary sewers, spray irrigation, indirect discharger to POTW, etc.). (Complete Section E)
- Renewal NPDES application or PTI application with no requested increase in loading of currently permitted pollutants. (Complete Section E, Do not complete Sections C or D).
- PTI and NPDES application for a new wastewater treatment works that will discharge to a surface water. (Complete Sections C and E)
- An expansion/modification of an existing wastewater treatment works discharging to a surface water that will result in any of the following (PTI and NPDES): (Complete Sections C and E)
 - ▶ addition of any pollutant not currently in the discharge, or
 - ▶ an increase in mass or concentration of any pollutant currently in the discharge, or
 - ▶ an increase in any current pollutant limitation in terms of mass or concentration.

- _____ PTI that involves placement of fill or installation of any portion of a sewerage system (i.e., sanitary sewers, pump stations, WWTP, etc.) within 150 feet of a stream bed. Please provide information requested on the stream evaluation addendum (i.e., number of stream crossings, fill placement, etc.) and complete Section E.
- _____ Initial NPDES permit for an existing treatment works with a wastewater discharge prior to October 1, 1996. (Complete Sections D and E)
- X Renewal NPDES permit or modification to an effective NPDES permit that will result in any of the following: (Complete Sections C and E)
- ▶ a new permit limitation for a pollutant that previously had no limitation, or
 - ▶ an increase in any mass or concentration limitation of any pollutant that currently has a limitation.

C. Antidegradation Information

1. Does the PTI and/or NPDES permit application meet an exclusion as outlined by OAC 3745-1-05(D) (1) of the Antidegradation rule?

 X Yes (Complete Question C.2)

_____ No (Complete Questions C.3 and C.4)

2. For projects that would be eligible for exclusions provide the following information:

Refer to Attachment 2 'Antidegradation Assessment', which is attached to this form.

- a. Provide justification for the exclusion.
- b. Identify the substances to be discharged, including the amount of regulated pollutants to be discharged in terms of mass and concentration.
- c. A description of any construction work, fill or other structures to occur or be placed in or near a stream bed.
3. Are you requesting a waiver as outlined by OAC 3745-1-05(D) (2-7) of the Antidegradation rule?

 X No

_____ Yes

If you wish to pursue one of the waivers, please identify the waiver and submit the necessary information to support the request. Depending on the waiver requested, the information required under question C.4 may be required to complete the application.

4. For all projects that do **not** qualify for an exclusion a report must accompany this application evaluating the preferred design alternative, non-degradation alternatives, minimal degradation alternatives, and mitigative techniques/measures for the design and operation of the activity. The information outlined below should be addressed in this report. If a waiver is requested, this section is still required.

Refer to Attachment 2 'Antidegradation Assessment', which is attached to this form.

- a. Describe the availability, cost effectiveness and technical feasibility of connecting to existing central or regional sewage collection and treatment facilities, including long range plans for

sewer service outlined in state or local water quality management planning documents and applicable facility planning documents.

- b. List and describe all government and/or privately sponsored conservation projects that may have been or will be specifically targeted to improve water quality or enhance recreational opportunities on the affected water resource.
- c. Provide a brief description below of all treatment/disposal alternatives evaluated for this application and their respective operational and maintenance needs. (If additional space is needed please attach additional sheets to the end of this addendum).

Preferred design alternative:

Non-degradation alternative(s):

Minimal degradation alternative(s):

Mitigative technique/measure(s):

At a minimum, the following information must be included in the report for each alternative evaluated.

- d. Outline of the treatment/disposal system evaluated, including the costs associated with the equipment, installation, and continued operation and maintenance.
- e. Identify the substances to be discharged, including the amount of regulated pollutants to be discharged in terms of mass and concentration.
- f. Describe the reliability of the treatment/disposal system, including but not limited to the possibility of recurring operation and maintenance difficulties that would lead to increased degradation.
- g. Describe any impacts to human health and the overall quality and value of the water resource.
- h. Describe and provide an estimate of the important social and economic benefits to be realized through this proposed project. Include the number and types of jobs created and tax revenues generated.
- i. Describe environmental benefits to be realized through this proposed project.
- j. Describe and provide an estimate of the social and economic benefits that may be lost as a result of this project. Include the impacts on commercial and recreational use of the water resource.

- k. Describe the environmental benefits lost as a result of this project. Include the impact on the aquatic life, wildlife, threatened or endangered species.
- l. A description of any construction work, fill or other structures to occur or be placed in or near a stream bed.
- m. Provide any other information that may be useful in evaluating this application.

D. Discharge Information

- 1. For treatment/disposal systems constructed pursuant to a previously issued Ohio EPA PTI, provide the following information:

PTI Number _____
 PTI Issuance Date _____
 Initial Date of Discharge _____

- 2. Has the appropriate NPDES permit application form been submitted including representative effluent data?

Yes (go to E)
 No (see below)

If no, submit the information as applicable under a OR b as follows:

- a. For entities discharging process wastewater attach a completed 2C form.
- b. For entities discharging wastewater of domestic origin attach the results of at least one chemical analysis of the wastestream for all pollutants for which authorization to discharge is being requested and a measurement of the daily volume (gallons per day) of wastewaters being discharged.

- E. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete.

This section must be signed by the same responsible person who signed the accompanying permit application or certification as per 40 CFR 122.22.

Signature 

Date 4/12/10

**ArcelorMittal Cleveland Inc.
NPDES Permit Modification Request**

Attachment 2 - Antidegradation Assessment

ArcelorMittal is requesting a modification of the Cleveland facility NPDES permit to increase the ammonia limits applicable to Outfall 604. None of the exemptions to the Antidegradation regulation at OAC 3745-1-05(B)(2) apply. Therefore, per OAC 3745-1-05(B)(1), this request is subject to the Antidegradation regulation.

The Ohio EPA Antidegradation regulation requires that dischargers requesting increased permit effluent limits to submit information for consideration by Ohio EPA. The required information for this request is provided below.

OAC 3745-1-05 (B) (3) (a)

Identification of the substances to be discharged, including the amount of regulated pollutant in terms of mass and concentration, and, if paragraph (B)(1)(c) of this rule applies, the amount of dredged fill material to be discharged.

This application is being submitted to modify the effluent limits for ammonia-N at Outfall 604. Outfall 604 is an internal monitoring station that discharges to final Outfall 005.

The PMELs (i.e., requested limits) are presented in Table 2-1. Table 2-1 also contains the corresponding ammonia-N concentrations for Outfall 604 and Outfall 005, at flow rates of 450 gpm¹ and 38.5 mgd², respectively. Note that the limits at Outfall 604 are mass loading limits.

Table 2-1
Proposed Modified Ammonia Effluent Limits for Outfall 604 and Corresponding Ammonia-N Concentrations

Proposed Outfall 604 Ammonia Limits (kg/day)		Corresponding Outfall 604 Concentration at 450 gpm for Proposed Limits (mg/l)		Corresponding Outfall 005 Concentration at 38.5 mgd for Proposed Limits (mg/l) ³	
Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
224	294	91	120	1.54	2.02

OAC 3745-1-05 (B) (3) (b)

A description of any construction work, fill or other structures to occur or be placed in or near the stream bed.

¹ Flow rate upon which proposed limits are based. (70 gal/ton x 9,252 tons/day / 1440 min/day = 450 gpm)

² Average Outfall 005 flow rate for 2006 to 2007 (relatively high production periods)

³ Ammonia-N concentration attributable to Outfall 604; excludes any background ammonia contained in the once-through non-contact cooling water withdrawn from and discharged to the Cuyahoga River to Outfall 005. Average Outfall 005 flow from January 2004 to September 2008; November 2009 to January 2010.

No dredged fill will be discharged as part of this request. No construction work, fill or other structures will occur or be placed near the stream bed as part of this request.

OAC 3745-1-05 (B) (3) (c)

A description and schematic of the applicant's preferred alternative for design and operation, including appropriate cost estimates, of the activity.

The preferred alternative for design is to operate the existing blast furnace recycle without any modifications and without installing a treatment system for ammonia-N for the blowdown. There is no incremental cost increase associated with this preferred design alternative.

The C5 & C6 blast furnaces are equipped with a common gas cooling and scrubber process water treatment and high rate recycle system comprising blast furnace thickeners (clarifiers) for removal of particulates removed from the blast furnace gas and a mechanical draft cooling tower for cooling the recirculating water. A portion of the recirculating water is used for cooling slag generated from the furnaces and a low-volume blowdown is discharged through Outfall 604. A schematic line drawing of the system is attached as Figure 4. This is equivalent to the EPA model BPT treatment system for blast furnace operations.

OAC 3745-1-05 (B) (3) (d)

Description and analyses, including availability, cost effectiveness and technical feasibility, of the utilization of central or regional treatment facilities rather than creating a new point source discharge. This analysis shall include an evaluation of long-range plans outlined in state or local water management planning documents and applicable facility planning documents.

Granting this request will not create a "new point source discharge". Nonetheless, ArcelorMittal has considered directing the Outfall 604 discharge to the Northeast Ohio Regional Sewer District (NEORSD) collection system. The discharge would be treated further at the NEORSD Southerly Treatment Center. ArcelorMittal considers this option unattractive because it involves some technical uncertainty and would not be cost effective.

Technical Considerations

During past conversations with NEORSD personnel, ArcelorMittal was informed that should the Cleveland facility direct industrial discharge to the NEORSD collection system, ArcelorMittal would be required to install some means of shutting off the industrial discharge during unspecified periods of overflow from local combined sewer system⁴. However, NEORSD was unable to provide a specified period of time upon which the design for retention facilities must be based. Based on a retention period of 5 days and a blowdown flow of 450 gpm, a tank volume of more than 3,200,000 gallons would be required. A tank of such size would need to be located across a plant road and railroad tracks from the blast furnace recycle system clarifiers, requiring pipe bridges, some extended piping runs and freeze protection measures. We do not know at this time whether 5 days is a sufficient basis for design or if the NEORSD would even be agreeable to accepting this discharge and under what additional requirements.

⁴ See NEORSD Code of Regulations Title IV – Combined Sewer Code Chapter 10 Section 4.1001 – Requirement to Store.

Cost Effectiveness

An order of magnitude capital cost estimate for the retention tank and ancillary equipment is \$3,000,000 to \$3,500,000. Operation and maintenance costs for the blast furnace recycle system would increase substantially because of NEORSD industrial user fees. Table 2-2 below sets out industrial sewer use charges based upon NEORSD sewer use rates:

Table 2-2
Projected Industrial Sewer Use Charges for
Blast Furnace Recycle System Blowdown to NEORSD

Year	NEORSD Industrial Sewer Use Rate (\$ / MCF) ⁵	Blowdown Flow (gpm) ⁶	Annual Sewer Use Costs (\$)
2010	40.75	450	\$ 1,289,000
2011	44.75	450	\$ 1,415,000

As can be seen, discharge to the NEORSD is clearly not cost effective, especially when considering that there is no increased cost associated with the preferred design alternative.

OAC 3745-1-05 (B) (3) (e) to (h)

Non-degradation alternatives; social and economic benefits, jobs created, tax benefits; environmental benefits lost; conservation projects.

The requested increase in the Outfall 604 ammonia-N effluent limits is than 10% of the applicable waste load allocation, and the proposed 'lowering of water quality' does not exceed 80% of the wasteload allocation. Consequently, the increase is considered 'de-minimis' under OAC 3745-1-05 (D) (1), and is excluded from the submittal requirements of OAC 3745-1-05 (B) (3) (e) to (h). Table 2-3 sets out the comparison of the increased loadings to the 10% and 80% thresholds.

⁵ NEORSD Code of Regulations Title 1 Chapter 6. Does not include any surcharges. NEORSD surcharge concentrations are 266 mg/l TSS; 228 mg/l BOD and 532 mg/l COD. The blast furnace discharge concentrations would not exceed these values.

⁶ 450 gpm is the flow upon which the proposed limits are based: (70 gpt [EPA BAT blowdown rate] x 9,252 tpd [Cleveland facility NPDES production rate] / 1440 min/day = 450 gpm).

Table 2-3
Requested Increased Ammonia-N Loadings Percentage of Ohio EPA Wasteload Allocation

10% De minimis Threshold Evaluation										
Season	Current Limits (kg/day)		Requested Limits (kg/day)		Increase (kg/day)		WLA (kg/day)	Increase Percentage of WLA		WLA 'De-minimis' Threshold
	M. Avg	D. Max	M. Avg	D. Max	M. Avg	D. Max	D. Max	M. Avg	D. Max	
Summer	62.4	85.6	224	294	162	208	3,135	5.2%	6.6%	< 10%
Winter	81.6	211	224	294	142	83	2,472	5.7%	3.4%	< 10%
80% De minimis Threshold Evaluation										
Season	Requested Limits (kg/day)		WLA (kg/day)	Requested Limits Percentage of WLA		WLA 'De-minimis' Threshold				
	M. Avg	D. Max	D. Max	M. Avg	D. Max					
Summer	224	294	3,135	7.1%	9.4%	< 80%				
Winter	224	294	2,472	9.1%	12%	< 80%				

Although the requested increase is considered 'de-minimis' under the Antidegradation regulations and is excluded from the submittal requirements of OAC 3745-1-05(B)(3)(e) (non-degradation alternatives), ArcelorMittal developed order of magnitude capital and operation and maintenance cost estimates for treatment of ammonia-N in the blast furnace recycle system blowdown of \$3,000,000 to \$5,000,000 (capital cost), and over \$1,000,000 (annual O&M). These estimates are based upon USEPA's BAT treatment system (alkaline chlorination) for ammonia-N for blast furnace discharges. If this request is not approved, ArcelorMittal would likely be compelled to install such treatment facilities. This is precisely what the Section 301(g) variance is intended to avoid, while being protective of ambient water quality in the lower Cuyahoga River.

OAC 3745-1-05 (C) - Antidegradation Review Requirements

OAC 3745-1-05 (C)(1) - Protection of Water Body Uses

The water body uses for the segment of the Cuyahoga River which receives the discharge will continue to be protected if the request is approved. The requested increase is less than the applicable wasteload allocation. Therefore, the water quality criteria will continue to be protected.

OAC 3745-1-05 (C)(2) - Required Treatment Technology; Non-point source controls

This section of the regulation requires any increase to be controlled through 'best available demonstrated control technology' relative to the specific regulated pollutant.

As defined at OAC 3745-1-05(A) (3) "Best available demonstrated control technology" means a wastewater treatment capable of meeting the following effluent limitations or design criteria:

*For industrial direct discharges subject to federal effluent guidelines, the facility shall be designed to meet the most stringent of the new source performance standards, best conventional pollutant control technology, best available technology economically achievable and best practicable control technology currently available **for the appropriate categorical guidelines of 40 C.F.R. 400 to 40 C.F.R. 471. (emphasis added)***

The Cleveland blast furnaces are not a new source. Ammonia-N is not a conventional or a toxic pollutant under the Clean Water Act. The Section 301(g) variance for ammonia-N for the Cleveland facility is from the best available technology economically achievable (BAT) effluent limitations guidelines (ELGs) set out at 40 CFR §420.33 (i.e., the Cleveland facility is not subject to the BAT limits for ammonia-N). At a minimum, Section 301(g) requires compliance with the generally applicable categorical best practicable control technology currently achievable (BPT) at 40 CFR §420.32. Thus, the most stringent *appropriate categorical guidelines* for ammonia-N for the Cleveland facility are those defined as best practicable control technology currently achievable (BPT) at 40 CFR §420.32.

The EPA model treatment system for BPT is solids removal in clarifiers or thickeners and cooling of the scrubber process and gas cooling water followed by high rate recycle. The Cleveland facility has had the model BPT treatment system in place since the 1970's and complies with permit limits that would be derived from the generally applicable BPT ELGs for ammonia-N. Thus, the Cleveland facility meets the requirements of OAC 3745-1-05(C)(2).

OAC 3745-1-05 (C)(3) - Public Involvement

ArcelorMittal expects that Ohio EPA will take the required steps to involve the public through the standard NPDES permit public review and comment process.

OAC 3745-1-05 (C)(4) - Outstanding Natural Resource Waters

This section is not applicable. The receiving water is not an Outstanding Natural Resource Water.

OAC 3745-1-05 (C)(5) - Other Waters

Per OAC 3745-1-05(D)(1), the request is exempt from the review requirements of this part because the request is for a 'de minimis' increase.

OAC 3745-1-05(C)(6) – Set Asides to Limit Lower Water Quality

The discharge is to a section of the Cuyahoga River designed as a Limited Resource Water. Consequently, per OAC 3745-1-05(C)(6)(d), the increase shall not cause water quality criteria to be violated. The requested increase is less than the applicable wasteload allocation. Therefore, the ambient water quality criteria will be met.

OAC 3745-1-05(C)(7) – Credit Projects

This section is not applicable because the requirements of OAC 3745-1-05(C)(6) – Set Asides to Limit Lower Water Quality will be met.

OAC 3745-1-05(C)(8) – Procedures

ArcelorMittal expects that Ohio EPA will follow the required procedures when evaluating this request.

Figure 1 (page 1 of 2)
ArcelorMittal Cleveland Outfall 604 Daily Ammonia-N Concentrations (mg/l) Jan 2004 to Feb 2010

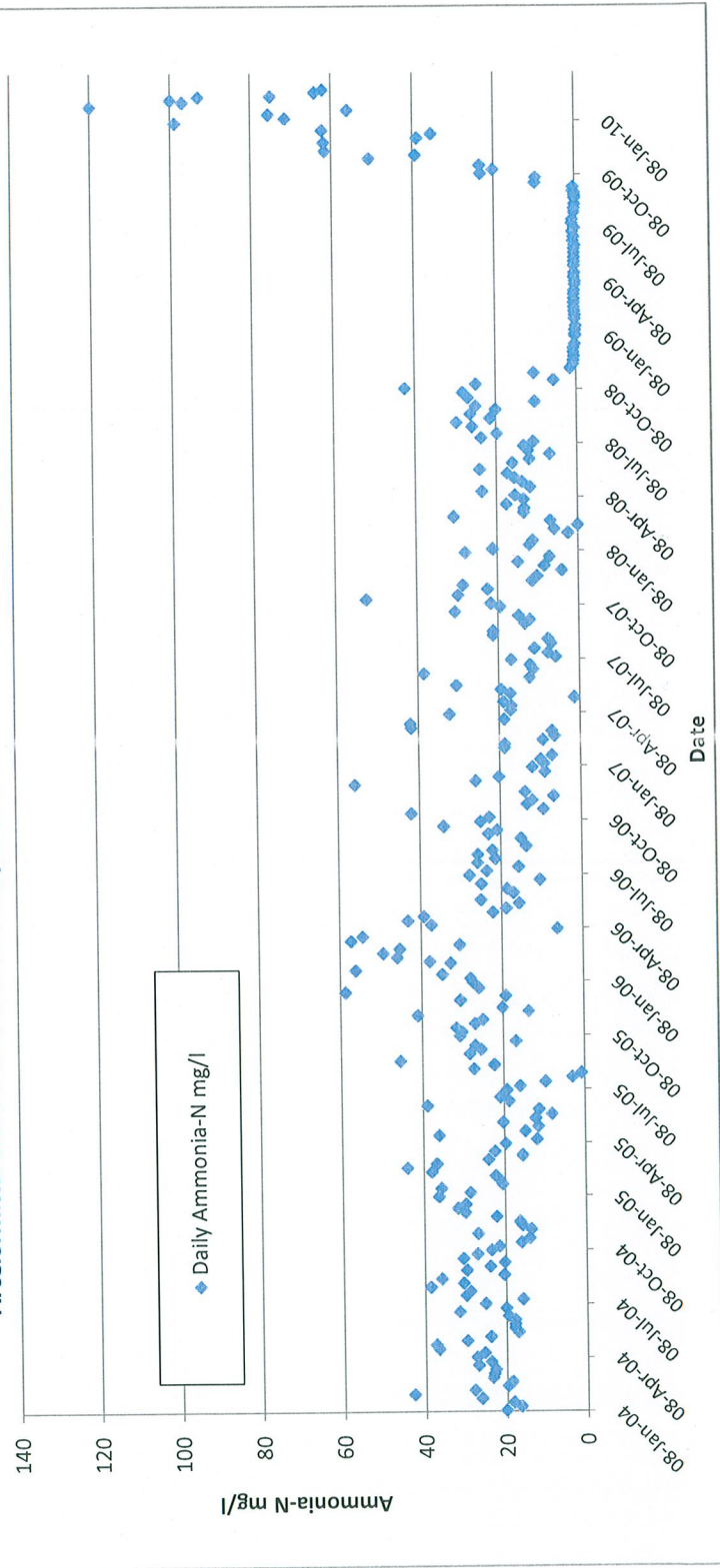


Figure 1 (page 2 of 2)
 ArcelorMittal Cleveland Outfall 604 Monthly Average Ammonia-N (mg/l) Jan 2004 to Feb 2010

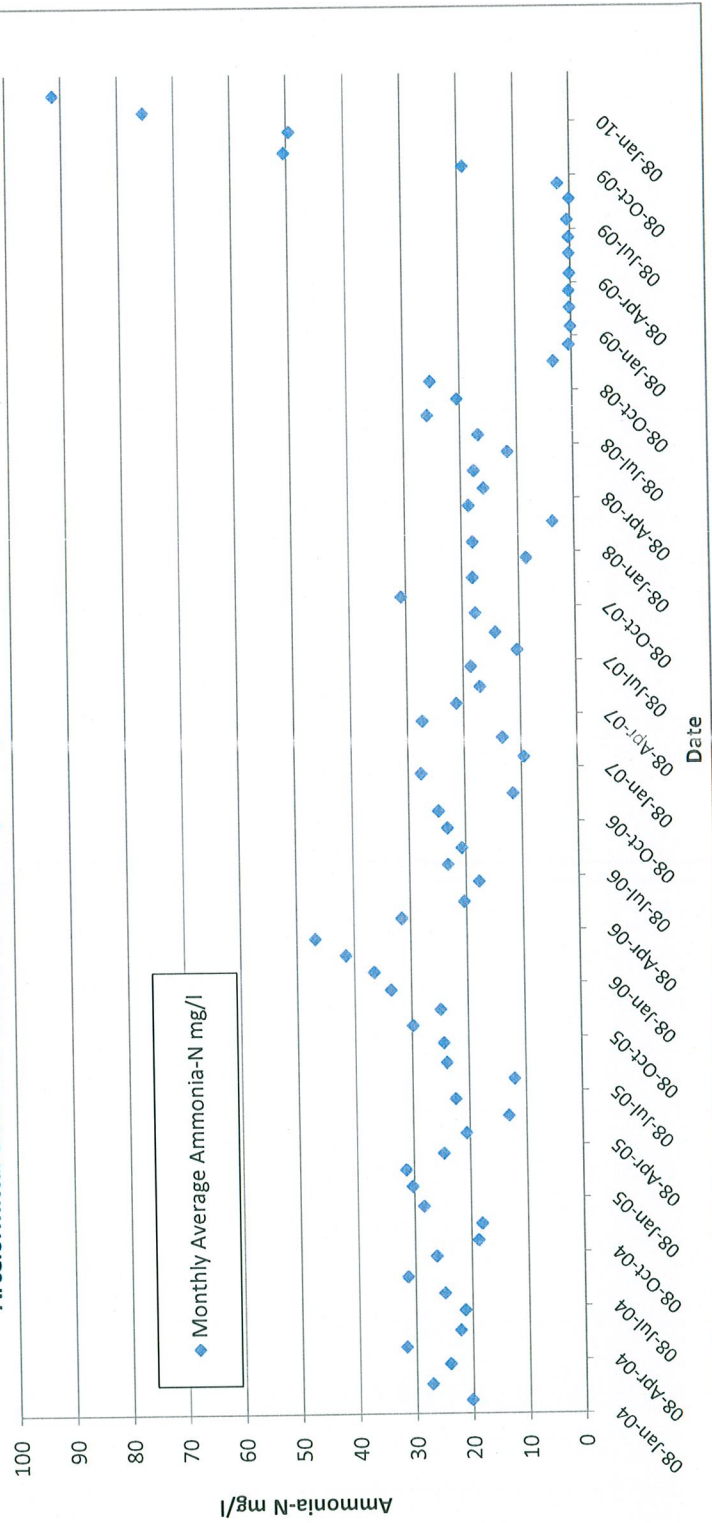


Figure 2 (page 1 of 2)
ArcelorMittal Cleveland Outfall 604 Daily Ammonia-N Loadings (kg/day) Jan 2004 to Feb 2010

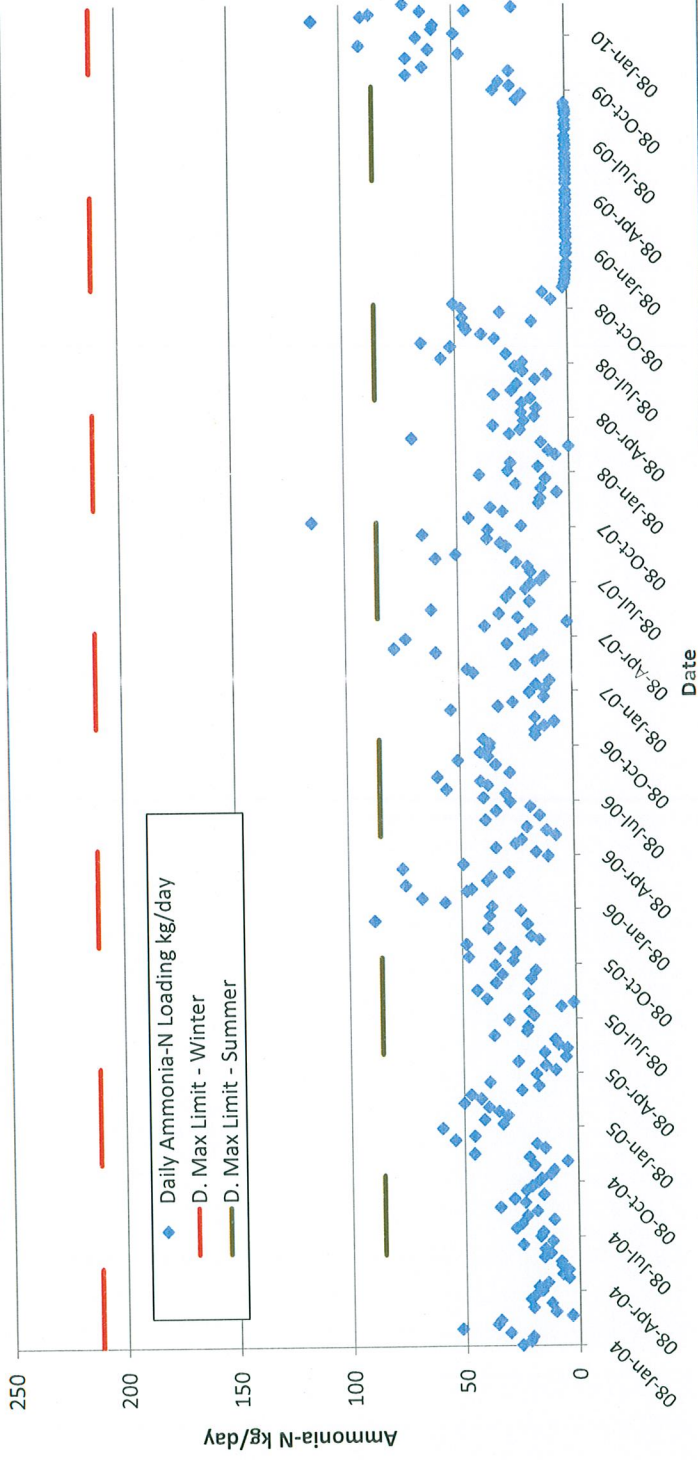


Figure 2 (page 2 of 2)
 ArcelorMittal Cleveland Outfall 604 Monthly Average Ammonia-N Loadings (kg/day) Jan 2004 to Feb 2010

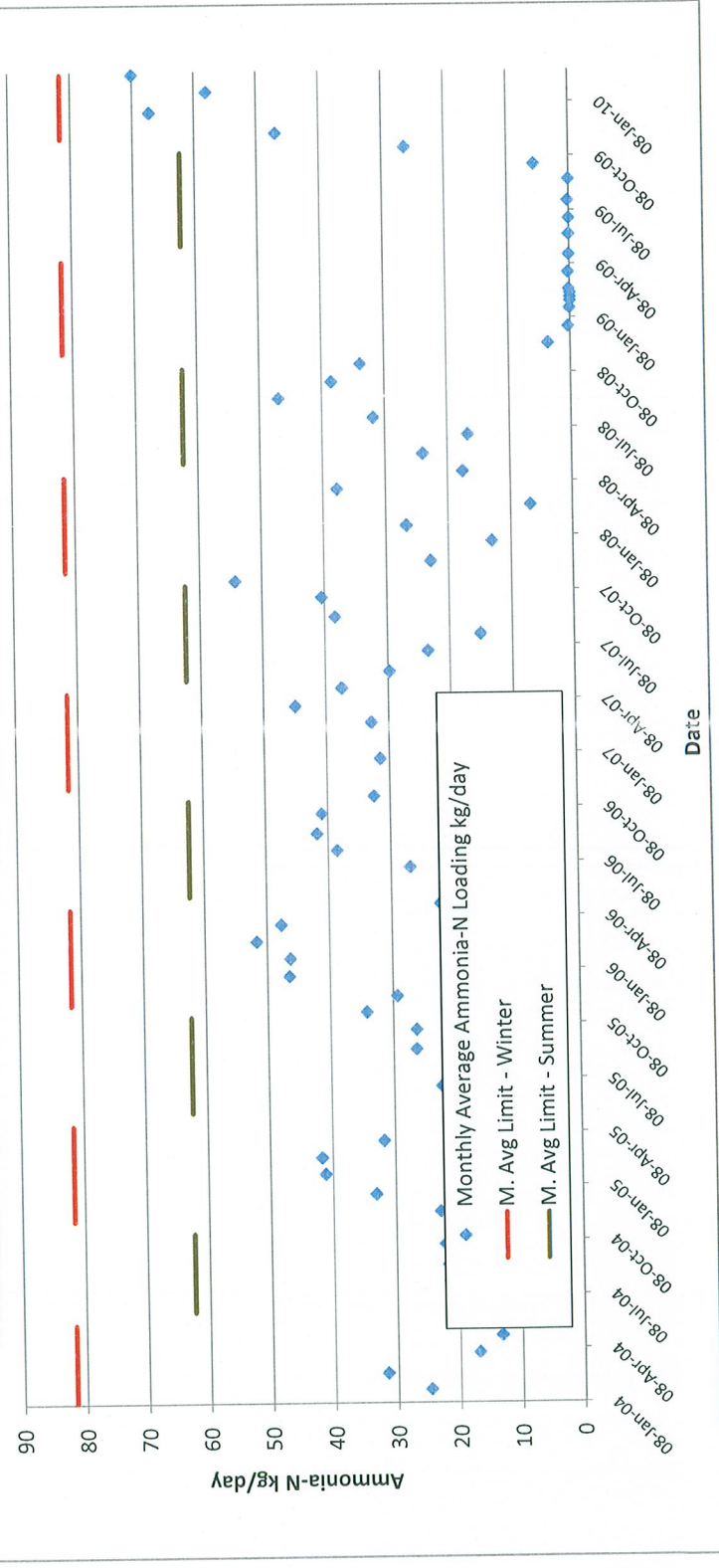


Figure 3
ArcelorMittal Cleveland Ammonia-N WLA , BPT, BAT and Current and Requested Outfall 604 Effluent Limits
kg/day

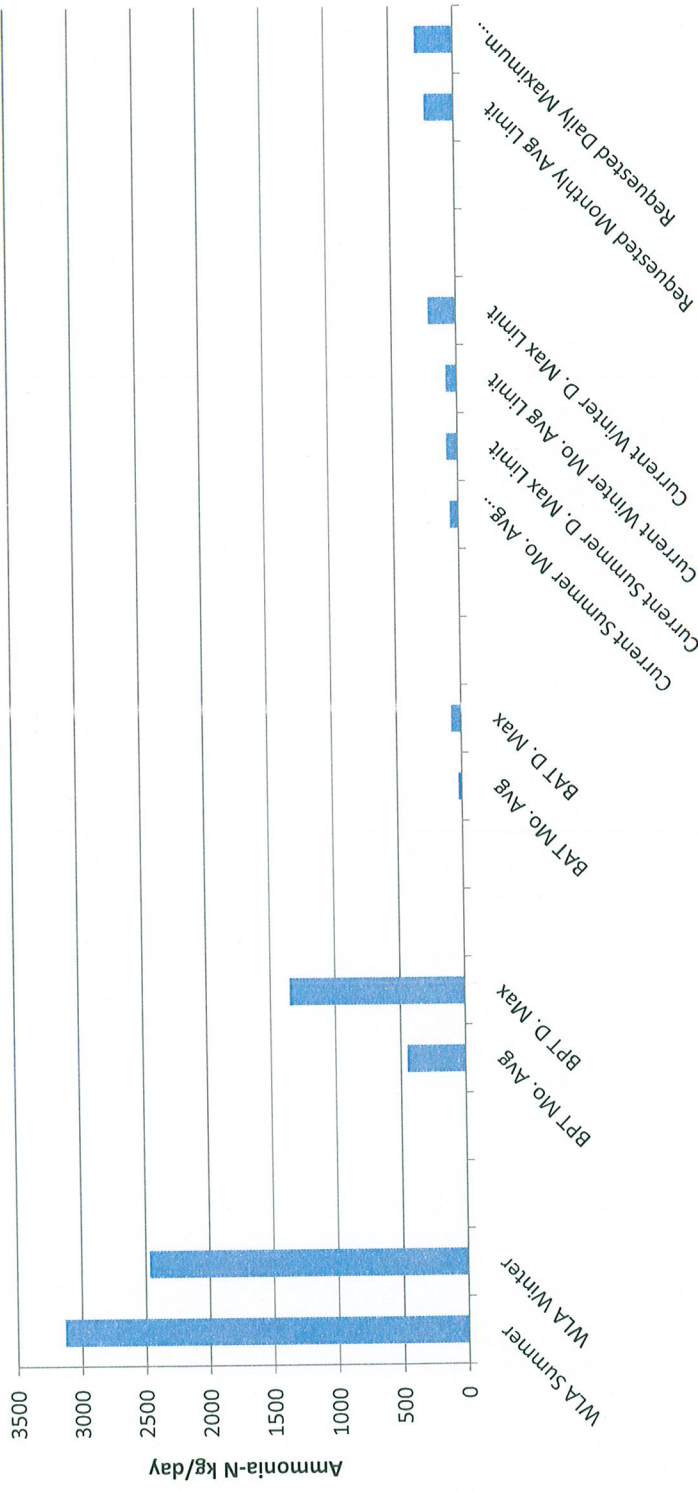
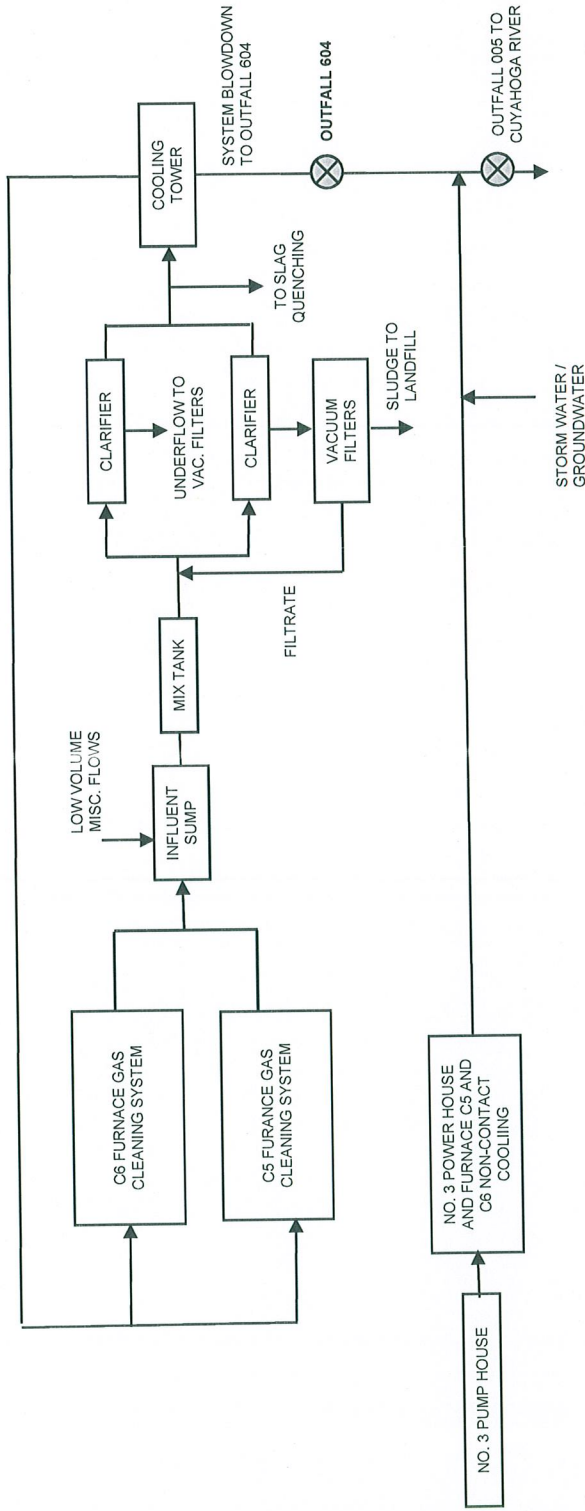


FIGURE 4
EXISTING BLAST FURNACE RECYCLE SYSTEM
PREFERRED DESIGN ALTERNATIVE
(SIMPLIFIED LINE DRAWING)




	CLEVELAND, INC. REVISION 0 03.26.10
	AMENDOLA ENGINEERING INC.

FIGURE 4
SIMPLIFIED BLAST
FURNACE RECYCLE
SYSTEM