LDEQ RECEIPT

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KOCH METHANOL ST. JAMES

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Post Office Box 510
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HAND DELIVERED

June 19, 2023

Louisiana Department of Environmental Quality
Office of Environmental Services
PO Box 4313
Baton Rouge, LA 70821-4313

RE: Koch Methanol St. James, LLC
Koch Methanol Facility
Revised Environmental Assessment Statement in support of the KMe Optimization Project: Application for a Significant Modification to Title V Permit No. 2560-00295-V4 and an Initial PSD Permit
AI No. 194165
Activity Nos. PER20220006 and PER20220007

Dear Sir or Madam:

Koch Methanol St. James, LLC (Koch) operates the Koch Methanol (KMe) Plant and KMe Terminal located in St. James, St. James Parish, Louisiana. The KMe Plant currently operates under Title V Permit No. 2560-00295-V5, and the KMe Terminal currently operates under Title V Permit No. 3169-V3. Koch is submitting this revised Environmental Assessment Statement (EAS) in support of the Application for a Significant Modification to Title V Permit No. 2560-00295-V4 and an initial PSD permit. The changes addressed in this EAS primarily reflect the results of revised 1-hour NO_2 National Ambient Air Quality Standard (NAAQS) air dispersion modeling, which are presented in a revised Air Quality Impact Assessment (AQIA) modeling report submitted to the LDEQ on June 1, 2023.

Enclosed are the revised EAS and two copies, as required by LDEQ; and per LAC 33:III.533.B.1, a copy of the revised EAS is also being submitted to the United States Environmental Protection Agency, Region 6. Additionally, pursuant to the requirements of La. R.S. 30:2018 of the Environmental Quality Act, the revised EAS is being provided to the local governmental authority and designated public library where the facility is located for public viewing.

If you or your staff have any questions or require additional information during your review of this revised EAS, please contact Brian Glover at (225) 408-2741, bglover@ramboll.com, or you may contact me at (580) 478-7621, kevan.reardon@kochind.com.

Sincerely,

Kevan Reardon
EH&S and Security Leader

cc: Mr. Anthony Randall, LDEQ

EPA Region 6 (r6airpermitsla@epa.gov)

APPENDIX D
ENVIRONMENTAL ASSESSMENT STATEMENT

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1. INTRODUCTION AND OVERVIEW

Koch Methanol St. James, LLC (Koch) operates the Koch Methanol Plant and the adjacent Koch Methanol Terminal, collectively known as the KMe Facility, on 1,300 acres in St. James, St. James Parish, Louisiana. The KMe Facility has been designed and constructed with state-of-the-art pollution abatement equipment to meet applicable state and federal environmental standards. Construction of the facility began in 2017 and it has been fully operational since 2021, with portions of the plant starting operations in late 2020.

As part of Koch's ongoing efforts to optimize the KMe Facility, Koch is proposing to implement, and seeking air permit authorization for, the KMe Optimization Project ("the Project"). Koch is also seeking to revise certain existing permit emission limits. These changes were described in Part 2 of the application for significant modification to Title V Permit No. 2560-00295 and an initial PSD Permit submitted to LDEQ on November 2, 2022 ("November 2022 Application"), as well as the addendum to that application (the Addendum) submitted to LDEQ on February 1, 2023.

Additionally, Koch submitted a permit application to the LDEQ on May 18, 2023, to update the existing Louisiana Pollutant Discharge Elimination System (LPDES) Permit LA0127367 in support of the Project ("May 2023 LPDES Application"), which included a separate EAS. Elements of the Project will result in an increase in the volume of wastewater flow sent to the KME Facility's existing wastewater treatment facility as well as an increase in volume of boiler and cooling tower blowdown, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems, with a commensurate increase in the volume of effluent discharged to the Mississippi River. Further detail is provided in Section 2.3.4 of this document and are also provided in the May 2023 LPDES Application.

An initial Environmental Assessment Statement (EAS) for the KMe Facility was submitted for the initial Title V permit application and reviewed by LDEQ prior to original construction. A subsequent EAS was completed for the initial LPDES permit application. An EAS addressing the Project was included with the November 2022 Application, and a revised EAS was submitted in support of the Addendum. (Note that a separate EAS addressing the project was submitted in support of the May 2023 LPDES Application.) This EAS replaces in full the EAS for the Project, which was included as Appendix D in the November 2022 Application and previously revised in support of the Addendum. The changes addressed in this EAS primarily reflect the results of revised 1-hour NO_2 national ambient air quality standard air dispersion modeling, which are reflected in a revised Air Quality Impact Assessment (AQIA) modeling report submitted to the LDEQ on June 1, 2023 ("June 2023 Revised AQIA").

As described in Part 1 of the November 2022 Application, the proposed Project along with other requested permit revisions will result in increases in facility-wide emissions of Prevention of Significant Deterioration (PSD) regulated pollutants that will result in the KMe Facility being classified, for the first time, as a major source under the PSD program. As described in Part 3 of the November 2022 Application and in Part 2 of the Addendum, while not required, with this permitting action Koch is voluntarily undergoing PSD[1] review and permitting for the KMe Facility. Accordingly, this EAS has been prepared in support of the November 2022 Application and Addendum and is being revised consistent with the June 2023 Revised AQIA.[2]

The requirement for an Environmental Assessment Statement (EAS) arose out of litigation involving the construction of a new proposed commercial hazardous waste incineration facility by International Technology Corp., also known as "IT". The "IT" Decision (Save Ourselves v. La. Env. Control Commission, Louisiana Supreme Court) in 1984 interpreted the Louisiana Constitution as reflecting a "public trust" doctrine that imposes a "rule of reasonableness" and requires the Louisiana Department of Environmental Quality (LDEQ) to determine, before granting approval of action affecting the environment, that any adverse environmental impacts resulting from the action have been minimized or avoided as much as possible consistent with the health, safety, and public welfare of Louisiana citizens.

The requirement derives from Article IX, Section 1 of the Louisiana Constitution which provides:

> *The natural resources of the state, including air and water, and the healthful, scenic, historic, and aesthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety and welfare of the people. The legislature shall enact laws to implement this policy.*

The "IT" Decision concluded that to satisfy the Constitution, LDEQ must adhere to statutes that the legislature has enacted to protect the environment. The Legislature enacted La. R.S. 30:2018 in 1997 to require that LDEQ affirmatively protect the environment by ensuring that permit applicants have addressed the five questions announced in the decision. This statute requires an EAS for all new major environmental permits issued by LDEQ and for major modifications to those permits. These five IT questions were largely based on the Court's interpretation

[1] The air quality in St. James Parish currently meets the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants; therefore, the PSD program is the only New Source Review permitting program that applies to major sources in the parish.

[2] This EAS addresses potential impacts resulting from both the KMe Optimization Project and the other permit revisions requested in the November 2022 Application and Addendum.

that the review should be much like an environmental assessment under an analogous federal law – the National Environmental Policy Act (NEPA).

The remainder of this Introduction and Overview provides background information about Koch Industries, the KMe Facility and the proposed Project. The remaining sections of the EAS address the five IT Questions.

1.1 Koch Industries and the KMe Facility

Koch Industries, Inc. (KII) is a privately held multinational conglomerate corporation based in Wichita, Kansas and is the second largest privately held company in the United States. KII creates products to address life's basic necessities, while innovating ways to make them even better. The companies that are part of KII include Georgia Pacific, Guardian Glass, Flint Hills Resources, INVISTA, Infor, Molex, Koch Engineered Solutions, Koch Minerals and Trading, and Koch Ag & Energy Solutions (KAES), which owns and operates a number of ammonia, urea, and other fertilizer production operations. Koch Methanol St. James, LLC is a subsidiary of KAES and the KMe Facility is its only methanol production facility.

1.1.1 KII's Commitment to Environmental and Social Stewardship and its Governance Priorities

Through business and philanthropic endeavors, KII seeks to make society better through mutual benefit. KII contributes to creating the best possible environment where all people have the opportunity to develop their unique talents and abilities. The company provides engagement opportunities that enable employees to build relationships, have meaningful and fulfilling experiences, and make a positive difference in their communities based on what is important to them. More broadly, KII is committed to building mutually beneficial, long-term partnerships with customers, employees, suppliers, regulators, and the communities in which KII operates. KII gives preference to those who are principled and committed to creating value in society. KII's Stewardship Framework further defines the company's commitment and describes priorities around environmental and social stewardship and governance.[3]

1.1.1.1 Environmental Stewardship/Environmental Priorities[4]

With more than 300 manufacturing sites across the United States (US) – and about 100 more globally – KII is one of America's largest manufacturers. Every day, across those sites, KII strives to create more value, using fewer resources than the day before. KII does this through constant improvement and innovation – both in the products KII makes and how they are made, and by managing resources in a

[3] https://www.kochind.com/KOCHInd-Dev/media/assets/files/koch-stewardship-framework.pdf, accessed October 31, 2022.

[4] https://www.kochind.com/stewardship/environmental-stewardship, accessed October 31, 2022.

way that benefits customers, employees, partners, community members and society. *KII's five environmental stewardship priorities are: innovation, energy efficiency, air quality, water quality and consumption, and responsible resource management.*

Essential to stewardship, and KII's long-term success, is the discovery of new technologies and methods to create more value for customers while using fewer resources, minimizing waste and improving the environmental performance and effectiveness of products and processes. Since 2015, KII has invested more than $1.8 billion, and years of hard work and innovation, in energy efficiency projects across its US facilities. In addition, KII has invested another $1.7 billion toward energy transformation technologies, such as electric battery, energy storage and solar power infrastructure in the past two years.

Across operations, KII continually works to improve energy efficiency and develop innovative technologies. As an active partner and leader in the industry, KII was recognized as an Energy Star Partner of the Year in 2022.[5] The award recognizes organizations that have made outstanding contributions to protecting the environment through energy efficiency, and is the highest honor jointly bestowed by the United States Environmental Protection Agency (EPA) and United States Department of Energy.

KII continually seeks new ways to reduce and improve air emissions. KII companies have reduced criteria air pollutants — among those most common to industry — by 48% from 2008-2021. And in the US, KII's greenhouse gas emissions are down by 18% since 2014 (approximately 5 million metric tons of CO_2e). KII companies are also applying new technologies to monitor certain types of emissions leaks and correct and prevent them in real time.

Because clean, plentiful water is vital to life – for humans and the countless plant and animal species with which we share this planet, KII continually explores new opportunities to reduce water consumption and to improve the quality of water discharges throughout operations.

Stewardship encompasses the responsible management of actions and the resources entrusted to the company's care in a manner that respects the rights of others. KII makes it a priority to ensure resources are managed to create value for KII's constituencies and for KII. From 2014 to 2021, the amount of production-related waste generated at our U.S. facilities is down by approximately 250 million pounds (~40%). In 2021, KII reporting facilities recycled, recovered for energy or treated 90% (369 million pounds) of all waste produced.

[5] https://www.epa.gov/newsreleases/epa-recognizes-koch-industries-incorporated-energy-star-award-winner, accessed October 31, 2022.

1.1.1.2 Social Stewardship/Social Priorities

KII's social stewardship priorities include health and safety, employee experience and community involvement/philanthropy.

The safety and well-being of KII's employees and communities is the company's first priority. KII makes this happen every day by building capability through employees and resilience in plant systems, so when the unexpected happens, employees, partners and communities stay safe.[6]

At KII's companies, an individual's character and contributions are valued over credentials, connections, or group affiliation. KII believes in helping all employees have opportunities that fit their gifts and abilities to contribute to society and improve their own lives – and KII rewards their individual contributions based on the value they create.[7]

KII believes everyone can discover and develop their innate abilities and apply them to contribute and succeed when empowered to do so. KII seeks to create opportunities based on each individual's unique gifts and potential to contribute. KII continually looks for mutually beneficial outcomes by providing employees with benefit choices aligned with their values and personal situations. KII strives to treat every person with dignity and respect, encourage and foster networking, and sponsor activities that are inclusive and focus on shared interests.

KII celebrates the uniqueness of each individual and believes it is disrespectful to judge a person—positively or negatively— based on group identity. KII selects and empowers employees, including leaders, who have a variety of perspectives, aptitudes, skills, knowledge, experiences, and backgrounds. This diversity enables working together to identify opportunities, solve problems, and create greater value for others. KII solicits challenge consistently and respectfully from employees at all levels of the organization.

With community involvement and philanthropic endeavors, KII seeks to make society better through mutual benefit that gives people the opportunity to flourish. Through a multitude of programs and initiatives, KII works to help people discover, develop and unleash their true potential while removing barriers to opportunity in their lives and communities.[8]

KII focuses on creating the best possible environment where all people can develop their unique talents and abilities – empowering them to transform their lives, their

[6] https://www.kochind.com/stewardship/social-stewardship/health-safety, accessed October 31, 2022.

[7] https://www.kochind.com/stewardship/social-stewardship/employee-experience, accessed October 31, 2022.

[8] https://www.kochind.com/stewardship/social-stewardship/community-involvement-philanthropy, accessed October 31, 2022.

work and their communities. Since 2018, KII has averaged more than 2,000 charitable contributions per year – contributing in nearly every US state as well as in countries around the world. KII's community involvement and philanthropy encompasses the following areas.[9]

Enhancing Education: KII supports an environment where students are able to discover, develop and apply their unique abilities, establishing a foundation for a life of contribution and fulfillment. KII partners with programs and institutions that support scholarships for qualifying students and offer curriculums that empower scholars to excel, as well as organizations that provide skilled and technical training.

Youth Development: Helping others find their innate gifts, passions and best path forward can make a life-changing difference. KII is honored to partner with organizations that do just that. KII supports community-based initiatives that help young people unlock their full potential through mentorship, educational support and social-emotional skill development.

Strengthening Workforce: KII supports partnerships that seek to develop a skilled workforce ready to continuously adapt to a rapidly changing world. KII seeks to empower entrepreneurs to launch and grow businesses, provide alternative educational opportunities for rapid skill development and remove barriers to entry for traditional employment opportunities.

Uplifting Communities: KII serves as an active and engaged community partner by developing effective and collaborative relationships, as well as contributing ideas and bottom-up solutions that lead to healthier communities. Through financial and employee volunteer support, KII seeks to strengthen the communities in which it operates.

1.1.1.3 Governance Priorities

In KII's business, being good stewards starts with acting with the proper regard for the rights of others, as well as complying with laws and regulations. Practicing stewardship and acting with integrity are how KII supports employees, protects the environment and invests in communities – today and into the future.[10] KII has several governance priorities including the following related to environmental protection and community engagement:

- Compliance and ethics standards – robust compliance standards and risk management systems, as well as a Global Code of Conduct that outlines expectations for all employees and third parties to raise issues and concerns.

[9] https://www.kochind.com/stewardship/social-stewardship, accessed October 31, 2022.
[10] https://www.kochind.com/stewardship/governance, accessed October 31, 2022.

- Oversight and continuous improvement – board-level oversight of audit and assurance programs. Tools used to learn and improve performance include audits, self-assessments, incident tracking, investigations, and knowledge sharing.
- Open communication – open and proactive communication with employees, the community, and customers about KII's principles and EHS performance.

As mentioned above, KII operates under a Global Code of Conduct[11] that emphasizes the company's, and its employees', commitment to integrity, stewardship and compliance as well as other company guiding principles.

1.1.2 KMe Facility Overview

Methanol is produced at the KMe Facility by combining steam, oxygen, and natural gas under high pressures and temperatures using the licensed Lurgi MegaMethanol® technology. The methanol production process consists of three main steps: synthesis gas (syngas) production, crude methanol synthesis and methanol distillation. Part 1, Section 1.3 of the November 2022 Application describes the production process in detail. The facility is designed to allow four modes of product distribution: truck, rail, barge, and ocean vessel. An advanced truck and rail terminal is operated by Koch, and an existing third-party dock facility located adjacent to the site is used for shipping along the Mississippi River.

With the Project, which is described in more detail in Part 2, Section 2.2 of the November 2022 Application, Koch is aiming to increase the KMe Facility design production rate from 4,950 to approximately 6,200 metric tons per day of refined methanol.

1.1.2.1 Methanol Chemical Information and Uses

As a naturally occurring and organic molecule, methanol is considered a building block of life. Methanol is a clear, colorless liquid that evaporates when exposed to air, is soluble in water, and is biodegradable.

Methanol occupies a critical position in the chemical industry as a highly versatile building block for the manufacture of countless products. The methanol produced at the KMe Facility is sent worldwide and used as a feedstock to make everyday products such as:

- High performance plastics
- Synthetic fabrics and fibers, including carpet
- Adhesives and solvents

[11] https://codeofconduct.kochind.com/en-US/Front-cover, accessed October 31, 2022.

- Paint
- Plywood
- Chemical agents in pharmaceuticals and agrichemicals
- Wastewater treatment plant additives

Methanol as a Fuel

In addition to the uses of methanol listed above, methanol is increasingly being considered a clean and sustainable fuel. Methanol is being employed around the globe in many innovative applications to meet growing energy demand. Methanol is used to fuel cars and trucks, marine vessels, boilers, cookstoves, and kilns, among a growing list of market applications. Its inherent clean-burning properties produce lower criteria pollutant emissions from land/marine vehicle combustion (while improving fuel efficiency) compared to many traditional fuels.[12]

Methanol's use as a fuel, including as a transportation fuel, is growing. Methanol is a versatile, affordable alternative to conventional transportation fuel due to its efficient and clean combustion, ease of distribution, and wide availability around the globe. Methanol is used in gasoline blends around the world, and as a diesel substitute for use in heavy-duty vehicles (HDVs).[13]

Methanol-fueled vessels are on the water today, and more are on the way. There is a broad range of methanol-fueled vessels including pilot boats, tug/push boats, ferries, cruise ships, superyachts, crew transfer vessels, and multi-purpose ships. Also, more methanol-compatible engines are being developed by the major engine manufacturers and vessel designers. Methanol is a simple, safe liquid fuel, miscible in water, and is plentiful, available globally, and priced competitive to marine gas oil. Methanol benefits from safer handling characteristics compared to some other alternative fuels. It works with existing engine technologies as a drop-in or a dual fuel and requires only minor modifications to current bunkering infrastructure.[14]

Cooking with higher polluting fuels such as coal, biomass and waste has led to indoor air pollution being one of the leading health risk factors in developing countries. As a safe, clean burning fuel that is easy to handle (because it is a liquid at ambient temperature and pressure), methanol is suitable for regions that do not have access to gaseous fuels. Methanol's properties allow it to be used as a cooking fuel in industrial kitchens, households, refugee camps, and on ships. Most importantly, it is a cost-efficient fuel for households in developing countries that wish to transition to cleaner cooking solutions.[15]

[12] https://www.methanol.org/applications/, accessed October 31, 2022.

[13] https://www.methanol.org/road/, accessed October 31, 2022.

[14] https://www.methanol.org/marine/, accessed October 31, 2022.

[15] https://www.methanol.org/heat/, accessed October 31, 2022.

Methanol as a Hydrogen Carrier

As the global economy prepares for an energy transition that will change the future of energy landscapes, new alternative fuels are coming to the fore. Hydrogen has been gaining traction as a clean alternative fuel as it only emits water upon combustion. However, there are a number of inherent challenges with the production, handling, and consumption of hydrogen with the state of technology today. It is still expensive to produce clean hydrogen from renewable sources. As a gas, hydrogen also requires capital-intensive infrastructure for its storage and transport.

Methanol is tomorrow's hydrogen, today. It is an extremely efficient hydrogen carrier. Being a liquid at ambient conditions, methanol can be handled, stored, and transported with ease by leveraging existing infrastructure that supports the global trade of methanol.[16] Methanol reformers are able to generate on-demand hydrogen from methanol at the point of use to avoid the complexity and high cost associated with the logistics of hydrogen as a fuel.

Fuel cells use hydrogen as a fuel to produce electricity that can power cars, trucks, buses, ships, cell phone towers, homes and businesses. Methanol is an excellent hydrogen carrier fuel, packing more hydrogen in this simple alcohol molecule than can be found in hydrogen that has been compressed (350-700 bar) or liquified (-253°C).

Methanol can be "reformed" on-site at a fueling station to generate hydrogen for fuel cell powered vehicles,[17] or in stationary power units feeding fuel cells for mobile phone towers, construction sites, or ocean buoys. Methanol fuel cells can be fueled just as quickly as a gasoline or diesel vehicle, and can extend the range of a battery electric vehicle from 200 km to over 1,000 km.

1.1.3 Local Environmental and Social Commitments

Koch strives to minimize the environmental impact of its business activities and operations and maximize efficiencies in the methanol manufacturing process to reduce its environmental footprint to the maximum extent practicable. The sustainability of a business hinges on the responsible stewardship of resources and the environment. To the KMe Facility team, sustainability means keeping people safe, protecting the environment and constantly innovating to make products using fewer resources, while minimizing waste and reducing energy intensity.

[16] Shen Y, Zhan Y, Li S, Ning F, Du Y, Huang Y, He T, Zhou X. Hydrogen generation from methanol at near-room temperature. Chem Sci. 2017 Nov 1;8(11):7498-7504. doi: 10.1039/c7sc01778b. Epub 2017 Sep 20. PMID: 29163903, available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5676115/, accessed October 25, 2022.

[17] https://www.offshore-energy.biz/methanol-to-hydrogen-generator-gets-approved-for-marine-use/, accessed October 25, 2022.

1.1.3.1 Local Environmental Stewardship

The KMe Facility is committed to environmental stewardship and uses advanced technologies to produce methanol. The KMe Facility is committed to following all local, state and federal requirements and uses a variety of emissions controls.

Air emissions controls include ultra-low and low nitrogen oxide (NOx) burners and selective catalytic reduction (SCR) systems for NOx control; catalytic oxidation for controlling carbon monoxide (CO) and volatile organic compounds (VOCs); modern cooling tower drift eliminators for particulate matter emissions minimization; a flare for controlling VOC emissions from process vents; a vapor control unit for controlling VOC emissions from truck and railcar loading operations; and internal floating roofs, the flare, or a vent gas scrubber to control VOC emissions from storage tanks. As part of the November 2022 Application and Addendum, whereby Koch is voluntarily undergoing PSD review, a Best Available Control Technology (BACT) analysis has been completed, which demonstrates that all air emissions sources at the KMe Facility are equipped with BACT for the control of air emissions (see Part 4 of the November 2022 Application, as well as Part 3 of the Addendum).

The KMe Facility was designed to minimize methanol streams sent to its wastewater collection and treatment plant. Methanol-containing streams such as methanol tank scrubber water and off-spec methanol with high methanol content are routed to a methanol slop tank and reprocessed in the KMe Facility as useful product. Additionally, an extensive system of piping routes methanol-containing streams from maintenance and decommissioning activities to the closed methanol slop system for reprocessing. By designing the KMe Facility in this manner, fugitive drain emissions to air and effluent discharge impacts are minimized. For process wastewater streams that require treatment prior to discharge, the KMe Facility is equipped with a wastewater collection and treatment plant that is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit. This is achieved via equalization, pH adjustment, biological treatment, and clarification.

The KMe Facility utilizes and treats water from the Mississippi River as its source of process water; it does not use groundwater for process water. Additionally, only a small amount of municipal water is utilized for potable water purposes, such as for safety shower and eye wash stations.

The facility has a stormwater pollution prevention plan (SWPPP) for the management and monitoring of stormwater, which incorporates Best Management Practices (BMP). The SWPPP also ensures that the potential adverse environmental effects associated with the generation of solid and/or hazardous wastes resulting from spills of oil or hazardous substances are minimized to the maximum extent possible. Section 2.3.4.2 provides further detail on the types of controls and BMPs implemented at the KMe Facility.

1.1.3.2 Local Social Commitments

The KMe Facility maintains the highest safety standards and ensures, through both facility design and operation, safe working conditions for employees. Safety performance is Koch's first order of business, with a goal of zero incidents. This, in turn, protects employees, partners, neighbors, and the community.

One of the many ways the KMe Facility demonstrates its commitment to the highest safety standards is by going above and beyond regulatory requirements for process safety and risk management by managing all process units consistent with EPA and Occupational Safety and Health Agency (OSHA) risk prevention program elements even though the regulations apply only to certain process units. This heightened commitment to process safety and risk management materially mitigates the potential for an unplanned release to the surrounding community. In the event there were to be a release or spill, trained facility personnel are available 24/7 to respond with portable monitors within the plant and along fence line areas as needed to determine if there are detectable levels of materials and to take other appropriate actions based on the monitor readings.

The KMe Facility also conducts joint drills with local emergency services and facility personnel. Last summer (August 18, 2022), KMe also had the local responders on-site to tour and learn important information about the facility. Affected employees are properly trained on the KMe Facility's Emergency Response Plan, which is reviewed annually and incorporated into site operations.

As mentioned previously, KII believes that strong communities are good for business. The company's core philosophy is anchored in a belief that for a business to survive and prosper long term, it must develop and use its capabilities to create sustainable value for both its customers and society. Working directly with local organizations is a key focus, and Koch is investing locally in the following four key areas.

Education: Supporting programs that give students and future workers the skills necessary for today's workplace. These programs include St. James Parish school initiatives, local scholarships, and Science, Technology, Engineering, Arts, and Math (STEAM) programs. For example, Koch has established two scholarships at River Parish Community College for students majoring in Industrial Trades, one for high school students and one for adult learners.[18]

Community Enrichment: Working with organizations that support community needs and allow for employee engagement through volunteering with various organizations. This includes financial and volunteer support for the Bonfire Festivals. An additional example, following Hurricane Ida in 2021, Koch and its

[18] https://www.rpcc.edu/news/1747275/rpcc-held-the-first-ever-rougarou-awards-breakfast, accessed October 31, 2022.

employees engaged in hurricane relief efforts, which included supplying water, tarps, essential products, cooked meals and food items to community organizations.[19]

Entrepreneurship: Promoting entrepreneurial development while fostering economic and critical thinking skills, with a focus on initiatives that align with KII's Principled Based Management™ philosophy (as detailed in Section 3.1).

Environment: Assisting organizations that foster environmental responsibility and provide environmental learning opportunities (as detailed in Section 3.1).

Community outreach also includes engaging with local authorities and the community regarding ongoing facility operations and activities. The KMe Facility hosted a St. James Citizens Advisory Panel (CAP) meeting in April 2022 that was attended by industry representatives, local residents, elected officials and local emergency response personnel. Attendees were provided a tour of the facility. Additional community meetings were held in 2022 to discuss general community concerns, community views of industry, the KMe Facility, and the proposed Project and other changes addressed in the November 2022 Application. Specifically, Koch arranged two focus group meetings that were held in St. James in July 2022 to solicit feedback about the St. James Parish community in general, including the most significant impactors on the community, the most prominent concerns about the future of the community, and the greatest opportunities for the St. James Parish community moving forward. During the second meeting, feedback regarding the KMe Facility and its operations was also solicited. Some key pieces of feedback received at these meetings included that the community highly values the ability to engage with industry directly on an ongoing basis, and that the community values the support Koch has provided to the community (e.g., support after Hurricane Ida, donating school resources, and providing scholarships). As a result of this feedback, Koch is currently working to establish an ongoing community advisory board (CAB) between the KMe Facility and the community so engagement can occur on a routine basis. Feedback from the 2022 panel was discussed at a reconvening of the focus group members on January 17, 2023. Although only a few of the original focus group members attended, the discussion regarding initiation of a CAB was very well received.

Additionally, a Community Outreach Meeting was held on August 30, 2022, to provide local community members with information regarding the KMe Facility, including information regarding the proposed Project and Koch's plans to file a permit application. Further detail of that meeting as well as the earlier meetings is included in Section 2.11.3.3., Meaningful Involvement with Community.

[19] https://www.csrwire.com/press_releases/744481-out-storm-koch-employees-resilient-spirit-helps-hurricane-stricken-neighbors, accessed October 31, 2022.

1.2 Description of Proposed Project and Air Permitting

Koch is seeking both to revise certain existing permit emission limits and authorize the construction of a project to increase the design production rate of the KMe Facility as described in the November 2022 Application and Addendum. A detailed description of the proposed Project is included in Part 2, Section 2.2 of the November 2022 Application. Koch has applied for both a PSD permit and a significant modification to Title V Permit No. 2560-00295 as further discussed below.

1.2.1 Title V Major Source for Criteria Pollutants and HAP/LTAP

The KMe Facility is currently considered a major source of hazardous air pollutants (HAP) because potential HAP emissions exceed the applicable major source threshold of 10 tons per year (tpy) for a single HAP (including methanol and n-hexane) and 25 tpy for all combined HAP. The facility is also a major source of Louisiana Toxic Air Pollutants (LTAP) pursuant to the LAC 33:III. Chapter 51 – Comprehensive Toxic Air Pollutant Emission Control Program. As a result of the emissions increases proposed with the November 2022 Application and Addendum, facility-wide potential to emit (PTE) for NOx, CO, and VOC will exceed the major source threshold for criteria pollutants (100 tpy) under the Title V program.

1.2.2 PSD Review and Technical Analyses

The KMe Facility is located in St. James Parish, which is designated by the EPA as "attainment" or "unclassifiable" for all NAAQS. Therefore, LDEQ's Prevention of Significant Deterioration (PSD) regulations (LAC 33:III.509) potentially apply for all PSD-regulated pollutants. Part 3, Section 3.1 of the November 2022 Application includes a discussion of the PSD regulations. An updated PSD applicability review for the KMe Facility was included in Section 2.2.1 of the Addendum. As further explained in Section 3.1 of the November 2022 Application and Section 2.2.1 of the Addendum, Koch has voluntarily and conservatively elected to go through PSD review as part of this permitting action.

When PSD applies, LAC 33:III.509 requires the utilization of BACT to minimize the emissions of regulated PSD pollutants emitted in significant amounts. Therefore, because Koch has voluntarily elected to go through PSD review, a BACT analysis was included in Part 4 of the November 2022 Application and Part 3 of the Addendum. The analysis covers all existing emissions units (no new emissions units are being proposed) with the potential to emit NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and GHG. A BACT summary is also included in Section 2.3.1.3 of this EAS.

Similarly, a PSD Air Quality Impact Assessment (AQIA) was also conducted. As part of that assessment, facility-wide NOx, CO, VOC, $PM_{2.5}$, and PM_{10} emissions have been evaluated as the "net emissions increase" and modeled according to the protocol approved by LDEQ. The AQIA along with the approved protocol were contained in Appendix E of the November 2022 Application. Revised AQIAs were submitted February 8, 2023 (February 2023 Revised AQIA) and June 1, 2023 (June 2023 Revised AQIA). A summary of the modeling results, which demonstrate that facility-wide emissions at the rates proposed will not cause or contribute to an exceedance of any air quality standard, is included in Section 2.3.1.2 of this EAS.

1.3 Water Permitting

Koch submitted a permit application to the LDEQ on May 18, 2023, to update the site's Individual LPDES Permit No. LA0127367, as further described in Section 2.3.4.1. The update addresses the increase in wastewater flowrates and loading at the final outfall that discharges to the Mississippi River due to increased production rates resulting from the Project. Increased production rates will result in additional process-generated wastewaters, increased blowdown waters from cooling and steam systems, and increased demineralized regeneration wastewater.

2. ENVIRONMENTAL IMPACTS

Have the potential and real adverse environmental effects of the proposed project been avoided to the maximum extent possible?

Yes. The KMe Facility was initially planned and designed such that the potential and real adverse environmental effects of the construction activities and operations were avoided to the maximum extent possible. As noted in Section 1, an EAS was completed for the initial construction of this facility as well as a follow-up EAS with the wastewater treatment plant (WWTP) installation. Both were reviewed and considered by LDEQ. The proposed Project, which is the focus of this EAS, is being planned and designed consistent with that same desired outcome. Specifically, construction and operation of the Project are planned such that they will not cause or contribute to an exceedance of any ambient air standard for any criteria pollutant or HAP/LTAP; an exceedance of any ambient water quality standard; further impairment to receiving water bodies; material change in waste management; excess noise, light, or odors; significant degradation of wetlands; or adverse impacts that would disproportionately affect environmental justice (EJ) communities. Key points that demonstrate the real and potential adverse environmental impacts of the proposed Project have been and will be avoided to the greatest extent feasible are outlined below.

2.1 Environmental Impacts Related to Project Site Location

The proposed Project will be performed at the existing KMe Facility in St. James Parish. The facility is located along the West Bank of the Mississippi River, about 30 miles south of Baton Rouge. The KMe Facility started up and was fully operational in the third quarter of 2021. As discussed in Section 5, the site selection for the location of the KMe Facility considered avoidance of environmental impacts including use of existing infrastructure where practical. Such infrastructure at the current site includes access to the Mississippi River for transportation and as a water source, proximity to existing highways and railroads, established electrical systems, and proximity to existing pipelines for feedstock natural gas and ethane. Locating in areas of existing infrastructure significantly minimizes environmental impacts.

The proposed Project will primarily increase the design production rate at the existing Facility, which is located in an area currently zoned as industrial, and will utilize the existing manufacturing facility as well as the existing infrastructure. Because the proposed Project is a modification to the existing site, the environmental impacts related to the Project site location will be minimal. Existing roads will be used for access to the extent possible. Furthermore, the Project will not adversely affect wetlands or the geology, topography, soils, vegetation, or food production in the vicinity. Releases of pollutants to soils from the KMe Facility are unlikely due to the use of paved process areas and compliance with required spill containment and control regulations.

The air emissions increases resulting from the Project will meet all applicable technology standards. Importantly, the air quality analysis demonstrates that the emissions increases associated with the proposed Project will not cause or contribute to any exceedance of a federal National Ambient Air Quality Standard (NAAQS) or Louisiana Ambient Air Standard (LAAS). These ambient air standards have been established by EPA and LDEQ to be protective of human health with a margin of safety. A review of the changes in effluent resulting from the proposed Project will be conducted by LDEQ during the LPDES permitting review process. Effluent discharges are and will continue to be subject to stringent technology based LPDES permit limits and will not cause any exceedance of any ambient water quality criteria. Such ambient water quality criteria have been established by EPA and LDEQ to be protective of human health, aquatic life, and to ensure receiving waters meet designated uses.

2.2 Environmental Impacts During Construction Phase

As with the initial KMe Facility, construction of the proposed Project will incorporate best management practices (BMPs), engineering practices, and regulatory requirements to ensure that potential adverse environmental effects occurring as the result of construction activities are avoided to the maximum extent possible. The following BMPs, engineering practices, and regulatory requirements will be used and followed, as applicable, for the proposed Project.

- Safe work permits will be used to ensure work sites are returned to a clean and safe condition when work is completed.
- During the construction phase, air emissions will primarily consist of exhaust emissions from equipment and delivery vehicles. KMe Facility inspectors and construction supervisors will notify equipment operators and contractors if any equipment is observed to be performing poorly (e.g., as evidenced by dark exhaust emissions), and will require that the equipment be promptly repaired or replaced.
- Contractors will be required to develop and implement a dust management plan to minimize dust during construction. KMe Facility construction inspectors and contract construction supervisors will make observations regarding the contractors' compliance with the plan. The facility will require that roads and high traffic areas be wetted as necessary to minimize the generation of dust due to vehicle traffic.
- General trash and debris generated during construction will be containerized and disposed of offsite in accordance with applicable regulatory requirements. Used oil and lubricants from equipment maintenance will be

stored in closed containers and managed in accordance with all applicable rules and will be sent to used oil recycling contractors.

- Solid and/or hazardous waste generated during construction may include waste such as construction material debris, used solvents, paint wastes, used lubricants and oils, and general trash. Any waste generated from construction will be stored temporarily onsite in accordance with all applicable federal and state regulations prior to transport off-site to an authorized treatment, storage, recycling, or disposal facility.
- Construction related activities will be performed in accordance with applicable state requirements of LAC 33:IX.Chapter 9 for Spill Prevention and Control (SPC) as well as federal Spill Prevention, Control, and Countermeasure (SPCC) requirements of 40 CFR Part 112. In tandem, these regulations cover all liquids and solids listed under LAC 33:I.3931 as well as oils that could be immediately transported to waters of the state in event of a release. Such rules apply to any container storing 55 gallons or more of subject fluids that may be present on site either permanently or temporarily. The facility's existing SPCC/SPC Plan will be amended to include any additional subject containers brought on site as a result of the Project.
- Given the current Project scope, the impact to soil is minimal and is not anticipated to exceed acreage thresholds for requiring coverage under a construction stormwater general permit; however, a permit will be pursued if scope changes such that one is required. Regardless, the facility maintains an operational Stormwater Pollution Prevention Plan (SWPPP) which incorporates BMPs to protect surface water bodies that traverse the site or receive stormwater discharges from the site. The SWPPP is a "living document" that will be updated as construction progresses and for operation of the facility once the Project is completed, to ensure appropriate and effective management practices are applied as site conditions change.

2.3 Environmental Impacts During Operations

2.3.1 Air Quality

Potential adverse environmental effects from air emissions increases resulting from the Project will be avoided, minimized, or mitigated to the maximum extent practicable. Although this EAS is in support of the proposed Project, Koch has voluntarily and conservatively evaluated total facility-wide emissions (not just the proposed emissions increases) by conducting an air quality impact assessment (AQIA) pursuant to PSD regulations, which are designed to protect public health and welfare and ensure that economic growth occurs in a manner consistent with the preservation of existing clean air resources (i.e., without allowing significant deterioration of existing good air quality). That AQIA demonstrates that total facility-wide emissions will not cause or contribute to an exceedance of any National

Ambient Air Quality Standards (NAAQS) and thus will not have a significant impact on air quality.

As part of the voluntary and conservative PSD review, Koch also performed a Best Available Control Technology (BACT) evaluation for all emission sources authorized by the permit. In addition to meeting BACT, the KMe Facility emission sources will meet all applicable New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) Standards, and all state emissions limitations and work practice requirements.

2.3.1.1 Local Ambient Air Monitors

LDEQ operates a network of ambient monitoring stations approved by EPA that continually monitor and record ambient concentrations of certain air pollutants. For the criteria pollutants evaluated as part of the AQIA (see Appendix E of the November 2022 Application, February 2023 Revised AQIA, and June 2023 Revised AQIA), the following are the closest monitoring stations to the KMe Facility that monitor each pollutant.[20]

Table D-1: LDEQ Monitoring Stations Closest to the KMe Facility

Monitoring Station	Pollutants Monitored
Geismar	$PM_{2.5}$
Dutchtown	NOx
Convent	Ozone
Capitol	CO, PM_{10}

Monitored concentrations of criteria pollutants at these stations show that the design value for each pollutant is less than the respective NAAQS. The monitored design values in the form of the NAAQS[21] over the 3-year period 2019-2021[22] for each relevant pollutant and averaging period are shown below and compared to the NAAQS.

[20] LDEQ's Air Assessment and Planning Division won a competitive EPA air-monitoring grant announced in November 2022 that will provide funding to add two temporarily located community (TLC) monitors, including one in St. James Parish. (https://deq.louisiana.gov/assets/docs/DiscoverDEQ/2022/DiscoverDEQNewsletter-Issue131-December2022.pdf, accessed Feb. 14, 2023.)

[21] The appropriate "rank" of data chosen for comparison to the NAAQS depends on the pollutant and averaging period. For example, for the 1-hour CO data, the appropriate choice of data for comparison to the NAAQS is the second-highest observation recorded over the year. This is what is referred to in air quality analyses as the "form of the NAAQS".

[22] Evaluation of ambient air data versus the NAAQS requires an average of the most recent three years of the appropriate rank of data. This 3-year average has been calculated and listed in each case.

Table D-2: LDEQ Monitoring Station Monitored Values Compared to the NAAQS				
Pollutant	**Averaging Period**	**Units**	**Monitored Design Value**	**NAAQS**
CO	1-Hour	µg/m^3	1,610	40,000
	8-Hour	µg/m^3	1,266	10,000
NO_2	1-Hour	µg/m^3	56.4	188
	Annual	µg/m^3	11.5	100
Ozone	8-Hour	µg/m^3	116	137
$PM_{2.5}$	24-Hour	µg/m^3	17.6	35
	Annual	µg/m^3	7.9	12.0
PM_{10}	24-Hour	µg/m^3	53	150

2.3.1.2 Air Quality Impact Assessment (AQIA)

The AQIA presented in Appendix E of the November 2022 Application, and revised in February 2023 and June 2023, evaluated whether emissions from the KMe Facility would cause or contribute to an exceedance of the applicable National Ambient Air Quality Standards (NAAQS) and PSD increments. The NAAQS include both primary standards, which are designed to protect the health of sensitive populations such as asthmatics, children and the elderly, as well as secondary standards, which are designed to protect the environment. The NAAQS is a maximum allowable concentration "ceiling." A PSD increment, on the other hand, is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. The baseline concentration is defined for each pollutant and, in general, is the ambient concentration existing at the time that the first complete PSD permit application affecting the area is submitted. LTAP emissions increases, specifically ammonia and methanol emissions increases from the Project, were also evaluated in the AQIA.

St. James Parish is designated as “attainment” or “unclassifiable” for all NAAQS, meaning the air quality meets these standards. PSD review was completed for the following pollutants emitted from the KMe Facility: NOx, CO, PM/PM_{10}/$PM_{2.5}$, VOC, and GHG.

Rather than evaluate just the Project emissions increases, Koch has conservatively evaluated total facility emissions of each criteria pollutant where such emissions exceed the PSD significance threshold. The AQIA is performed primarily through conducting computer modeling of the dispersion of air emissions from the facility. PSD Significance Modeling is the first step in conducting the PSD AQIA. The results of the significance modeling determine whether the maximum off-site impact resulting from the KMe Facility exceeds the PSD significant impact level (SIL) for any NAAQS. For each NAAQS pollutant and averaging period for which the PSD significance modeling results exceed the SIL, full NAAQS modeling and PSD Increment modeling (where applicable) are performed. These more refined analyses require the development of an inventory of offsite emissions sources (i.e., other facilities) that affect the air quality in the area included in the modeling. The area of the offsite inventory is determined during the significance modeling and inventory data is provided by LDEQ. The significant impact analysis modeling results are summarized in Table D-3.

Table D-3: Significant Impact Analysis – Modeling Results

Pollutant	Averaging Period	Maximum Modeled Concentration[a,b] ($\mu g/m^3$)	SIL ($\mu g/m^3$)	> SIL?
CO	1-hour	1453.56	2,000	No
	8-hour	441.48	500	No
NO_2	Annual	0.40[c]	1	No
	1-hour	13.47[c]	7.5	Yes
PM_{10}	Annual	0.16	1	No
	24-hour	1.32	5	No
$PM_{2.5}$[d]	Annual	0.11	0.2	No
	24-hour	1.01	1.2	No

Notes:

a. For the annual averaging period, modeled concentrations represent the maximum annual average concentration over five years.
b. For the short-term averaging periods, modeled concentrations represent the maximum highest first high (H1H) value over five years, except for the 1-hour NO_2 and 24-hour $PM_{2.5}$, which represent the highest five-year average.
c. Tier 3 (OLM) was used for 1-hour modeling. Tier 1 (full conversion) was used for annual modeling.
d. The modeled concentrations for $PM_{2.5}$ include secondary concentrations calculated using the MERP methodology as presented in Section 2.3 of the AQIA.

The only pollutant and averaging period for which modeling indicated that the SIL was exceeded is 1-hour NO_2. Thus, refined modeling for 1-hour NO_2 was required. (There is no PSD Increment associated with 1-hour NO_2; therefore, PSD increment analysis is not required.) Refined modeling including emissions from nearby sources was performed to assess impacts for the 1-hour NO_2 NAAQS; the results of the NAAQS analysis are shown in the following table.

Table D-4: Full-Impact NAAQS Analysis Results						
Pollutant	**Averaging Period**	**Modeled Concentra-tion (µg/m³)**	**Background Concentration (µg/m³)[a]**	**Modeled + Background (µg/m³)**	**NAAQS (µg/m³)**	**> NAAQS?**
NO_2	1-hour	126.0	56.4	182.4	188	NO

Notes:

a. The background concentration for 1-hour NO_2 was based on the 2019-2021 design values for the Dutchtown Station (AQS # 22-005-0004).

In summary, the PSD modeling demonstrates that potential impacts from the KMe facility-wide emissions are below the SIL except for 1-hr NO_2. For 1-hr NO_2, the refined modeling results do not exceed the NAAQS; therefore, the AQIA demonstrates that emissions from the facility will not cause or contribute to exceedance of any NAAQS or PSD increment and thus will not result in significant deterioration of ambient air quality.

The Louisiana Ambient Air Standards (LAAS) for ammonia and methanol were also considered as part of the AQIA. Because prior permitting actions for the KMe Facility have included AQIAs that evaluated impacts from facility LTAP emissions, the AQIA has evaluated LTAP emissions increases proposed in the November 2022 Application and the Addendum (note, however, that portions of the EJ analysis included in Section 2.11 of this EAS are based on total LTAP emissions from the facility). Per LDEQ LTAP modeling guidance, ambient modeling is assessed in steps. In Step 1, emissions from the facility alone are modeled and if the resulting modeled concentration is ≤ 7.5% of the LAAS, no further modeling is required. If Step 1 modeling shows that the modeled concentration is > 7.5%, then additional modeling is required. The LTAP analysis modeling results are summarized in Table D-5. Modeled concentrations were below 7.5% of the LAAS.

Table D-5: LTAP Analysis – Modeling Results					
Pollutant	**Averaging Period**	**Maximum Modeled Concentration (µg/m³)**	**LAAS (µg/m³)**	**Modeled Concentration as Percent of LAAS**	**>7.5%?**
Ammonia	8-hour	44.04	640	6.9%	No
Methanol	8-hour	72.02	6,240	1.2%	No

Additional analyses were conducted in accordance with the PSD requirements of LAC 33:III.509.O and P. These analyses evaluated the potential air quality impacts projected for the area as a result of general commercial, residential, industrial and other growth associated with the KMe Facility as well as the potential for impairment to soils, vegetation, and visibility as a result of the KMe Facility and general commercial, residential, industrial and other growth associated with the facility. An analysis of the potential for impacts on nearby Class I areas was also performed. Per the growth analysis, the Project is not expected to result in significant air quality impacts as a result of associated general commercial, residential, industrial and other growth because such growth is expected to be minimal. The analysis of soil and vegetation impacts demonstrates that the KMe Facility emissions will not result in harmful effects to soils and vegetation because emissions from the facility will not cause or contribute to an exceedance of any secondary NAAQS.[23]

A Level 1 visibility screening was conducted that showed that the level of proposed facility-wide emissions will not yield significant impairment to local visibility. Finally, the potential for Class I area impacts resulting from the KMe Facility was considered. The review determined that neither a notification to the Federal Land Manager nor an evaluation of Class I Air Quality Related Values is required. A detailed Air Quality Impact Assessment Report was included in Appendix E to the November 2022 Application, and revised in February 2023 and June 2023.

2.3.1.3 BACT Summary

The KMe Facility will minimize any potential impact from air emissions associated with not just the proposed Project but also with operation of the overall facility by voluntarily applying BACT to all emission units authorized by the permit. The detailed BACT analysis is presented in Part 4 of the November 2022 Application and Part 3 of the Addendum. Applying BACT means that a facility is controlling emissions to the extent demonstrated to be technically feasible and economically reasonable, without causing adverse energy and environmental impacts.

Under the PSD program as voluntarily and conservatively applied to this permitting action, Koch has proposed BACT for each emissions unit at the facility to minimize the emissions of each PSD-regulated pollutant for which the facility potential to emit will be greater than or equal to the pollutant-specific PSD “significance” level following the proposed Project. BACT may be an add-on control device or a design, equipment, work practice or operational standard. The BACT determination process for each emissions unit involves identifying all available and technically feasible emission control options for each pollutant and, selecting as BACT, the option that will achieve the maximum degree of reduction after consideration of cost and any associated economic, energy, or environmental impacts that would result from

[23] United States Environmental Protection Agency. New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting. Web. 1990. https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf, accessed October 31, 2022.

application of the control option. A technically feasible technology that is more effective at reducing emissions can be rejected as BACT in favor of a less effective control option if it is determined that the more effective technology is not cost effective or would cause economic, energy or environmental impacts that render it undesirable. The permit applicant is responsible for conducting and documenting the BACT analysis and presenting the proposed BACT selection for each emissions unit-pollutant combination to LDEQ in the permit application. Evaluations of capital cost, operating costs, and any energy, environmental or economic impacts must be included if any top-ranked technically feasible control options are rejected as BACT. The minimum BACT standard that must be used ("floor") is either an applicable Maximum Achievable Control Technology (MACT) Standard or a New Source Performance Standard (NSPS). MACT and NSPS standards are federal regulations intended to limit emissions of hazardous and criteria air pollutants, respectively, from facilities in various manufacturing categories or defined emission units.

The following summarizes the proposed controls and work practice standards for the KMe Facility emission sources to meet BACT (see Part 4 of the November 2022 Application and Part 3 of the Addendum for the detailed BACT analysis):

- The steam methane reformer (SMR) and boiler (BLR) are equipped with selective catalytic reduction (SCR), which is the top-ranked control option for NOx; they are also equipped with an oxidation catalyst, which is the top-ranked control option for both CO and VOC. Good combustion practices are used to minimize PM, PM_{10} and $PM_{2.5}$ emissions, and energy efficiency measures, including good combustion practices, and clean burning fuels, are used to minimize GHG emissions. Also, the Lurgi MegaMethanol® process is inherently carbon efficient relative to other methanol technologies, as described in the BACT analysis.
- The flare, used as a control device for various process vents, will be operated in accordance with 40 CFR 60.18 (NSPS) and 40 CFR 63.11 (MACT) for control of VOC emissions.
- Truck and rail loading vapors are routed to a vapor control unit (VCU) for destruction of VOC emissions; use of natural gas as fuel, energy efficiency, and good operating practices minimize combustion emissions, including GHGs, from the VCU.
- The wastewater treatment plant (WWTP) operates in compliance with the stringent MACT requirements of 40 CFR Part 63, Subpart G.
- The fugitive components are managed with a leak detection and repair (LDAR) program in accordance with NSPS 40 CFR 60, Subpart VVa and MACT 40 CFR 63, Subpart H to reduce VOC emissions.

- Fugitive components containing greater than 5% methane or carbon monoxide will be managed with an LDAR program to reduce GHG and CO emissions.
- Emergency engines, generators and fire water pumps comply with applicable NSPS and MACT standards, including work practices.
- The cooling tower uses high-efficiency drift eliminators for control of particulate matter emissions. The cooling tower is designed as direct-contact and monitoring and repair of leaks is performed in accordance with the MACT standards of 40 CFR 63, Subpart F to minimize VOC, CO, and GHG emissions from HON-regulated heat exchange systems.
- The methanol tanks and slop vessel are equipped with vapor collection and are routed to a scrubber and flare, respectively, to minimize VOC emissions. As noted, the flare will comply with applicable NSPS and MACT standards.
- Terminal tanks are equipped with internal floating roofs to control VOC emissions.
- The gasoline tank is equipped with submerged fill pipe to control VOC emissions.

2.3.2 Greenhouse Gas Emissions

The Project consists of a number of activities with the collective primary goal of increasing utilization of the existing KMe Facility assets and achieving a 25% increase of the KMe Facility design production rate. Accordingly, the Project will leverage the existing energy and carbon efficiency that has been integrated into the KMe Facility's Combined Reforming process design as described below.

Energy and carbon efficiency have been integrated into the Combined Reforming (SMR+ATR) process design. Specifically, with Combined Reforming, adding an AutoThermal Reactor (ATR) downstream of steam methane reforming (SMR) optimizes the carbon monoxide to hydrogen stoichiometry/ratio (key components to produce methanol), and thus carbon efficiency. As a result, the Combined Reforming process design is inherently carbon efficient converting nearly 80% of the carbon entering the facility into methanol (final product).[24] This contrasts significantly with other industrial processes that leverage SMR, such as on purpose Hydrogen (H_2) plants which typically convert all carbon from feedstocks/fuels to carbon dioxide emissions (process is selective for H_2 product). Natural gas-based methanol production via Combined Reforming is estimated to emit 10-20% of the GHG emitted by coal-based methanol produced internationally and is also more carbon efficient than more traditional SMR based natural gas to methanol production common in U.S. and other global markets. According to the

[24] "Table 3: Overall Carbon Balance of the Plant": Demonstrating Large Scale Industrial CCS through CCU – A Case Study for Methanol Production – ScienceDirect.

International Panel for Climate Change (IPCC) Guidance for National Inventories summarized in IPCC's Emission Factor Database (EFDB), the carbon emissions intensity of the Lurgi MegaMethanol® process utilized at the KMe Facility is roughly half that of conventional natural gas-based SMR methanol production on a MT CO_2/MT of methanol basis.[25]

In its September 2022 Net Zero Tracking Report on Chemicals[26], the International Energy Agency (IEA) highlights the importance of private and public sector investments in energy efficiency and conversion from coal- to natural gas-based chemical processing, stating:

> "*The coal-based chemical industry, particularly prevalent in China, poses a significant environmental challenge, as emission intensities are considerably higher than in natural gas-based production. Methanol can be produced far more affordably from coal in China, which has in turn facilitated the large-scale (and rapidly growing) route of producing plastics from coal…. Increased energy efficiency – achieved both through incremental improvements to existing methods and step changes resulting from switching to fundamentally more efficient methods (e.g. from coal- to natural gas-based processing) is also important in the Net Zero Scenario.*"

Koch's continued investment in the KME Facility's Combined Reforming process is consistent with IEA's stated step change goal noted above as it not only reflects investment in low carbon feedstock-based methanol production, but also investment in the Combined Reforming process design, which is fundamentally more carbon efficient than other more traditional natural gas-based methanol production that relies solely on SMR.

The fraction of carbon that is not converted into product is emitted as carbon dioxide at low concentrations in the post combustion exhaust stream. Greenhouse gas emissions are regulated under PSD regulations, thus utilizing carbon capture and sequestration (CCS) to further reduce GHG emissions was evaluated as part of the BACT analysis (see Part 4 of the November 2022 Application).

For the KMe Facility, a CCS process would include equipment to capture the carbon dioxide from the dilute combustion stream. This can be accomplished by running the combustion gases through a tower (vessel) where they come into contact with an amine solution that preferentially absorbs the carbon dioxide while the rest of the gases are emitted. Then a separate process would use heat to remove the relatively pure carbon dioxide as a concentrated stream, essentially regenerating the amine to be used again to capture CO_2 in a recycle loop. The carbon dioxide stream would then be pressurized and transported to a location where it could be

[25] https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php, accessed October 31, 2022.
[26] https://www.iea.org/reports/chemicals, accessed October 31, 2022.

injected into a geologic formation where it would be sequestered, unless sequestration is available on the facility property. Each of these processes (capture, concentration, compression, transport, and sequestration) requires significant capital equipment/investment and energy to pump fluids, compress them, heat them (to remove CO_2 from the amine), and ultimately sequester them in an underground cavern. Additionally, as noted in more detail in the BACT analysis presented in Part 4 of the November 2022 Application, this process becomes a significant GHG producer as well and, therefore, reduces overall carbon capture efficiency unless the system is sized to not only capture emissions from the facility, but also from the additional boiler emissions associated with the steam generation needed to regenerate the amine, which would add further significant cost.

To further evaluate the technical feasibility and cost effectiveness of CCS technology specifically for the KMe Facility, Koch contracted two outside engineering firms, one to conduct preliminary engineering to estimate the capital expenditures, annual utilities and operating expenditures, and develop equipment lists for the capture and compression components of CCS (the Capture and Compress Study), and the other to evaluate the geological fit for sequestration below the site property (the Sequestration Study). The Capture and Compress Study determined that the dilute post combustion streams could likely be captured via amine but would require approximately 5 million MMBtu of natural gas firing annually for the generation of steam to regenerate the amine resulting in additional CO_2 and traditional criteria pollutant emissions. An electricity-based heat pump option was considered, which would use electricity rather than a natural gas fired boiler to regenerate the amine. However, this option was found to be both less cost efficient than a natural gas fired boiler and not commercially demonstrated at the size required.

The Sequestration Study evaluated cost but also focused on the geological fit for sequestration below site property. While the Sequestration Study found the geological conditions at the site to be a strong fit for sequestration potentially making onsite sequestration feasible, the Capture and Compress Study found that capture and compression of the available post combustion, dilute and low-pressure CO_2 streams dominate the economic assessment and proved consistent with BACT precedent – i.e., that CCS is not a cost effective option for the KMe Facility's process. The findings were also directionally consistent with the recently published Louisiana State University (LSU) study on Carbon Capture potential in Louisiana's Industrial Corridor.[27] That study quickly ruled out low quality industrial candidates with dilute, post combustion streams such as the KMe Facility and found that CCS was not likely economically feasible for even the most ideal industrial sites with

[27] https://www.lsu.edu/ces/publications/2019/doe_carbonsafe_02-18-19.pdf, accessed October 31, 2022.

more than 10 times the emissions and availability of concentrated CO_2 streams, noting:

> *"However, industrial CCS is expensive. The capture component of an industrial CCS project is the largest individual cost item and can account for as much as half of an industrial CCS investment (Simbolotti, 2010). Industrial CCS investment costs, however, are a little more nuanced than those associated with coal-fired power plants since they are driven in part by the CO_2 emissions purity and, as noted earlier, the partial pressure of the CO_2 source. Higher CO_2 concentrations and pressures allow for capture systems with lower operational and capital costs."*

As for transportation costs associated with offsite sequestration, they are a very small portion of total annualized cost given the significant capital and operating costs associated with capture.

As noted above, the inherent carbon efficiency of the combined reforming process (SMR with ATR), which has a natural incentive to maximize conversion of feed carbon into carbon monoxide building blocks for methanol production, does not result in waste streams rich in CO_2. The KMe Facility continues to evaluate advances in the technology and potential future market incentives to competitively implement CCS and plans to meet with the LDEQ periodically to share learnings.

BACT for greenhouse gas emissions will be implemented in the form of energy efficient operations and maintenance that will be made enforceable through a permit condition limiting emissions of CO_2e per ton of methanol produced on an annual basis,[28] which is similar to what has been determined as BACT for other chemical processing sites, including methanol facilities. The proposed two-tiered limit is reflective of the inherent carbon efficiency of KMe's Combined Reforming process and will ensure energy efficient operation. Furthermore, the limit

[28] As noted above, the IEA has recognized that the increase in energy efficiency achieved through step changes resulting from switching to fundamentally more efficient methanol production methods, including conversion from coal- to natural gas-based methanol production, is key to GHG emissions reductions goals. Therefore, while the Project itself will result in a relatively modest increase in GHG gas emissions from the KMe Facility, it is very possible that the Project increase will be more than offset by global reductions resulting from the displacement of less efficient, coal-based methanol production and/or more traditional natural gas-based methanol production that relies solely on SMR. Moreover, even if only the direct Project GHG emissions increases were considered, quantifying any potential impacts from such emissions is not possible and, therefore, has not been attempted. As EPA states in its PSD and Title V Permitting Guidance for Greenhouse Gases, "[C]limate change modeling and evaluations of risks and impacts of GHG emissions currently is typically conducted for changes in emissions orders of magnitude larger than the emissions from individual projects that might be analyzed in PSD permit reviews. Quantifying these exact impacts attributable to the specific GHG source obtaining a permit in specific places is not currently possible with climate change modeling." PSD and Title V Permitting Guidance for Greenhouse Gases, EPA-457/B-11-001, March 2011 at p. 42 (available at https://www.epa.gov/sites/default/files/2015-08/documents/ghgguid.pdf, accessed October 28, 2022).

recognizes that onsite steam generation results in higher emissions of CO_2e per ton of methanol produced compared to sites that purchase steam from an offsite supplier.

As noted in the BACT analysis, Koch will also be implementing a new leak detection and repair (LDAR) program for monitoring and minimizing leaks from piping components in methane (natural gas) service to reduce fugitive GHG emissions.

Additionally, as noted in Section 1.1.1.1, KII continues to focus on energy efficiency and energy intensity, which has resulted in recognition by EPA with corporate Energy Star Partner of the Year award in 2022. Consistent with KII's focus on energy efficiency, Koch has invested in and is in the process of commissioning a steam condensing electrical generation turbine to leverage excess process steam (otherwise released to atmosphere) to reduce grid electricity consumption by 30-50% and is working to optimize up to 90% reduced grid electricity consumption under normal operation. Leveraging EPA's latest regional Egrid factors, a 50-75% annualized reduction in purchased electricity would reduce KMe's Scope 2 (indirect) GHG emissions by 15,000-25,000 Metric Tons CO_2e/year plus approximately 5% associated distribution line losses which would be avoided with onsite power generation.

2.3.3 Water Usage

The KMe Facility obtains the water it uses for process water, utility water, and fire water directly from the Mississippi River through an intake structure. The Project will result in an increase in water demand of up to 25%, but overall demand post Project will remain within the currently authorized limit of 10.8 MMgal/day (actual use has averaged approximately 4MM gal/day with peak withdrawal of 5.6 MMgal/day). The KMe Facility potable water is supplied from a public utility. From an environmental impact standpoint, compared to potential concerns related to groundwater aquifer resource availability, there are no identifiable concerns with the industrial use of Mississippi River water.

Section 316(b) of the Clean Water Act requires EPA to issue regulations governing the design and operation of water intake structures (the pipe and screens in the river connected to water supply pumps), in order to minimize potential adverse impacts to aquatic life. As part of the initial installation and commissioning of the site, KMe was required to perform testing on the facility's water intake structure pursuant to Section 316(b) to ensure that aquatic life would not be adversely impacted by the water intake structure. This initial testing was completed at maximum expected water intake flowrates and the results showed no adverse effects. To ensure no adverse effects during facility operation, an enforceable limit on the intake velocity across the intake screens was established. With this Project there will be an incremental increase of roughly 1 MMgal/day in water demand to supply additional cooling water and boiler feed water makeup (required to meet the increased steam demand). However, the increase in water demand will not require any physical modifications to the intake structure or installation of any additional pumps. Therefore, no additional testing is expected to be required since KMe will continue to meet the existing intake velocity limit.

2.3.4 Wastewater and Stormwater Discharges

2.3.4.1 Wastewater

In Louisiana, the National Pollutant Discharge Elimination System (NPDES) program has been delegated to LDEQ, with federal oversight, and is called the LPDES permitting program. The KMe Facility operates under LPDES Permit Number LA0127367.

The facility discharges into two waterbodies, the Mississippi River (subsegment 070301) and the St. James Canal (subsegment 020101). The Mississippi River segment receiving the discharges is not impaired (i.e., it does not exceed any ambient water quality standard). Prior to discharge, the process wastewater streams are sent to a wastewater treatment facility, which includes equalization, pH adjustment, biological treatment, and clarification and is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit. The treated discharges to the Mississippi River are also subject to LPDES Technology Based Effluent Limits (TBELs) commensurate with the nature of the facility's operations, specifically the requirements under 40 CFR Part 414, Subparts F & I for the Organic Chemicals, Plastics and Synthetic Fibers production category. The treated process wastewater is combined with other wastewater streams, including boiler and cooling tower blowdown, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems prior to discharge to the Mississippi River.

Non-process area stormwater, hydrostatic test water and other miscellaneous waters are discharged to the St. James Canal in accordance with EPA and Louisiana regulations, guidance and/or pertinent general permits. The St. James Canal is impaired for nitrates, phosphorous, fecal coliform, and dissolved oxygen, but the LDEQ has determined that the wastewater discharges to the canal from the KMe facility are protective of human health, aquatic life, the environment and designated uses of the St. James Canal. The proposed Project will not impact discharges to the St. James Canal.

The Project will result in an increase in production rates, which will result in an increase in the volume of process-generated wastewaters sent to the wastewater treatment facility as well as an increase in the volume of blowdown waters from cooling and steam systems, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems. The increase in volume of wastewater flow will result in a commensurate increase in volume of wastewater discharged to the Mississippi River. While a change in concentration of pollutants in the wastewater discharge is not anticipated, there will be an associated increase in pollutant loading (lb/day) from the final outfall that discharges to the Mississippi River due to the increase in discharge volume. An update to the KMe Facility's LPDES permit was requested to account for these changes and the KMe Facility will ensure that the facility's WWTP is designed and operated to comply with all permit conditions. As part of this permitting process, KMe also requested changes to the LPDES permit to better reflect the as-built operation of the KMe Facility. These changes included narrative updates, updates to represented streams routed to each permitted outfall, updates to the layout and location of permitted stormwater outfalls, and other minor changes.

The site will continue to perform annual Whole Effluent Toxicity (WET) testing on the final outfall to the Mississippi River. This testing is in place to ensure that wastewater effluent discharged into the Mississippi River does not negatively impact aquatic ecosystems.

2.3.4.2 Stormwater Pollution Prevention Plan (SWPPP) Including Best Management Practices (BMPs)

KMe recognizes how critical the water quality of the nearby St. James Canal is to area residents using the waterway in a variety of ways. As a result, KMe is committed to responsibly managing its permitted discharge of stormwater to the St. James Canal. Stormwater associated with industrial activity at the site is managed and monitored in accordance with a Stormwater Pollution Prevention Plan (SWPPP) as required under the permit LA0127367. The SWPPP incorporates Best Management Practices (BMPs) to protect nearby surface water bodies that traverse the site or receive stormwater discharges from the site. BMPs can include both structural and non-structural measures. The SWPPP is a "living document" and is updated routinely to ensure appropriate and effective management practices are applied as site conditions change.

The SWPPP also ensures that the potential adverse environmental effects associated with the generation of solid and/or hazardous wastes resulting from spills of oil or hazardous substances are minimized to the maximum extent possible. Some areas of the facility have very specific controls/BMPs in place due to the nature of the activity performed and to protect the quality of the stormwater leaving the site. As listed in the SWPPP, these specific BMPs and/or good housekeeping measures include, but are not limited to:

- Containment dikes provided for chemical storage tanks, with visual inspections prior to release of accumulated stormwater;
- Minimization of exposed bare soils;

- Wastes and chemicals are stored in covered containers or designated storage areas under roofing to prevent contact with stormwater;
- Immediate cleanup of spills prior to next storm event; and,
- Maintenance operations conducted under roof where practicable, and maintenance related fluids stored indoors or within covered containers.

If necessary, the KMe Facility will obtain coverage under an LPDES General stormwater permit for construction activities associated with the proposed Project. Regardless, Koch will update its existing SWPPP as necessary to ensure appropriate and effective best management practices are applied and implemented to address activities during construction as well as to address post-project changes related to operations.

To minimize the quantity of stormwater leaving the KMe Facility, the site's original footprint includes permeable surfaces in areas of low contamination potential. While impermeable surfaces are utilized directly in the process block areas to provide proper containment, the outlying areas are majority gravel and/or grass, thus reducing the runoff coefficient and thus the volume of runoff that leaves the site. The proposed Project will have minimal impact to impermeable surfaces and therefore minimal impact to the quantity of stormwater runoff.

The containment areas in the process block have a higher potential for contamination and therefore the site utilizes a "first-flush" protocol to protect against potentially contaminated stormwater being sent directly to offsite waters. This protocol requires stormwater that is generated within the process block area from the first inch of rainfall to be collected in a separate, segregated sewer system (the Potentially Contaminated Sewer System, or PCSS) and to be routed to the onsite WWTP for treatment prior to discharge to the Mississippi River. After the first inch of rainfall, to prevent overwhelming the wastewater treatment plant, the PCSS is diverted to a lined pond that can discharge to the Mississippi River (this stream is not discharged to the St. James Canal). Note that after the first inch of rainfall, the potential for contamination is low and, therefore, treatment at the WWTP is not necessary.

2.3.4.3 Spill Prevention, Control, and Countermeasure (SPCC) Plan

The KMe Facility operates under an SPCC/SPC Plan in accordance with requirements of 40 CFR 112 and LAC 33:IX.Chapter 9 to aid in the prevention of spills of subject fluids at the facility. This includes routine inspection of containers of stored oils and chemicals to ensure that all are in working order with no signs of maintenance needs or imminent failure. The facility's existing SPCC/SPC Plan will be amended to include any Project related equipment, as necessary.

2.3.5 Solid and Hazardous Waste

The KMe Facility is registered with LDEQ as a Small Quantity Generator (SQG), as the facility produces less than 2,200 lb/month of hazardous waste. This is not anticipated to change as a result of the Project. The KMe facility does not own or operate a hazardous waste treatment, storage or disposal unit on-site. All hazardous wastes are properly managed under the generator rules and are manifested for off-site treatment, disposal or recycle.

Koch is also registered with the LDEQ as a generator of industrial solid wastes (G-093-13828). Koch complies with the LDEQ solid waste regulations by appropriately managing solid wastes prior to off-site disposal and by submitting annual generator reports.

Solid and hazardous waste minimization practices are implemented facility-wide through a variety of best management practices, from generation minimization to reuse where possible.

Wastes generated during normal operation of the facility are characterized, transported and disposed of in compliance with all applicable solid and/or hazardous waste regulations. The KMe Facility produces a number of routine “wastes” and also materials that are reused/recycled, including:

- Used Oil that is shipped offsite and reused in compliance with used oil regulations (thus not considered a “waste”)
- Non-Hazardous Industrial Solid Waste
    - Oily rags and debris wastes, such as clean up from oil spills, absorbent pads, contaminated gravel and debris
    - Plant water treatment lab testing wastes, which do not contain methanol
    - Wastewater Treatment Plant centrifuge cake, which is a solid waste and stored in a lined roll-off box prior to off-site disposal
- Hazardous Waste
    - Methanol lab testing wastes
    - Off-Spec methanol (when <5,000 BTU/lb) waste, such as methanol spill clean ups and methanol purges
    - Aerosol can liquid waste/unpunctured aerosol cans
    - Waste paint, coatings, and thinner waste
- Universal waste
    - Batteries (non-alkaline), lamps/bulbs (i.e., fluorescent), mercury-containing equipment, and pesticides

All KMe Facility wastes are managed in appropriate tanks or containers located on concrete surfaces so as to preclude any potential for impacts to soils and underlying groundwater resources. After being containerized, industrial wastes are taken to the onsite Central Accumulation Area (CAA) and stored properly until disposal. The proposed Project is not anticipated to generate any new wastes, change the facility's generator status from SQG, or require any updates to current waste management practices. Wastes generated during construction of the Project will be managed as described above in accordance with applicable regulations.

2.4 Noise, Odor, Light, and Aesthetics – Minimization of Impacts

The methanol manufacturing process is not prone to excessive noise that would create a public nuisance, and standard operational procedures have been implemented to minimize any noise from railcar coupling and decoupling. Compliance with OSHA noise standards for employee hearing protection serves to minimize noise as well. Through these and other measures, the KMe Facility complies with generally accepted noise ordinance standards. The proposed Project will be executed (constructed and operated) within the existing facility, thus within the current operating footprint, with no discernable change in noise level. Furthermore, the KMe Facility implements standard practices for hearing conservation for all employees and contractors. The standard practices set forth criteria used to develop safe work practices necessary to minimize the impact of exposure to workplace noise and that outline procedures to anticipate the potential for hazardous exposures, control exposures, and verify the effectiveness of control measures.

No offensive odors are associated with current operations, nor anticipated in connection with the Project. Notably, the odor threshold for methanol is approximately 2,000 ppm.[29] The modeling analysis conducted as part of this permit action predicted a maximum increase in ground level concentration of methanol at or beyond the property boundary of 0.072 ppm. In the event an incident occurs resulting in a release or spill that leads to detection of odors, the KMe Facility will use an air monitoring team trained to use air monitoring instruments to determine if there are detectable levels of odors at the fence line. Data will be gathered to investigate and take any necessary corrective actions.

Facility area lighting required for safe, 24/7 operations of the facility is consistent with the industrial zoning for the site[30]. This includes the process area lighting as well as lighting on the flare and other elevated structures. Minimization of non-routine flaring is a priority both from the standpoint of minimizing associated emissions and visual aesthetics and is inherently driven by the desire to minimize

[29] https://kochfertilizer.com/Communities/kochfertilizer/getsds.ashx?ID=1150, accessed October 31, 2022.

[30] https://www.stjamesla.com/DocumentCenter/View/690/Land-Use-Map-PDF, accessed October 31, 2022.

the lost production and product that may be associated with non-routine flaring events.

2.5 Impacts to Traffic and Local Infrastructure

A traffic study[31] conducted in 2016 prior to construction of the KMe Facility, showed that existing roadways and intersections had adequate capacity to handle all traffic associated with the original construction of the facility and with plant operations out to the year 2026. Nonetheless, two additional turn lanes were constructed on the Highway 3127 entrance to the facility to minimize any potential traffic impacts. Additionally, in response to a community member request, lighting was recently installed on the underside of the heavy haul bridge over Highway 18 to increase traffic visibility at that location.

The long-term impact of the proposed Project on roads and vehicle traffic is expected to be minimal compared to current conditions. Raw materials will continue to arrive at the facility primarily by pipeline, but also by truck. Products will continue to leave via truck, rail, and the marine dock adjacently located up-river of the marine offloading facility. The materials transported will be of the same types that are already handled by the facility and its transporters. Although there will be some increased volume via these modes of transportation, there will be no significant changes that would impact public resources. This is due to the fact that although production rate is increasing, the additional production volume is expected to primarily serve non-local customers and thus be shipped by rail and marine vessel.

There may be an increase in road traffic during construction expected to last a number of months; however, increased traffic on nearby roadways is anticipated to be manageable, as Highway 3127 is a two-lane highway with adequate shoulders and turn lanes, including the turn lanes added as part of the initial construction of the KMe Facility. During construction on the Project, the KMe Facility will have a traffic control plan in effect, and project teams will work with the St. James Parish Sheriff's Office to provide traffic control and assistance, as needed, at the facility entrances as well as within the local community. State and parish permit procedures will be followed and coordinated with the Louisiana State Police to minimize the traffic impact. Adequate privately-owned existing roadways leading from Highway 3127 to the facility are suitable for handling the traffic volumes and no additional accesses are required. Additionally, the KMe Facility does not foresee or anticipate the need for off-site or remote parking.

Infrastructure to the surrounding communities will not be impacted by the proposed Project due to the following factors:

[31] Traffic Analysis Report, 138643-0000-RPT-CS-0001, YUHUANG CHEMICAL, INC., METHANOL PLANT, ST. JAMES PARISH, LOUISIANA.

- There will be no need for additional medical facilities in the surrounding communities. There is a hospital in St. James Parish (located in Lutcher approximately 20 miles from the KMe Facility), as well as several urgent care and medical clinics within near proximity. Additional metropolitan hospitals and specialty health services are available within close proximity in the New Orleans and Baton Rouge areas. St. James Parish is also located within the Acadian Ambulance service area.[32]
- There are no anticipated significant additional costs for schools as a result of this Project. In fact, the economic impact from additional taxes generated by the Project will provide increased long-term funds to improve local schools (see more details in Section 3.1 of this EAS). Further, Koch's community efforts with its partner schools and other local area schools will continue.

2.6 Louisiana Department of Natural Resources (LDNR) and Louisiana Coastal Protection and Restoration Authority (CPRA) Requirements

The KMe Facility is located within the Louisiana Coastal Zone. Certain work within the Coastal Zone is regulated by the Louisiana Department of Natural Resources – Coastal Management Division (LDNR) per Louisiana Administrative Code Title 43, Part I. Unless otherwise exempt, activities that may impact coastal resources within the Coastal Zone require authorization from LDNR in the form of a Coastal Use Permit. Coastal Use Permitting is pursued through a Joint Permit Application submitted online to both the LDNR and the United States Army Corps of Engineers (USACE).

The majority of the KMe Facility site is above the 5-foot elevation contour (considered to be "fastland"), and thus is exempt from Coastal Use Permitting per LAC 43:I.723.B.1. The initial construction of the landward side of the facility (work performed within the Mississippi River levee flood protection area) was determined to be exempt from LDNR Coastal Use Permitting through issuance of Coastal Use Permit Exemption P20141674 dated January 20, 2015. The heavy haul road and marine offloading ramp were not exempt from permitting and their construction was approved by LDNR through issuance of Coastal Use Permit P20150795 dated January 27, 2016. Installation of a water intake structure adjacent to the marine offloading ramp was authorized by LDNR through Coastal Use Permit P20170424 issued October 9, 2017. To reflect final facility design plans, updates were proposed, and the exemption was confirmed through issuance of Coastal Use Permit Exemption P20161140 on January 10, 2017, for the landward side of the facility, and the timeline for Coastal Use Permit P20150795 was extended on February 24, 2021 for the heavy haul bridge, road and marine offload facilities. A previously authorized onsite marine barge loading dock was not constructed.

[32] https://acadianambulance.com/locations/louisiana/, accessed October 31, 2022.

Instead, the KMe Facility uses the marine loading dock located adjacent to the site that is operated by Plains Marketing LP.

The proposed Project will not require onsite physical construction activities, such as dirt work, that could impact coastal resources. Thus, a Coastal Use Permit is not required for the Project.

The Coastal Protection and Restoration Authority (CPRA) was established as the single state entity with authority to articulate a clear statement of priorities and to focus development and implementation efforts to achieve comprehensive coastal protection for Louisiana. It currently operates under the Louisiana Coastal Management Zone Master Plan implemented in 2017, with plans to update the Master Plan in 2023.[33] The 2017 Master Plan includes one project within the KMe Facility area, known as the St. James – Vacherie Nonstructural Risk Reduction (Project ID: STJ.02N). The project is focused on properties that are at risk for future flood damage based on their location within flood-prone areas and encompasses a large area of the west bank of the parish beyond the KMe Facility area. It includes floodproofing of non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet. The project specifications currently include mitigation of two non-residential properties and ten residential properties.[34]

No other CPRA projects were identified within the vicinity of the KMe Facility.

The existing KMe Facility does not impact the current CPRA Master Plan as described above. The November 2022 Application and Addendum do not propose any changes to the site that would impact the current CPRA Master Plan. Koch will review the new 2023 Master Plan when available to stay apprised of any future planned projects in the area in relation to the KMe Facility site and operations, including the proposed Project.

2.7 Cultural and Historical Resources Effects

The following sections summarize actions that have been and will be taken to ensure that the proposed Project does not impact previously identified historic resources.

2.7.1 Sugar Mill Remains

A Phase I Cultural Resource Survey was performed prior to construction of the site in August and September 2014. The survey identified remnants of a historic sugar

[33] https://coastal.la.gov/our-plan/, accessed October 31, 2022.

[34] See 2017 Louisiana Comprehensive Master Plan for a Sustainable Coast at p. 125, available at http://coastal.la.gov/wp-content/uploads/2017/04/2017-Coastal-Master-Plan_Web-Book_CFinal-with-Effective-Date-06092017.pdf, accessed November 1, 2022

mill at the site, referred to as Site 16SJ82. The survey was reviewed and approved by the State Historic Preservation Officer (SHPO) in letters dated February 20 and April 17, 2015. Phase II Archeological Testing and Evaluation to further define Site 16SJ82 with respect to its eligibility for nomination to the National Register of Historic Places was conducted in February 2015, under a site investigation plan approved by SHPO. Based on the results of the Phase II Evaluation, an Avoidance Plan was developed to set aside the area of archeological Site 16SJ82 to protect it from any future ground-disturbing activities. The area has been fenced off and secured to prevent entry by unauthorized personnel, and the area has been fallow since completion of the historic resource evaluation. SHPO approved the Avoidance Plan by letter dated July 22, 2015.

Koch is not proposing any construction activities near Site 16SJ82 in connection with the proposed Project. The area will remain protected in accordance with the Avoidance Plan.

2.7.2 Graugnard Farms Plantation House

The Phase I Cultural Resource Survey also identified the Graugnard Farms Plantation House, a property listed on the National Register of Historic Places, located on property near the KMe Facility that is not owned by Koch. In a letter dated July 22, 2015, the State Historic Preservation Office (SHPO) concurred that the initial construction of the KMe Facility would not adversely impact the plantation home. Subsequently, in August 2016, the Graugnard Farms Plantation House was sold to a new owner who planned to relocate the home. The house was lifted from its original pier foundation and placed on steel girders in preparation for moving. All plumbing and electrical connections were disconnected.

At the current time, the house is on steel girders in preparation for moving but has not been relocated and remains on the property that KMe does not own, near the KMe Facility. We understand that ownership of the house may have reverted to the Graugnard family. Koch is not proposing any construction activities near the house in association with the proposed Project.

2.7.3 Other Historic Resources

The September 2014 Phase I Cultural Resource Survey included evaluation of cultural resources situated within or immediately adjacent to the site. With respect to cemeteries and historic structures, the survey included a review of the area within 1 mile of the site location. Other than the Graugnard Farms Plantation House described previously, no other identified historic structures met the criteria for listing in the National Register of Historic Places. SHPO agreed with these findings in a letter dated April 17, 2015. With the November 2022 Application and Addendum, Koch is not proposing expansion of the site or any construction activities that would require further evaluation of potential cultural resources in the area.

2.8 Wetlands/Waters of US

USACE issued a Jurisdictional Determination (JD) on July 29, 2015, identifying the extent of wetlands and other waters of the US (WOUS) on the property subject to USACE jurisdiction. With the exception of the Mississippi River levee batture, the JD documents that there are no wetlands regulated under Section 404 of the Clean Water Act on the property. Some portions of the drainage ditches on the property were documented as being jurisdictional WOUS.

The November 2022 Application and Addendum do not propose onsite construction activities that are anticipated to impact jurisdictional wetlands or WOUS that would require USACE permitting by Koch. A scope item that is part of the Project includes connecting an existing, off-property, third-party ethane supply pipeline to new piping at the KMe Facility. The third party that will be constructing the ethane supply piping will secure any necessary wetland permits for its work on or off Koch property.

2.9 Threatened, Endangered, Protected Species Impacts

Prior to the initial construction of the KMe Facility, the site consisted of land that was in agricultural service for decades. No threatened or endangered species or sensitive habitats were identified in the field as part of the initial site surveys conducted prior to the initial construction of the facility. In addition, in conjunction with the USACE jurisdictional review in 2015, a review of the Project area (landward) was conducted using the Information for Planning and Consultation (IPaC) online tool provided by the US Fish and Wildlife Service (USFWS) to determine whether critical habitat or species would be adversely impacted by the initial construction of the facility. The USFWS-based review determined that the new facility would not have an effect on Federal trust resources under USFWS jurisdiction and protected by the Endangered Species Act of 1973. The USFWS IPaC tool was used again in 2017 to access the potential for impacts to listed species as a result of construction of the marine offloading facility, heavy haul bridge and heavy haul road. The IPaC tool noted three listed species that have the potential to occur in the Project vicinity. These include the West Indian Manatee (*Trichechus manatus*), the Pallid Sturgeon (*Scaphirhynchus albus*), and the Monarch Butterfly (*Danaus plexippus*). The manatee (listed as threatened) and sturgeon (listed as endangered) are both aquatic species; therefore, only where construction is proposed in the marine environment (i.e., in the Mississippi River) would there be a potential impact to these species. Currently, the Monarch Butterfly is listed as a candidate species and, as such, there are no regulatory requirements related to this particular species at this time.

The proposed Project will not involve construction activities in the Mississippi River thus there are no potential impacts to manatee or sturgeon. In addition, the only construction is landward construction primarily associated with existing equipment (within the developed/industrial footprint) that would not impact any listed species.

2.10 Emergency Response and Prevention

Potential adverse environmental effects associated with operation of the KMe Facility could result from a fire, an explosion, a hazardous materials release, a spill, a security breach, or a combination of these. Any of these incidents can affect any or all of the three environmental media: air, water, and land. The KMe Facility implements regulatory requirements and best practices to avoid these incidents to the maximum extent. Following implementation of the Project, the KMe Facility operations will continue to be addressed by the following security and emergency response related requirements and practices:

- Compliance with OSHA's Process Safety Management (PSM) rules at 29 CFR Part 1910, Subpart H
- Compliance with EPA's Risk Management Program (RMP) regulations (40 CFR Part 68) and the equivalent LDEQ program (LAC 33:III.Chapter 59)
- Compliance with the federal, state, and local requirements of the Emergency Planning and Community Right-to-Know Act as set forth in 40 CFR Parts 355 to 372 and LAC 33:V.10101 to 10123
- Adoption of and conformance with voluntary best practices including partnering with local, state, and federal authorities
- Design to meet applicable fire codes

The PSM program, implemented pursuant to OSHA regulation 29 CFR 1910, is a comprehensive program designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals to employees and contractors of a regulated facility.[35] The PSM regulations require that process safety information be developed and that such information be used to prepare safe operating procedures and to train persons who will be involved with such processes. In addition, a process hazard analysis is required to be conducted for each process initially and updated periodically. The PSM program entails the development of a written plan of action regarding employee participation as well as consulting with employees on the conduct and development of process hazard analyses and on the development of other elements of PSM required under the rule. The KMe Facility will fully comply with these regulations with respect to the proposed Project, including any new equipment and project modifications.

Key elements of the PSM rule are the requirement to implement a Management of Change (MOC) program for any changes to a process and to conduct a pre-startup

[35] For more information on the OSHA PSM program, see https://www.osha.gov/SLTC/processsafetymanagement/, accessed October 31, 2022.

safety review. As required by these PSM regulations, the KMe Facility employs a comprehensive and proactive MOC system. Any "changes" to existing processes occurring as a result of the Project will be identified via the MOC process and will undergo the appropriate review and documentation. Prior to startup of the facility following construction of the proposed Project, a safety review will be conducted and documented. Any identified unsafe condition will be mitigated prior to startup.

Piping and instrumentation diagrams/drawings (P&IDs) as well as operating procedures and instructions will be updated, as necessary, to reflect implementation of the proposed Project. If the changes made by the Project affect the operating and/or maintenance procedures, then operating personnel as well as employees engaged in routine and non-routine work in the process area will receive refresher or additional training. Any incident investigation recommendations, compliance audit findings, or process hazard analysis recommendations will be reviewed and addressed, as necessary, before initiating startup following implementation of the proposed Project.

The KMe Facility is also subject to EPA rules in 40 CFR Part 68 - called the Risk Management Program (RMP). Many of the compliance components of the RMP rules are identical to the requirements of the OSHA PSM rules. However, while the PSM rules are intended to protect facility employees, the RMP rules are intended to protect surrounding communities.[36] One requirement of RMP that differs from PSM regulations is the requirement for a facility to determine its worst-case and alternative release scenarios and provide those to the EPA for the purpose of planning emergency response. The LDEQ has adopted the EPA RMP rules by reference, with a few additional requirements, at LAC 33:III.Chapter 59. The KMe Facility is currently a Program Level 1 facility under RMP, which is the lowest level, because no public receptors are predicted to be impacted in the event of a worst-case scenario.

Koch has ensured that the facility is prepared and that emergency response services are available in the unlikely event of potential environmental releases and/or fire. Koch has adopted a policy that it will respond to all emergencies within the facility 24 hours per day, 365 days per year, using on-duty facility Emergency Response Teams. The KMe Facility maintains an Emergency Response Plan (ERP) that describes the planning and capabilities of the facility and provides the Emergency Action Plan (EAP) to inform employees of the required actions in the case of an emergency. Appropriate updates will be made to the ERP to address the proposed Project.

The KMe Facility Emergency Response Plan also provides emergency health care information on the proper first aid treatment for exposure, as well as employee

[36] For more information on the EPA RMP program, see https://www.epa.gov/rmp/risk-management-program-rmp-rule-overview, accessed October 31, 2022.

training for informing the public and response agencies (e.g., the fire department) should an incident occur. Information regarding the Emergency Response Plan is also routinely shared with the St. James Parish Emergency Preparedness Department. KMe Facility personnel will contact and maintain communications with the St. James Local Emergency Planning Commission if and when there is a potential for direct impact to the public.

2.11 Environmental Justice (EJ)

An environmental justice assessment was performed to ensure that any adverse environmental effects of the proposed Project, including any adverse environmental effects on communities of color or people living with low income, have been avoided to the maximum extent possible. This assessment was performed utilizing the EPA's Environmental Justice Screening and Mapping Tool (EJScreen), Version 2.1 (October 2022).[37] While this EAS and thus this environmental justice assessment are both focused on assessing the potential impacts from the proposed Project, because the EJScreen results do not account for the existing KMe Facility, this analysis conservatively addresses the potential impacts on the surrounding community from the entire KMe Facility following implementation of the proposed Project.

Accordingly, throughout this environmental justice assessment, potential impacts from the KMe Facility are considered and assessed.

This Section is organized as follows:

- Section 2.11.1 provides an overview of environmental justice and relevant federal policies guiding this analysis;
- Section 2.11.2 summarizes the baseline environmental justice analysis conducted using EPA's EJScreen version 2.1 to identify the baseline burdens and vulnerabilities in the community surrounding the KMe Facility;
- Section 2.11.3 identifies potential adverse and beneficial impacts from the Facility and assesses these impacts in the context of baseline conditions to understand potential cumulative impacts to the community.
- Section 2.11.4 describes how Koch fosters meaningful engagement and involvement in the community, and describes the specific activities conducted to engage the community with respect to this permit application; and
- Section 2.11.5 provides conclusions of the environmental justice analysis.

[37] US Environmental Protection Agency (EPA). EJScreen: Environmental Justice Screening and Mapping Tool (version 2.10). Oct 11, 2022.

2.11.1 Definition of Environmental Justice and Applicable Regulations

Currently, there is no specific regulatory requirement or guidance from the EPA or LDEQ requiring an environmental justice analysis for this major air permitting effort. This following federal policy summary is provided as a general framework guiding consideration of environmental justice within this EAS.

In 1994, in response to growing concern that minority[38] and low-income populations bear a disproportionate amount of adverse health and environmental effects, President Clinton issued Executive Order 12898 on environmental justice formally focusing federal agency attention on this issue. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* requires federal agencies to assess the potential for their actions to have disproportionately high and adverse environmental and health impacts on minority and low-income populations, and directs them to develop strategies for implementing environmental justice.

The EPA defines "environmental justice" as follows:[39]

> *The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.*

The EPA defines "fair treatment" as follows:[39]

> *No group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.*

The EPA defines "meaningful involvement" as follows:[39]

1) Potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health;
2) The public's contribution can influence the regulatory agency's decision;

[38] To utilize more inclusive language, for the remainder of this assessment the terms "people of color" or "communities of color" are used instead of the term "minority;" the EPA has also adopted similar phrasing updates in EJScreen 2.1.

[39] EPA. 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses.

3) The concerns of all participants involved will be considered in the decision-making process; and,

4) The decision-makers seek out and facilitate the involvement of those potentially affected.

Recently, EPA provided *Principles for Addressing Environmental Justice in Air Permitting,*[40] which provides suggested direction to guide federal, state, and local permitting programs that can inform this EAS process. Additional guides, *Environmental Justice and Civil Rights in Permitting Frequency Asked Questions*[41] and *EPA Legal Tools to Advance Environmental Justice*[42] provide additional direction, specifically addressing questions related to permitting processes and cumulative impacts analysis. This environmental justice analysis takes into account these and other guidance documents and provides an environmental justice perspective of potential environmental effects of the proposed Project being evaluated in this EAS.

In this analysis, <u>impacts</u> are defined as adverse or beneficial health or environmental effects of the KMe Facility on the surrounding community. This includes cumulative impacts on the surrounding community that could result when any impacts from the KMe Facility combine with other impacts. <u>Disproportionate impacts</u> are defined as adverse impacts borne disproportionately on the basis of race, color, or national origin.

2.11.2 Baseline Environmental Justice Assessment Using EJScreen

This section presents a screening-level review of the baseline conditions, burdens, and vulnerabilities for the community in the area surrounding the KMe Facility using EJScreen (Version 2.1, released October 2022).[3737] EJScreen is the most widely used federal assessment tool for evaluating potential impacts to communities facing environmental justice-related concerns. It provides a nationally consistent dataset and approach for combining environmental and demographic socioeconomic indicators used to assess potential exposure in vulnerable communities. In this analysis, the results of the tool were used to identify potential baseline environmental concerns present in the community that warrant additional review and guide further assessment of whether the KMe Facility might contribute to adverse and disproportionate impacts.

[40] EPA. 2022. Principles for Addressing Environmental Justice in Air Permitting. Memorandum from Joseph Goffman, Principal Deputy Assistant Administrator, Office of Air and Radiation, to Air and Radiation Division Directions, EPA Regions I-X. December 22, 2022.

[41] EPA. 2022. Environmental Justice and Civil Rights in Permitting Frequency Asked Questions. Office of General Counsel. August 2022.

[42] EPA. 2022. EPA Legal Tools to Advance Environmental Justice. Office of General Counsel. May 2022.

2.11.2.1 EJScreen Overview

EJScreen calculates 12 "Environmental Justice Indexes (EJ Indexes)," one for each of 12 individual environmental indicators, where the EJ Index is a percentile ranking among two comparison populations: state and US. Each EJ Index is available at state and US comparison levels within the standard reports (Attachment D-1) exportable from the tool.

As recommended by EPA, the 80th percentile is a suggested starting point for the purpose of identifying geographic areas in the US that may warrant further consideration, analysis, or outreach.[43] That is, if any of the EJ Indexes are at or above the 80th percentile, then further review may be appropriate. LDEQ also has used the 80th percentile as the threshold for assessing the need for further evaluation.[44,45] In this analysis, EJ Indexes equal to or greater than the 80th percentile among either of the two comparison populations are scrutinized to assess the potential for disproportionate impacts.

An EJ Index for a particular environmental indicator (e.g., $PM_{2.5}$ or Air Toxics Cancer Risk) combines the following information for the user-specified study area:

- the environmental indicator percentile for a Census block group,
- a demographic index for a Census block group, consisting of percent low-income population[46] and percent people of color, and
- population size for block group.

The EJ Index results are intended to represent the average resident within the study area; however, the data used to calculate the index are based on a combination of Census tract- and Census block group-levels, which can be larger geographic areas than the user-defined study area. In this way, the EJ Indexes represent the closest approximation to the average resident in the study area but are estimates only, with some imprecision.

2.11.2.2 Study Area Definition

Figure D-1 shows the 30.18 square mile study area for this environmental justice analysis, which is defined as a 3.1-mile (5 kilometer [km]) ring centered around the

[43] EPA. 2022. EJSCREEN Technical Documentation; EPA. 2019. EJSCREEN Technical Documentation (note: both guides remain relevant as the 2022 update does not provide the comprehensive level of information that the 2019 version includes).

[44] LDEQ. June 3, 2022. Basis for Decision, Magnolia Power LLC – Magnolia Power Generating Station Unit 1, AI No. 222431. LDEQ-EDMS Document 13323744, see discussion of "EJSCREEN," on page 22.

[45] LDEQ. April 29, 2022. Basis for Decision, Indorama Ventures Olefins, LLC – Westlake Ethylene Plant, AI No. 5337. LDEQ-EDMS Document 13275727, see discussion of "EJSCREEN," on page 22.

[46] The low-income population metric is developed using a threshold of two times the federal poverty level.

KMe Facility. Use of a 3.1-mile radius is consistent with LDEQ[44,45] and EPA practice,[47] and is also the maximum distance recommended by EPA.[43] The 3.1-mile study area is large enough to encompass multiple census blocks near the KMe Facility, thereby reducing uncertainties in demographic estimates, while also not including areas that are too distant and not representative of the area closest to the Facility.

EJScreen was used to generate reports for the study area encompassed within a 3.1-mile distance from the KMe Facility. As an alternate point of comparison, a study area defined by a 1-mile radius was also evaluated. Comparisons across different study area sizes may suggest large differences are present in environmental vulnerabilities though this is not necessarily an accurate interpretation. The EJScreen technical guide indicates, "…EJ index values are often very uncertain at block group resolution. Therefore, modest differences in percentile scores between block groups or small buffers should not be interpreted as meaningful because of the uncertainties in demographic and environmental data at the block group level."[48]

The study area defined by a 3.1-mile (5 km) ring is located at a point between the KMe Plant production unit (M1) and the KMe Terminal (T1) (29.984221,-90.850335) (see Figure D-1 and the EJScreen Reports in Attachment D-1). The smaller, 1-mile study area was centered around the same point. The 1-mile radius is comprised of Census block group 220930405001 within Census tract 22093040500. The same Census tract and block group are included within the 3.1-mile study area along with Census block groups 220930405002 and 220930404002 in Census tract 22093040400.

The EJScreen analysis based on the 3.1-mile ring is more representative and relevant for characterizing the environmental justice vulnerability of the communities surrounding the KMe Facility than the 1-mile ring based on the following rationale:

- The 3.1-mile ring covers 30.18 square miles and an approximate population of 1,142 and incorporates the nearest communities in St. James Parish. The 1-mile ring does not provide adequate coverage of neighboring communities further away from the KMe Facility or the east bank of the river, covering only 3.14 square miles and an approximate population of 41.
- EPA cautions on use of smaller study areas (e.g., less than one mile) with smaller population counts due to uncertainties in the spatial resolution of the Census and environmental datasets that are used in EJScreen. The 1-mile

[47] https://www.epa.gov/system/files/documents/2022-07/Valero%20Houston%20Order_6-30-22_0.pdf, accessed February 17, 2023.

[48] EPA. 2019. EJSCREEN Technical Documentation.

study area population count of 41 may introduce uncertainties due to small sample size.

This environmental justice analysis will focus on the EJScreen results for the 3.1-mile study area. However, the EJScreen report for both the 3.1- and 1-mile radii are included in Attachment D-1.

2.11.2.3 EJ Indexes

The demographic index and population count are combined with each of the 12 individual environmental indicators to yield 12 EJ Indexes. An EJ Index is higher for Census block groups where the demographic index is higher, where there are more people living with low income and/or a higher percentage of people of color. As discussed previously, EJ Indexes equal to or greater than the 80th percentile, when compared with state or US populations are highlighted in this analysis. Table D-6 provides a summary of the EJ Indexes exceeding the 80th percentile among the state or US for the 3.1-mile study area; 7 of 12 EJ Indexes are included in this table. The complete EJScreen results are provided in Attachment D-1.

Table D-6: EJ Indexes Exceeding the 80th Percentile

EJ Indexes > 80th Percentile	State Percentile	US Percentile
Area: 30.18 square miles; Population: 1,142		
EJ Index for 2017 Air Toxics Cancer Risk	91	95
EJ Index for Air Toxics Respiratory HI	90	94
EJ Index for Diesel Particulate Matter	86	90
EJ Index for Lead Paint	80	81
EJ Index for Particulate Matter 2.5	83	89
EJ Index for RMP Facility Proximity	79	87
EJ Index for Wastewater Discharge	87	90

Notes:
HI = hazard index
RMP = Risk Management Program
*These values do not take into account any impact from the KMe Facility or Project.

The EJ Indexes representing the 2017 Air Toxics Cancer Risk, Air Toxics Respiratory Hazard Index (HI), diesel particulate matter (DPM), Lead Paint, $PM_{2.5}$, Risk Management Program (RMP) Facility Proximity, and Wastewater Discharge exceed the 80th percentile in the state and/or US comparison populations. These percentiles do not necessarily indicate health concerns but rather the need to review site-specific data or perform additional analysis for the study area. In addition to the percentiles, EPA also suggests considering the following:

- if and to what extent the environmental data show values above relevant health-based or regulatory thresholds,
- the significance of said thresholds, severity of health or impacts of environmental concern, and,
- the degree of any disparity amongst various groups exposed to environmental pollutants.

These EJ Indexes are further discussed in the context of the KMe Facility-specific impacts in Section 2.11.3.

2.11.2.4 Environmental Indicators for Baseline Assessment

EJScreen evaluates 12 environmental indicators that range from estimates of human health risk to proxies for potential exposure such as proximity to hazardous waste sites. These indicators are presented without consideration of the socioeconomic/demographic indicators. The environmental indicators associated with the EJ Indexes exceeding the 80th percentile as highlighted in Table D-6, are presented in Table D-7. These values do not take into account any impact from the KMe Facility or Project.

Table D-7: Baseline Environmental Indicators of Interest for the Study Area

Environmental Indicators of Interest	Environmental Indicator Value*	State Percentile	US Percentile
Area: 30.19 square miles; Population: 1,142			
2017 Air Toxics Cancer Risk (risk per million people)	54	92	95-100th
Air Toxics Respiratory HI (unitless)	0.5	90	95-100th
Diesel Particulate Matter (μg/m^3)	0.388	73	70-80th
Lead Paint (% Pre-1960 Housing)	0.23	65	51
Particulate Matter 2.5 (μg/m^3)	9.29	58	71
RMP Facility Proximity (facility count/km distance)	0.75	61	68
Wastewater Discharge (toxicity-weighted concentration/meter distance)	0.0065	69	65

Notes:
HI = hazard index
RMP = Risk Management Program
*These values do not take into account any impact from the KMe Facility or Project.

2.11.2.4.1 2017 Air Toxics Cancer Risk

The air toxics cancer risk indicator provides a numerical estimate of the probability of "excess lifetime cancer" in terms of cases of cancer per million people. Excess lifetime cancer relates to the potential for developing cancer over the course of a lifetime, apart from the existing background cancer rate. The significance of the cancer risk indicator value is assessed through comparison of the estimated excess lifetime cancer risk to EPA's acceptable range for cancer risk of 1 in one million to 100 in one million.[49] This range reflects a *de minimis* or negligible increased cancer risk level above background cancer risk, which is approximately 400,000 in one million, or 1 in 2.5 people, based on 2017-2019 data.[50] EPA's risk assessment methodology applied in calculating cancer and noncancer risks incorporates multiple factors representing a reasonable maximum exposure and applies toxicity values for each chemical that are modified by uncertainty and sensitivity factors that account for and are protective of sensitive subpopulations.[51] If estimated cancer risks are within or lower than this range, cancer risk is considered negligible.[49,51] If cancer risks are greater than EPA's acceptable risk range, then additional analysis is recommended. Typically, this includes refining data inputs and assumptions to reflect "site-specific" conditions.[51]

The air toxics cancer risk indicator value presented in EJScreen is based on EPA's AirToxScreen 2017[52] (Air Toxics Screening Assessment), which provides modeled health risks at the Census tract resolution level. The AirToxScreen cancer risk represents an upper-bound baseline risk level, for which it is conservatively assumed that someone is breathing the air toxics continuously over a 70-year lifetime. The health risks are based on modeling National Emissions Inventory and other emissions data sources for each Census tract. A Census tract is comprised of Census block groups and is oftentimes a larger geographic area than the 3.1-mile study area. Therefore, risks provided for the Census tract may reflect risks associated with emissions from facilities that are distant from the KMe Facility. In addition, EJScreen uses 2017 AirToxScreen information for any Census tract that intersects with the study area (i.e., Census tracts 22093040400 and 22093040500, shown as Census tracts "404" and "405" in Figure D-1), which can also result in ascribing air toxics cancer risks to the study area that are not necessarily

[49] This range is derived from the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), which states that "acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response." For reference, the nomenclature used by the EPA, 10^{-4} and 10^{-6}, is equivalent to the terms '1 in one million to 100 in one million.'

[50] National Cancer Institute, Surveillance, Epidemiology, and End Results Program https://seer.cancer.gov/statfacts/html/all.html, accessed October 28, 2022.

[51] EPA. 1989. Risk assessment guidance for Superfund Volume I, Human health evaluation manual (Part A), Interim Final. EPA/540/1-89/002.

[52] EPA. 2022. 2017 AirToxScreen Mapping Tool. Available at: https://www.epa.gov/AirToxScreen/2017-airtoxscreen-assessment-results, accessed October 27, 2022.

representative. For example, only a small portion of tract 404 is included in the study area, but these results nevertheless influence the total cancer risk estimate calculated in EJScreen.

The EJScreen air toxics cancer risk indicator score of 54 in one million is well within EPA's acceptable cancer risk range of 1 in one million to 100 in one million. The cancer risk estimate in EJScreen is from the 2017 AirToxScreen and represents the baseline risk level in the study area, which does not account for contribution from the KMe Facility. These baseline risks are largely attributable to emissions of formaldehyde (39%), ethylene oxide (35%), chloroprene (7%), and carbon tetrachloride (6%),[52] with facilities emitting the greatest amounts of these chemicals located 16 to 20 miles from the KMe Facility (see facility locations in Figure D-1). While distant from the KMe Facility, the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

Results from 2018[53] and 2019[54] AirToxScreen are available for the Census tracts within which the study area lies (22093040400 and 22093040500), though these results have not yet been incorporated into the EJScreen tool. The KMe Facility lies within Census tract 22093040500, which also makes up the majority of the study area evaluated in EJScreen, with a small portion of Census tract 22093040400 making up the remainder of the study area (refer to Census tracts "404" and "405" in Figure D-1 for Census tract boundaries). 2018 and 2019 AirToxScreen results were reviewed to understand potential changes in baseline air toxics cancer risks that are incorporated in more recent versions of AirToxScreen but not yet reflected in EJScreen, which relies on the 2017 AirToxScreen results. 2018 and 2019 AirToxScreen results for the individual Census tracts within the study area must be reviewed because the environmental indicator value for the study area cannot be replicated outside of EJScreen.

With respect to Census tract 22093040500, where the KMe Facility is located and which makes up the majority of the study area, the 2018 results indicate that the total air toxics cancer risk remained similar to the 2017 results; although, the relative contributions from the air toxics changed, with an increase in ethylene oxide cancer risk contribution and decreases in carbon tetrachloride, chloroprene,

[53] EPA. 2022. 2018 AirToxScreen Mapping Tool. Available at: https://www.epa.gov/AirToxScreen/2018-airtoxscreen, accessed October 27, 2022. The 2018 AirToxScreen used the 2017 National Emissions Inventory (NEI) as a starting point and updated these data for 2018 from comments provided by state, local and tribal agencies during the AirToxScreen review.

[54] EPA. 2022. 2019 AirToxScreen Mapping Tool. Available at: https://www.epa.gov/AirToxScreen/2019-airtoxscreen, accessed January 20, 2023. The 2019 AirToxScreen used the 2017 National Emissions Inventory (NEI) as a starting point and updated these data for 2019 from comments provided by state, local and tribal agencies during the AirToxScreen review.

and formaldehyde cancer risk contributions (see Table D-8). The 2019 air toxics cancer risks, the most recent available, are substantially lower (26%) than those reported in EJScreen, reported at 39 in one million. From 2018 to 2019, air toxics contributions show a decrease in chloroprene and ethylene oxide risk contributions and an increase in carbon tetrachloride and formaldehyde risk contributions (see Table D-8). Air toxics cancer risks also decreased substantially (26%) between 2017 and 2019 in Census tract 22093040400, a small portion of which comprises the remainder of the study area evaluated in EJScreen. While distant from the KMe Facility (see Figure D-1), the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

The KMe Facility does not and will not contribute to emissions of ethylene oxide, chloroprene, or carbon tetrachloride, but will emit up to 0.47 ton per year of formaldehyde. The cancer risk from the KMe facility's formaldehyde emissions (0.021 in one million) is nearly two orders of magnitude less than the lower end of EPA's acceptable cancer risk range (1 in one million). Facility-specific emission rates and related cancer risk contributions are presented in Section 2.11.3.1.1.

Table D-8: Baseline Cancer Risk Reported in AirToxScreen 2017-2019 in Vicinity of KMe Facility

Year	**Cancer Risk** (per million people)	**Cancer Risk Contribution by Chemical (%)[a]**			
		Ethylene Oxide	**Chloroprene**	**Carbon Tetrachloride**	**Formaldehyde**
Census Tract 22093040500[b]					
2017	53	35	7	6	39
2018	54	47	3	4	34
2019	39	30	1	8	47
Census Tract 22093040400[c]					
2017	57	35	9	5	37
2018	60	49	4	4	31
2019	42	32	2	7	44

Notes

a. KMe Facility does not and will not contribute to existing emissions of ethylene oxide, chloroprene, or carbon tetrachloride.

b. The cancer risk estimates are based on Census Tract 22309040500, where the KMe Facility is located.

c. The cancer risk estimates are based on Census Tract 22309040400, a small portion of which is included in the KMe Facility 3.1-mile study area.

2.11.2.4.2 Air Toxics Respiratory HI

The EJ Index for air toxics respiratory HI is a measure of estimated noncancer health impacts specific to the respiratory system. The environmental indicator for this EJ Index is an HI value of 0.5 (90th percentile in state and 95-100th percentile in US). EPA uses a risk management threshold HI of 1 to assess potential noncancer health impacts, wherein HIs less than 1 indicate exposures are below levels of concern. The HI of 0.5 reported for the 3.1-mile study area is substantially below EPA's threshold of 1, which indicates no potential for adverse noncancer health impacts.

The air toxics noncancer HI indicator value presented in EJScreen is based on EPA's AirToxScreen 2017.[52,55] As with the cancer risk estimate provided in AirToxScreen, the noncancer HI value provided in EJScreen is associated with all Census tracts within which the study area lies (i.e., Census tracts "404" and "405", as shown in Figure D-2) and may reflect noncancer hazards associated with emissions from facilities that are distant from the KMe Facility and may not accurately reflect hazards in the vicinity of the facility.

The 2017 AirToxScreen HI value of 0.5 represents an upper-bound baseline hazard level and is largely attributable to emissions of formaldehyde (35%), acetaldehyde (26%), acrolein (20%), and DPM (7.6%),[52] with facilities emitting the greatest amounts of these chemicals located 16 to 20 miles from the KMe Facility (see facility locations in Figure D-2). Formaldehyde, acetaldehyde, and DPM are associated with cancer risk, but are also evaluated for noncancer health impacts. Acrolein is not a carcinogen. While distant from the KMe Facility, the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located. Compared to 2017 HI values, the 2018 and 2019 AirToxScreen results for Census tracts 22093040500 and 22093040400 have trended downward and remained well below EPA's risk management threshold HI of 1, each with HIs of 0.4 (2018) and 0.3 (2019). These values, which are a fraction of EPA's threshold HI of 1, demonstrate that exposure is well below noncancer health impact levels of concern. For both Census tracts (see Table D-9), relative contributions of acrolein and DPM to the HI have decreased between 2017 and 2019, but relative contributions of acetaldehyde and formaldehyde to the HI have increased. While distant from the KMe Facility (see Figure D-2), the sources of these air toxics emissions are relevant because they influence the Census tracts in which the study area is located.

[55] Although EJScreen currently only uses results from 2017 AirToxScreen, results from more recent versions of AirToxScreen (i.e., 2018 AirToxScreen and 2019 AirToxScreen) which use the 2017 NEI data as a starting point but were updated for 2018 or 2019 based on comments provided by agencies during the AirToxScreen review are also publicly available for individual Census tracts and are referenced in this document.

Table D-9: Baseline Air Toxic Respiratory HI Reported in AirToxScreen 2017-2019 in Vicinity of KMe Facility					
Year	**Hazard Index**	**Air Toxic Respiratory HI Contribution by Chemical (%)[a]**			
		Acetaldehyde	**Acrolein**	**DPM**	**Formaldehyde**
Census Tract 22093040500[b]					
2017	0.5	26	20	8	35
2018	0.4	27	12	10	37
2019	0.3	30	10	7	42
Census Tract 22093040400[c]					
2017	0.5	26	20	8	35
2018	0.4	27	12	10	37
2019	0.3	29	10	7	41

Notes

a. KMe Facility does not and will not contribute to existing emissions of acrolein.

b. The air toxic respiratory HIs are based on Census Tract 22093040500, where the KMe Facility is located.

c. The air toxic respiratory HIs are based on Census Tract 22093040400, a small portion of which is included in the KMe Facility 3.1-mile study area.

DPM = diesel particulate matter

HI = hazard index

The KMe Facility does not and will not contribute to existing emissions of acrolein. Facility-specific emissions and associated impacts to air toxic respiratory risks are discussed further in Section 2.11.3.1.2.

2.11.2.4.3 DPM

The EJ index for DPM (86th percentile in state and 90th percentile in US) is based on an estimated DPM air concentration of 0.388 μg/m^3. This estimated air concentration is greater than the state (0.297 μg/m^3) and US (0.294 μg/m^3) average concentrations. This value is derived from 2017 AirToxScreen and reflects commercial marine vessel emissions; on-road, heavy duty diesel vehicle emissions; locomotive emissions; and other sources. When evaluated in the absence of the demographic index, this environmental indicator is ranked at or below the 80th percentile for both the state (73rd percentile) and US (70-80th percentile) (Table D-7). 2017, 2018, and 2019 AirToxScreen data show that the ambient air concentrations of DPM were 0.39 μg/m^3, 0.43 μg/m^3 and 0.26 μg/m^3, respectively, in the Census tract 22093040500 where the KMe Facility is located, which reflects fluctuations in ambient concentrations, and a substantial reduction in predicted DPM air concentrations between 2017 and 2019. Emissions of DPM from the KMe Facility are due to emergency engines only and modeled off-property concentrations resulting from these emissions represent less than two percent of the baseline DPM concentration of 0.388 μg/m^3 reported in EJScreen. Facility-specific DPM emissions are discussed further in Section 2.11.3.1.3.

2.11.2.4.4 Lead Paint

The EJ Index for lead-based paint (80th percentile in state and 81st percentile in US) is based on the percent of homes within the study area that were constructed prior to 1960, a time preceding the removal of lead from paint. Lead-based paint is of concern in communities with older homes because chipped and worn paint contributes to lead in house dust. Dust on home indoor surfaces, such as floors and toys, may be contacted by young children who then incidentally ingest the dust, including lead paint chips in house dust, through skin-to-mouth contact. There is a well-established relationship between elevated lead exposure and developmental health effects in children. The Louisiana Department of Health (LDH) lists the Lead-Based Paint Hazard Control Grant from Housing and Urban Development (HUD) as providing no cost lead abatement services to qualifying applicants.[56] LDEQ's website also lists references for controlling and addressing lead in residential buildings.[57] These programs serve to reduce potential lead exposures in older homes.

The environmental indicator value for this index is 23%, which means that the lead in house dust may be a concern in 23% of homes within the study area, and is comparable to the fraction of older homes (pre-1960) reported for the state (20%) and US (27%). When evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile for both the state and US. The KMe facility does not emit lead or use lead-based paints, as discussed in Section 2.11.3.1.4.

2.11.2.4.5 Particulate Matter ($PM_{2.5}$)

The EJ index for $PM_{2.5}$ (83rd percentile in state and 89th percentile in US) is based on an estimated $PM_{2.5}$ air concentration of 9.3 μg/m^3. When evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile. The annual $PM_{2.5}$ concentration of 9.3 μg/m^3 provided in the EJScreen tool for the 3.1-mile study area is derived from a 2018 analysis using the tool's downscaler model. EPA's model uses monitored data and community-scale model data to develop a relationship between observed concentrations from monitors and modeled concentrations to predict concentrations in unmonitored regions.

[56] Louisiana Department of Health (LDH). 2022. Lead Abatement Services. Available at: https://ldh.la.gov/page/3163, accessed February 17, 2023.

[57] LDEQ. 2022. Lead-Based Paint. Available at: https://deq.louisiana.gov/page/lead-based-paint, accessed February 17, 2023.

To assess how well EJScreen predicts air concentrations, monitoring data from the State and Local Air Monitoring Station (SLAMS) site nearest the KMe Facility (Geismar, AQSID 22-047-0005) were reviewed and contrasted with the EJScreen prediction for this location. The Geismar station is located approximately 20 miles northwest of the facility and had an annual $PM_{2.5}$ concentration of 8.9 μg/m^3 in 2018. The 2018 EJScreen downscaler model concentration for the location of the monitor is 10.1 μg/m^3. This comparison indicates the downscaler model is overpredicting $PM_{2.5}$ concentrations by approximately 13%. This suggests that the $PM_{2.5}$ concentrations for the KMe study area reported in EJScreen may be similarly overpredicted.

In addition, review of air monitoring data for the Geismar station indicate that $PM_{2.5}$ concentrations between years 2010 and 2022[58] are generally decreasing, as shown in Figure D-3. The current design value for the Geismar monitor is 7.9 μg/m^3 based upon the three-year 2019 to 2021 average, which is substantially lower than the 2018-based EJScreen concentration of 10.1 μg/m^3 for this location. Given that EJScreen relies on a 2018 analysis and area $PM_{2.5}$ concentrations are trending downward, it is possible that the EJScreen tool may further overestimate current $PM_{2.5}$ concentrations for the study area.

To understand the facility-specific $PM_{2.5}$ impacts, $PM_{2.5}$ concentrations were estimated using air dispersion modeling. A maximum off-property concentration of 0.11 μg/m^3 was predicted; this concentration is roughly one percent of the baseline $PM_{2.5}$ concentration predicted in EJScreen, as discussed further in Section 2.11.3.1.5.

2.11.2.4.6 RMP Facility Proximity

The EJ Index for proximity to facilities with RMPs (79th percentile in state and 87th percentile in US) is based on a total count of facilities within 5 km (or nearest facility beyond 5 km) of the study area, each divided by distance. The environmental indicator value for this index is 0.75 facilities per kilometer. This indicator is below the average indicator values calculated for the state (0.96) and US (0.77), and when evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile for the state and US. In a query of EPA's Facility Registry Service (FRS)[59] database, no RMP facilities were found within 5 km of the KMe Facility. The nearest RMP facility, a Program Level 3 facility, is located 6.67 km from KMe.

The RMP Facility Proximity EJ Index is included in EJScreen because these facilities represent a *potential* for accidental releases, explosions, or fires that could impact

[58] As noted in Figure D-3, data for 2022 are not full-year values and only include data collected between the first three quarters (January 1-September 30) of the year.

[59] https://www.epa.gov/frs/frs-query, accessed February 17, 2023.

surrounding communities. Importantly, EPA has found a reduction in the frequency of accidents at RMP facilities since the RMP Rule became effective in 1996.[48] Moreover, recently, EPA proposed revisions to its RMP rules, some of which are intended to "advance fair treatment of those populations by reducing the disproportionate damages that RMP-reportable accidents might otherwise inflict on those populations," where the 'populations' are those that are historically underserved and overburdened populations living in close proximity to RMP facilities.[60] Once final, EPA's regulatory actions should, therefore, reduce impacts on overburdened communities. The KMe facility is required to maintain an RMP and has a robust process safety management (PSM) program in place, including a comprehensive emergency response plan, as described in Section 2.10. Facility-specific RMP considerations are discussed in Section 2.11.3.1.6.

2.11.2.4.7 Wastewater Discharge

The EJ Index for wastewater discharge ranked in the 80th percentile or greater; however, the environmental indicator for wastewater discharge evaluated in the absence of the demographic index did not result in an elevated percentile. This indicator takes into account the proximity of the average resident in the study area to a stream or river reach receiving Louisiana Pollutant Discharge Elimination System (LPDES) loadings reported to the Toxic Release Inventory (TRI). This discharge information is used in EPA's Risk Screening Environmental Indicators (RSEI)[61] model which combines information on chemical concentrations, fate and transport factors, weighted toxicity values, and other factors to allow users to perform comparative analyses of specific facilities, industries, or geographies. EJScreen relies on RSEI modeled outputs to generate a toxicity-weighted stream concentration for segments within 500 meters of the study area, divided by distance between the study area and stream segment.

The environmental indicator value of wastewater discharge in the study area is 0.0065, which is two to three orders of magnitude lower than the state average value (0.37) and the US average (12). Despite the very low environmental indicator value for the study area relative to the state and US comparison populations, the percentiles for this environmental indicator in the study area range between the 65th to 69th percentiles among all comparison populations, and the EJ Indexes for wastewater discharge are even higher and greater than the 80th percentile threshold (87th percentile in state and 90th percentile in US, see Table D-7).

In an email from EPA responding to questions about the EJScreen wastewater indicator posed by LDEQ for an analysis associated with a permitting action for a

[60] EPA. 2022. Regulatory Impact Analysis, Safer Communities by Chemical Accident Prevention, Proposed Rule. April 19, 2022. https://www.regulations.gov/document/EPA-HQ-OLEM-2022-0174-0003, accessed February 17, 2023.

[61] EPA 2022 Risk-Screening Environmental Indicators (RSEI) Model. https://www.epa.gov/rsei, accessed October 28, 2022.

facility owned by Entergy Louisiana, EPA explained that the high percentiles of this EJ Index and the underlying environmental indicator are due to:

> 1) a 3 km cutoff around stream segments for processing, which results in a large number of block group values being set to zero (for Louisiana, 29% of block groups have a wastewater discharge indicator of zero), and
>
> 2) the data having a logarithmic distribution, with most values being very small, so even a very low environmental indicator value for wastewater discharge ends up being high on the distribution curve.[62]

Given the very low environmental indicator value for wastewater discharge relative to state and US averages, the high percentiles for this EJ Index are not accurate representations of the baseline wastewater discharge condition in the study area surrounding the KMe Facility. Instead, the very low environmental indicator value for wastewater discharge evidences that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for the communities surrounding the KMe Facility. This is discussed further in Section 2.11.3.1.7.

2.11.2.5 Socioeconomic/Demographic Indicators

EJScreen evaluates seven socioeconomic/demographic indicators that represent the social vulnerability characteristics of a population that does not have equitable access to environmental protections afforded to other populations. These factors are listed in the EJScreen standard report (Attachment D-1). EJScreen calculated a demographic index of 68% for the study area, as compared to the state of Louisiana average of 41% and the US average of 35%. The demographic index is at the 81st percentile when compared to the rest of the state. In addition to the demographic index, three out of the seven socioeconomic/demographic indicators ranked at or greater than the 80th percentile in the state or US comparison populations as listed below:

- People of color (80th percentile in state and 83rd percentile in US)
- Low income (74th percentile in state and 86th percentile in US)

[62] 2022. LDEQ. Basis of Decision, Entergy Louisiana, Michoud Electric Generating Plant and New Orleans Power Station, Permit No. LA0004324. https://edms.deq.louisiana.gov/app/doc/view?doc=12303187, accessed October 31, 2022. In August 4, 2020 email from EPA, questions raised regarding low wastewater treatment metric resulting in elevated EJ Index, "The numbers look odd for 2 reasons. First, the data has a logarithmic distribution, with most values being very small, so this example ends up being high on the distribution curve even though it is a fairly small number. This characteristic is then reinforced because there is a 3 km cutoff around stream segments for the processing. This results in a large number of block group values being set to Zero. For Louisiana, 29% of block groups have a Wastewater Discharge Indicator of Zero."

- Less than high school education (70th percentile in state and 80th percentile in US)

The influence of the KMe Facility on community socioeconomics, through investments in the economy, education, and outreach, are summarized in Section 2.11.3.2 and discussed in Sections 3.1 and 3.2 of the EAS. Examples of how the KMe Facility is making a positive impact on socioeconomic indicators include additional local employment opportunities and providing scholarships and services to schools in the area.

2.11.3 Assessment of Project Impacts

EJScreen provides a screening-level assessment of baseline characteristics for a given area based on environmental and socioeconomic/demographic indicators. As noted above, there are seven EJ Indexes ranked in the 80th percentile or greater for the study area defined as the area encompassed within a 3.1-mile mile radius of KMe facility.

The KMe Facility started operation in 2020 and, as a result, the environmental data sets used in the EJScreen analysis do not account for the KMe Facility emissions or other factors. Therefore, while the EAS and this environmental justice assessment are focused on assessing the potential impacts of the proposed Project, the following assesses the potential impact of the entire KMe Facility post Project.

2.11.3.1 Impacts Pertaining to Elevated EJ Indexes

EJ Indexes are greater than the 80th percentile threshold when compared with the state and/or US populations for air toxics cancer risk, air toxics respiratory HI, DPM, lead paint, $PM_{2.5}$, RMP facility proximity, and wastewater discharge. Potential impacts of the KMe Facility related to these indexes are discussed in the following sections.

2.11.3.1.1 Air Toxics Cancer Risk

The EJ Index for air toxics cancer risk (91st percentile in state and 95th percentile in US) for the 3.1-mile study area, based on an estimated cancer risk of 54 in one million, exceeds the 80th percentile when comparing to both the state and the US.

To understand the KMe Facility impacts in the context of baseline risks, cancer risks were calculated based on total facility-wide emissions post Project and air dispersion modeling techniques described in the AQIA of this application with modeling inputs as shown in Tables 1 through 5 of Attachment D-2. The modeled off-property air concentrations were used to estimate potential cancer risks for the study area, conservatively assuming that someone is continuously breathing the evaluated pollutants at the modeled concentrations. Annual average air concentrations within the study area were estimated for carcinogenic air toxics associated with KMe Facility operations: aldehydes, benzene, cadmium, dichlorobenzene, ethylbenzene, formaldehyde, naphthalene, and nickel, in addition to DPM which contains carcinogenic compounds. As shown in Table D-10, the maximum off-property annual average concentrations of carcinogenic air toxics predicted by air modeling are all well below the LAAS, which are established at concentrations protective of daily exposure over a lifetime.[63]

Based on EPA methodology for modeling health risks, the potential cancer risk associated with KMe Facility total emissions ranges from 0.02 to 2 excess lifetime cancer cases in one million at the current residence with the highest modeled air toxics concentrations (Table D-11). This estimated cancer risk is near or below the lower threshold of EPA's acceptable cancer risk range of 1 to 100 in one million excess lifetime cancer cases.

In this analysis, a cancer risk range rather than a single cancer risk estimate is presented due to uncertainty in estimating DPM carcinogenic potency.[64] The impact of this uncertainty is significant because DPM is the largest contributor from the KMe Facility to total cancer risk. In EPA's toxicity assessment for DPM, EPA concluded that DPM is carcinogenic but that the available human and animal studies supporting this assessment are inadequate to allow for quantifying the carcinogenic potency for use in risk assessment.[64] California EPA has nevertheless proposed a quantitative estimate of carcinogenic potency for DPM that is used to derive the EPA Regional Screening Levels (RSLs) and is used to estimate DPM cancer risk in the EJScreen tool. The California EPA estimate of DPM toxicity was used to represent the "midpoint" of estimated cancer risks for DPM presented in Table D-11 and depicted in Figure D-4. The lower and upper ends of the cancer risk range are based on order-of-magnitude toxicity estimates previously proposed, but later withdrawn, by EPA.[64]

The maximum KMe Facility air toxics residential cancer risk is approximately 0.04% to 4% of the 2017 cancer risk of 54 in one million predicted by EJScreen for the 3.1-mile study area, and the combined "baseline" and KMe Facility total air toxics cancer risk is 54 to 56 in one million people. Thus, the cumulative cancer risk for the residential area with highest predicted cancer risk within the study area may be unchanged, or modestly increased above the 2017 baseline reported in EJScreen after the addition of the cancer risk based on KMe Facility emissions, indicating that the cancer risks associated with KMe Facility emissions have little to no impact. When more recent AirToxScreen results are considered, i.e., 2019 cancer risk of 39 in one million for Census tract 22093040500 where the KMe facility and a majority of the study area are located (see Table D-8), the maximum residential cumulative

[63] Louisiana Register, Vol 17, pg. 1204, Dec 20, 1991.

[64] EPA. 2003. Integrated Risk Information System (IRIS) Chemical Assessment Summary, Diesel Engine Exhaust https://iris.epa.gov/ChemicalLanding/&substance_nmbr=642, accessed February 17, 2023.

cancer risks for the study area are lower, ranging from 39 to 41 in one million. Regardless of which AirToxScreen cancer risk estimate is considered, the maximum predicted total cancer risks for nearby residential areas is well within EPA's acceptable cancer risk range of 1 to 100 in one million.

In summary, air toxics cancer risk reported in EJScreen for the study area, 54 in one million, may be unchanged or increase slightly to 56 in one million people with consideration of emissions from the KMe Facility, which result in a facility-specific estimated cancer risk range of 0.02 to 2 in one million. The predicted cancer risks are primarily attributable to DPM emissions from six emergency engines and firewater pumps, which are essential to safe operation of the facility. These risks are well within EPA's risk management range of 1 to 100 in one million people, indicating that cumulative risks for the study area are below levels of concern. Furthermore, predicted air concentrations are below the LAAS, which are protective of daily exposure over a lifetime, and recent EPA AirToxScreen results for 2019 indicate that air toxics cancer risks for this area are lower than that reported in EJScreen, indicating cumulative risks presented here provide a conservative estimate of total air toxics cancer risk.

Table D-10: Comparison of Maximum Off-Property Carcinogenic Air Toxic Annual Average Concentrations to Louisiana Ambient Air Standards

Chemical	Maximum Annual Average Air Concentration (µg/m^3)	Louisiana Ambient Air Standard - Annual Average (µg/m^3)	Louisiana Ambient Air Standard - 8 Hour Average (µg/m^3)
Acetaldehyde	0.00085	46	NA
Other Aldehydes	0.0028	46	NA
Arsenic	<0.00001	0.02	NA
Benzene	0.00039	12	NA
Cobalt	<0.00001	NA	NA
1,4-Dichlorobenzene	0.00001	NA	1,430
DPM	0.0065	NA	NA
Ethylbenzene	0.00019	NA	10,300
Formaldehyde	0.0054	7.7	NA
Naphthalene	0.00002	NA	1,190
Nickel	0.00002	0.21	NA

Notes:

NA = not available

µg/m^3 = microgram per cubic meter

LDEQ = Louisiana Department of Environmental Quality (LDEQ 2013)

References:

LDEQ. 2013. Title 33 Environmental Quality. Table 51.2. Louisiana Toxic Air Pollutant Ambient Air Standards. May.

Table D-11: Estimated Facility Cancer Risks at Maximally Exposed Current Residential Location	
Chemical	**Cancer Risk[a]**
DPM	1.6E-07 (midpoint of potential cancer risk range; ideally presented as 2E-08 to 2E-06)[b]
Formaldehyde	2.1E-08
Acetaldehyde	1.1E-09
Other Aldehydes	6.2E-10
Benzene	3.1E-10
Ethylbenzene	2.5E-11
1,4-Dichlorobenzene	NC
Arsenic	NC
Cadmium	NC
Chromium VI	NC
Cobalt	NC
Naphthalene	NC
Nickel	NC
Total Cancer Risk	**2E-07** (i.e., 0.2 in one million) (midpoint of 2E-08 to 2E-06 estimated cancer risk)

Notes:

a. Cancer risks presented for the residence with the highest predicted risk, UTM: 708807, 3319335.

b. The DPM cancer risk presented here is based on a toxicity estimate proposed by California EPA (3E-04 per µg/m^3) and has not been formally adopted for use in baseline risk assessment by EPA. EPA has determined that the existing literature is lacking and does not support quantitative dose-response evaluation of DPM carcinogenic potency.[64] Due to uncertainty in quantifying DPM potency, risks are better represented as a range using an analysis initially presented and then withdrawn by EPA (10^{-3} to 10^{-5} per µg/m^3). The use of this range underscores the lack of confidence expressed by EPA in assessing the carcinogenic potency of this chemical mixture.

NC: risks not calculated due to extremely low (i.e., <0.00001 µg/m^3) predicted air concentration.

2.11.3.1.2 Air Toxics Respiratory HI

The EJ Index for noncarcinogenic air toxics (90th percentile in state and 94th percentile in US) is based on estimated air toxics noncancer HI of 0.5. As shown in Table D-12, the maximum off-property annual average concentrations predicted by air modeling of the KMe Facility non-carcinogenic air toxic emissions are all well below LAAS, which are established at concentrations that are protective of daily exposure over a lifetime.

Maximum air concentrations were modeled based on proposed Facility emission limits and used to calculate a Facility-specific noncancer HI, presented in Table D-13. The maximum estimated HI for a current residence is 0.04, which is well below the EPA's risk management threshold of 1. Hydrogen sulfide is the primary contributor to this HI, followed by ammonia and DPM. When adding the HI estimated for the Facility to the HI predicted by EJScreen for the 3.1-mile radius study area, the maximum cumulative HI is 0.54, which represents little to no change relative to the baselinlevel reported in EJScreen. Additionally, the cumulative noncancer HI metric is well below EPA's risk management threshold of 1 for noncancer health hazards. The actual noncancer HI contribution from the KMe Facility is expected to be lower than that reported in Table D-13, as recent changes in wastewater treatment processes have improved solids management and are expected to have substantially reduced emissions of hydrogen sulfide. While the site anticipates that some hydrogen sulfide emissions will still be present, the predicted noncancer HI for the Facility would be as low as 0.0006 without the influence of hydrogen sulfide emissions. The noncancer HIs for the vicinity of the Facility are depicted in Figure D-5**.**

In summary, all modeled chemical concentrations are below LAAS, and when the HI of 0.04 estimated for the Facility is added to the HI of 0.5 predicted by EJScreen for the 3.1-mile radius area, the maximum cumulative HI is 0.54, which is well below EPA's risk management threshold of 1 for noncancer health hazards and represents a noncancer hazard of essentially zero. With recent changes to the wastewater treatment processes likely having resulted in a decrease in hydrogen sulfide emissions, the noncancer HI contribution from the Facility is likely reduced further thereby likely further reducing any potential noncancer hazard associated with air toxics emitted from the Facility.

Table D-12: Comparison of Maximum Off-Facility Annual Average Noncarcinogenic Air Toxics Concentrations to Louisiana Ambient Air Standards		
Chemical	**Maximum Annual Average Air Concentration (µg/m^3)**	**Louisiana Ambient Air Standard - 8 Hour Average (µg/m^3)**
Ammonia	1.2	640
Barium	0.00004	12
Hydrogen sulfide	1.7	330
Manganese	<0.00001	4.8
Mercury	<0.00001	1.2
Methanol	40	6,240
n-Hexane	0.0081	4,190
Toluene	0.00044	8,900

Notes:

NA = not available

µg/m^3 = microgram per cubic meter

LDEQ = Louisiana Department of Environmental Quality (LDEQ 2013)

References:

LDEQ. 2013. Title 33 Environmental Quality. Table 51.2. Louisiana Toxic Air Pollutant Ambient Air Standards. May.

Table D-13: Estimated Facility Respiratory HI	
Chemical	**Maximum Residential Exposure Location**
Hydrogen sulfide	0.037
Ammonia	0.00012
DPM	0.00010
Methanol	0.000068
Other Aldehydes	0.000056
Nickel	NC
Barium	0.000020
Formaldehyde	0.00017
2,2,4-trimethylpentane	0.0000015
Acetaldehyde	0.000056
n-Hexane	0.0000024
Benzene	0.0000013
Naphthalene	NC
Ethylbenzene	2.0E-08
Toluene	6.0E-09
Naphthalene	NC
Nickel	NC
Total Facility HI	**0.04**

Notes:

a. Noncancer HI presented for the residence with the highest predicted risk, UTM: 708807, 3319335

HI = Hazard Index

NC: HI not calculated due to extremely low (i.e., <0.00001 μg/m^3) predicted air concentration.

2.11.3.1.3 DPM

The EJ index for DPM (86th percentile in state and 90th percentile in US) is based on an estimated DPM air concentration of 0.388 μg/m^3. This air concentration is greater than the state (0.297 μg/m^3) and US (0.294 μg/m^3) average concentrations. Emissions of DPM from the KMe Facility are from six emergency engines and firewater pumps only, which are essential to safe operation of the facility.

Figure D-6 presents modeled DPM concentrations in the vicinity of the KMe Facility. The predicted maximum DPM Facility-specific fence line concentration is 0.0065 μg/m^3, which is 1.7% of the baseline air concentration of 0.388 μg/m^3. The concentration at the nearest residence is even lower, at 0.0005 μg/m^3. The cumulative DPM concentration, the sum of EJScreen DPM air concentration and Facility-specific maximum modeled prediction, is 0.394 μg/m^3. The cumulative DPM concentration is even lower at the nearest residence, 0.389 μg/m^3, and represents a very small increase above baseline conditions. DPM is a mixture of carcinogenic and noncarcinogenic compounds, which are accounted for in EJScreen's Air Toxics Cancer and Air Toxics Respiratory HI metrics. As discussed in Sections 2.11.3.1.1 and 2.11.3.1.2, cancer risk and noncancer HI attributable to all air toxics emitted from the Facility, including DPM, are below or near the lower risk management thresholds established by EPA.

2.11.3.1.4 Lead Paint

The EJ Index for lead-based paint (80th percentile in state and 81st percentile in US) is based on the percent of homes within the study area that were constructed prior to 1960, a time preceding the removal of lead in paint. Lead in house dust may be a concern in older homes within the study area; however, this environmental indicator will not be influenced by the KMe Facility. Planned updates to the KMe Facility will not use lead-based paint or coatings. In addition, the KMe Facility will not emit lead into air as part of operations; therefore, there are no anticipated impacts from the KMe Facility on this environmental indicator or EJ Index.

2.11.3.1.5 $PM_{2.5}$

The EJ Index for $PM_{2.5}$ (83rd percentile in state and 89th percentile in US) is based on the annual average $PM_{2.5}$ levels in the air identified through EPA modeling and monitoring efforts. The $PM_{2.5}$ concentration of 9.29 μg/m^3 provided in EJScreen for the 3.1-mile study area is greater than both the state and US averages reported in EJScreen (9.2 and 8.67 μg/m^3, respectively). As noted in Section 2.11.2.4.5, these values are extremely conservative as the EJScreen downscaler model is shown to overestimate ambient $PM_{2.5}$ levels and actual 2019 to 2021 design value for the closest ambient monitor is only 7.9 μg/m^3.

Using estimated emissions information for the Facility, the maximum annual average $PM_{2.5}$ concentrations were modeled (see Figure D-7). The first step in this process is to model project emissions (in this case, all emissions from the Facility (post Project) and compare the result to the SIL for each pollutant and averaging period. The SIL is a de minimis threshold or level below which air quality impacts from the new or modified facility are considered insignificant.[65]

The SIL for annual $PM_{2.5}$ is 0.2 μg/m^3. Modeling of Facility emissions produced a maximum impact of 0.11 μg/m^3, which is below the level of the SIL (see Table D-3). This result includes the contribution from the secondary formation of particulates, calculated according to EPA guidance.[66] As noted previously in Section 2.11.2.4.5, this maximum impact is roughly 1 percent of the baseline $PM_{2.5}$

[65] "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program," April 17, 2018.

[66] "Guidance on the Development of Modeled Emission Rates for Precursors (MERPS) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program", April 30, 2019.

concentration predicted by EJScreen. Additionally, the 24-hour maximum predicted $PM_{2.5}$ concentration is 1.01 µg/m^3, which is below the 24-hour SIL of 1.2 µg/m^3 (see Table D-3). Because conservatively modeled Facility impacts are projected to be below the SILs, the Facility will not contribute to a significant increase in annual $PM_{2.5}$ concentrations in the area surrounding the Facility.

The present design value from the closest ambient monitor is 7.9 µg/m^3, well below the level of the NAAQS, which was established to provide public health protection. The Facility will not cause or contribute to an exceedance of the NAAQS.

2.11.3.1.6 RMP Facility Proximity

The EJ Index for RMP Proximity (79th percentile in state and 87th percentile in US) is based on a count of facilities subject to RMP requirements within 5 km of the study area, divided by distance from the KMe Facility, yielding an environmental indicator value of 0.75 facilities per kilometer. Although this EJ Index is greater than the 80th percentile for the US comparison population, the environmental indicator for this index (0.75) is well below the indicator value calculated for the state (0.96) and just below the value calculated for the US (0.77) comparison populations. Furthermore, when evaluated in the absence of the demographic index, this environmental indicator is ranked below the 80th percentile.

As noted in Section 2.10, KMe is currently subject to EPA's RMP regulations (40 CFR Part 68) and the equivalent LDEQ program (LAC 33:III.Chapter 59).[67] KMe is currently a Program Level 1 facility under RMP (the lowest program level) because no public receptors are predicted to be impacted in the event of a worst-case release scenario. KMe maintains an Emergency Response Plan (ERP) that describes the planning and capabilities of the facility to provide emergency response services in the unlikely event of potential environmental releases and/or fire. Information regarding the ERP is routinely shared with the St. James Parish Emergency Preparedness Department, and KMe Facility personnel will contact and maintain communications with the St. James Local Emergency Planning Commission if and when there is a potential for direct impact to the public.

KMe will continue to comply with federal RMP requirements and the equivalent LDEQ program and will remain a Program Level 1 facility under RMP after the Project because the worst-case release scenario following the Project also would not impact public receptors. Also, note that, in 2022, amendments to the federal RMP regulations were proposed to include "several changes and amplifications to the accident prevention program requirements, enhancements to the emergency preparedness requirements, increased public availability of chemical hazard information, and several other changes to certain regulatory definitions or points of

[67] EPA. 2022. Risk Management Program (RMP) Rule Overview https://www.epa.gov/rmp/risk-management-program-rmp-rule-overview, accessed February 17, 2023.

clarification."[68] With these changes, the EPA determined that there will be a reduction in "disproportionate damages that RMP-reportable accidents might otherwise inflict on those populations," with "those populations" referring to historically underserved or overburdened populations living in the vicinity of RMP facilities. Once finalized, EPA's regulatory actions should, therefore, reduce impacts on overburdened communities.

2.11.3.1.7 Wastewater Discharge

The EJ Index for wastewater discharge is 87th percentile in the state and 90th percentile in US. However, as explained above, the high percentiles for this EJ Index are not accurate representations of the baseline wastewater discharge condition in the study area surrounding the KMe Facility. Instead, the very low environmental indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Additionally, continued compliance with the facility's LPDES permit will ensure that wastewater discharges do not result in adverse environmental effects.

The KMe Facility operates under the LPDES program for its wastewater discharges and raw water intake. Specifically, LPDES permit number LA0127367 includes provisions under the Clean Water Act (CWA) for both point source discharges to nearby waterways, as well as surface water intake requirements as governed by CWA Section 316(b). The permit includes discharge limits along with specific monitoring and reporting requirements and other provisions to protect receiving waterways, the Mississippi River and St. James Canal. The permit includes allowances for discharge of treated process wastewaters as well as industrial stormwater, hydrostatic test waters, sanitary system effluents, boiler and cooling tower blowdowns, demineralized regeneration wastewater, and return waters from the feed water treatment plant clarifier systems to the Mississippi River. The St. James Canal receives only stormwater and previously monitored hydrostatic test wastewater. The LPDES permit limits are established at concentrations that have been determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody. For this reason, discharges within permit limits do not cause adverse environmental effects.

As a result of the Project, there will be an increase in the volume of wastewater flow sent to the KME Facility's existing wastewater treatment facility as well as an increase in volume of boiler and cooling tower blowdown, demineralized

[68] EPA. 2022. Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act; Safer Communities by Chemical Accident Prevention (Proposed Rule). Docket (EPA-HQ-OLEM-2022-0174). August. Available at: https://www.regulations.gov/document/EPA-HQ-OLEM-2022-0174-0003, accessed February 17, 2023.

regeneration wastewater, and return waters from the feed water treatment plant clarifier systems, with a commensurate increase in the volume of effluent discharged to the Mississippi River. While a change in concentration of pollutants in the wastewater discharge is not anticipated, there will be an associated increase in pollutant loading (lb/day) from the final outfall that discharges to the Mississippi River due to the increase in discharge volume. Accordingly, Koch submitted a permit application to update the LPDES permit to authorize the increase in wastewater discharge volume and corresponding increase in pollutant loading. The LPDES permit limits will be established at concentrations determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody, and the KMe Facility will be required to comply with monitoring requirements to ensure that discharges are within permit limits. For this reason, discharges will not cause adverse environmental effects and will remain protective of receiving water quality.

The very low environmental indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Additionally, continued compliance with the facility's LPDES permit will ensure that wastewater discharges do not result in adverse environmental effects.

2.11.3.2 Beneficial Impacts

The optimized KMe Facility will provide significant beneficial impacts to the community, influencing social structures and economics, as detailed in Sections 3.1 and 3.2 below. Social benefits will be realized through investments by Koch in the areas of education, community enrichment, entrepreneurship, and environment. Long-term economic benefits to the community will be gained through job creation and labor income during Project construction and continued operations. As discussed previously, these benefits directly and positively impact two of the three demographic categories that are highlighted by EJScreen: education level and income.

2.11.4 Meaningful Involvement with Community

As noted in Section 1.1.3.2 of this EAS, Koch utilizes a variety of different venues and practices to foster regular meaningful engagement and involvement with the community on an ongoing basis. Examples of such engagement/involvement include joint training with local emergency services personnel, employee outreach through volunteer activities, KMe's participation with the St. James Citizens Advisory Panel and the focus group meetings described below. Examples of key community engagement activities leading up to the filing of this permit application are further discussed below.

The KMe Facility hosted the St. James Citizens Advisory Panel (CAP) meeting in April 2022, which was attended by industry representatives and community members. KMe provided an overview and a tour of the facility and received strong, positive feedback. In mid-August 2022, KMe held a separate joint meeting with emergency agency personnel including the Parish President along with sheriff, fire department and emergency planning representatives to provide information about the KMe Facility and a tour of the site.

In June and July 2022, Koch hosted meetings with two small focus groups made up of residents of St. James Parish and the 5th District. The members of these focus groups were chosen by an outside firm who solicited input from the parish president, a local councilmember, school board members, and other local leaders. The objective of these focus groups was to engage with the community to learn more about what residents value within the St. James Parish community, what most concerns them about the community, and what opportunities they see for the community into the future. The June 2022 meeting focused on general industry in the area, and the July 2022 meeting focused more specifically around operations at the KMe Facility. Feedback from these focus groups included the following:

- Environment and Health: community residents desire more information from industry on impacts from emissions and help understanding EPA and LDEQ website information related to spills and permit exceedances; comments from the June meeting included "not knowing what they are breathing," "seems like a lot of people dying from cancer," "seems like a lot of spills and permit exceedances," "balancing staying here with potential health risks"
- Employment: residents would like for industry to better publicize job openings and foster more local hiring and educational support to enable local hiring
- Communication: include all media venues (online newsletters, mailings, website, social media), initiate recurring KMe CAP meetings/open houses
- Community Involvement: more engagement with High Schools, publicize community giving, looking to partner with industry for support of youth and other local resources (e.g., fire department), many were unaware of KMe community giving programs
- Community Resources: lack of recreational and other resources for youth in the community, industry pays taxes to the parish, but the community does not see the benefits
- KMe specific: increased communication on environmental and health matters and safety incidents as well as community involvement activities,

transparency in communication, jobs, and follow-through on the focus group meetings

As a follow-up to the information received through the focus group meetings, on August 30, 2022, Koch Methanol hosted a Community Outreach Meeting at the Westbank Reception Hall in Vacherie, Louisiana. Invitations were communicated via newspaper advertisements, postcards (over 570 residents; entire 5th District), email and telephone, and local community residents along with local emergency response personnel and community leaders were invited to attend. The purpose of the meeting was to provide the community the opportunity to connect with personnel from the KMe Facility; to learn about Koch, the KMe Facility and its operations, including its hiring practices, job opportunities, community engagement, safety practices, emergency response capabilities and environmental performance in the areas of air emissions, wastewater discharges, and waste management; and to inform the community of Koch's plans to submit this permit application to authorize the KMe Optimization Project and other changes to the permit. Feedback regarding the KMe Facility, its operations and the plan to submit this permit application was solicited so that Koch could better understand and respond to community questions and concerns and communicate Koch perspective where not well understood. Pertinent feedback received along with Koch's actions to address this feedback include the following:

- The community highly values the ability to directly engage with industry on an ongoing basis. Continued involvement in the community that allows the community to provide feedback outside of permit actions is appreciated. Koch is exploring holding additional community engagement meetings and is currently in the process of selecting board members for a community advisory board (CAB) to foster regular and sustained engagement between the KMe Facility and the community and so that community feedback can be received on a routine and ongoing basis. The first CAB meeting is scheduled for March 2023. A reconvening of the original focus group members from the July 2022 meetings occurred on January 17, 2023. Although only a few of the original focus group members attended, the discussion regarding initiation of a CAB was very well received. Koch also communicated the filing of this permit application with community members and leaders, and made this application easily accessible to the community by posting it on the Koch website, along with other timely company news articles.
- The community values the support Koch provides to the community (e.g., support after Hurricane Ida, donating school resources), including increased opportunities for scholarships. As noted in this EAS, Koch is committed to investing in a variety of community enrichment opportunities; and, by further optimizing the KMe Facility operations, the proposed Project will allow Koch to continue those investments.

- *Transparency regarding operations and emissions is highly valued.* During the meeting, Koch personnel shared estimates of total authorized air emissions under the current permit compared to the levels that are being requested with this permit application. Information regarding modeled off-site pollutant concentration levels was also communicated. Additionally, Mobile Area Monitoring Lab (MAML) air quality data from recent, nearby LDEQ monitoring was provided during the meeting and was very much appreciated by the community.[69] In an effort to provide ongoing transparency, Koch is evaluating options for "fence line" monitoring at the site with the full intention to install such monitoring. Additionally, as explained in this permit application, Koch has voluntarily performed a PSD review for this permit application, which includes a demonstration that all emissions units authorized by the permit meet BACT and that emissions of PSD-regulated pollutants will not cause or contribute to an exceedance of any NAAQS.
- *One commenter was concerned that the "fruits of these focus groups would not be listened to."* The CAP noted above provides a forum for continuing dialogue and challenge between industry and the community. In addition, as noted earlier, KMe is exploring holding additional community engagement meetings as well as establishing an ongoing CAB between the KMe Facility and the community so engagement can occur, and feedback can be received on a routine and ongoing basis. The CAP is an industry/community forum for the St. James area whereas the CAB will be a KMe/community-focused forum. Additionally, Koch is evaluating options for "fence line" monitoring at the site with the full intention to install such monitoring.

2.11.5 Conclusions

This environmental justice analysis was performed to ensure that any adverse environmental effects of the proposed Project, including any adverse environmental effects on environmental justice communities, have been identified and avoided to the maximum extent possible. Among the 12 EJ Indexes calculated by EPA's EJScreen tool for the study area surrounding the KMe Facility, seven ranked at or equal to the 80th percentile threshold used by EPA and LDEQ to assess the need for further evaluation: 2017 air toxics cancer risk, air toxics respiratory HI, DPM, lead paint, $PM_{2.5}$, RMP facility proximity, and wastewater discharge. The remaining five EJ Indexes ranked below the 80th percentile threshold. Based on the EJScreen report, additional analysis of each of the seven EJ Indexes ranked at or equal to the 80th percentile threshold was performed to further evaluate potential facility-specific

[69] LDEQ's Air Assessment and Planning Division won a competitive EPA air-monitoring grant announced in November that will provide funding to add two temporarily located community (TLC) monitors, including one in St. James Parish. (https://deq.louisiana.gov/assets/docs/DiscoverDEQ/2022/DiscoverDEQNewsletter-Issue131-December2022.pdf, accessed Feb. 14, 2023.)

impacts. This analysis of environmental indicators indicates that the KMe Facility will not cause adverse impacts and, therefore, will not result in disproportionate impacts and is based on review of data relied upon in EJScreen, facility-specific air modeling, and other facility characteristics as follows:

- <u>2017 Air Toxics Cancer Risk and Respiratory HI:</u> Risks from overall KMe Facility emissions are below or well within EPA's acceptable risk management ranges.
  - EJScreen reports a cancer risk of 54 in one million for the study area, which is well within the 1 to 100 in one million risk management range established by EPA. KMe's maximum contribution is 0.02 to 2 additional cancer cases per million people, largely due to DPM emissions from the periodic use of emergency engines. This estimated cancer risk is near or below the lower threshold of EPA's acceptable cancer risk range of 1 to 100 in one million excess lifetime cancer cases. The maximum cumulative cancer risk of 54 to 56 in one million is also well within EPA's risk management range. Furthermore, recent EPA AirToxScreen results for 2019 indicate that air toxics cancer risks for this area are lower than that reported in EJScreen, indicating that the cumulative risks presented here provide a conservative estimate of total air toxics cancer risk.

  - EJScreen reports a respiratory HI (i.e., noncancer hazard) of 0.5, which is below EPA's risk management threshold of 1. KMe's maximum contribution for a current residence is an HI of 0.04, resulting in a cumulative HI of 0.54, which is below EPA's threshold of 1 and represents little to no change to the baseline level and a noncancer hazard of essentially zero. Additionally, with the implementation of recent changes to the KMe Facility's wastewater treatment processes and the likely reduction in hydrogen sulfide emissions, the noncancer HI contribution from the KMe Facility may be as low as 0.0006, which again, reflects a noncancer hazard of essentially zero.

- <u>DPM:</u> The predicted maximum DPM Facility-specific concentration at a current residence is 0.0005 μg/m^3, which is 0.13% of the baseline air concentration of 0.388 μg/m^3 reported in EJScreen. The maximum predicted DPM Facility-specific concentration at the fence line is 0.0065 μg/m^3, which is 1.7% of the baseline air concentration reported in EJScreen. The cumulative DPM concentration, the sum of EJScreen DPM air concentration and Facility-specific modeled prediction, is 0.389 μg/m^3 at the nearest residence and 0.394 μg/m^3 at the fence line, both of which represent small increases above baseline conditions. DPM is a mixture of carcinogenic and noncarcinogenic compounds, which are accounted for in the air toxics modeled for the KMe

Facility. As noted above, air toxics health risks associated with the KMe Facility are well below EPA risk management ranges.

- Lead Paint: The majority of the KMe Facility was newly constructed starting in 2017 and did not require use of lead-based paint or coatings, and planned updates to the KMe Facility will not use lead-based paint or coatings. Furthermore, the facility will not emit lead into the air as part of operations. Therefore, there are no anticipated impacts from the KMe Facility on this environmental indicator or EJ Index.
- $PM_{2.5}$: Modeling of Facility emissions produced maximum annual average and 24-hour average impacts of 0.11 μg/m^3 and 1.01 μg/m^3, respectively, which are below the levels of the respective SILs. Because conservatively modeled Facility impacts are below the SILs, they are considered insignificant and demonstrate that emissions from the Facility will not cause or contribute to an exceedance of the NAAQS for $PM_{2.5}$, which have been established at concentrations that are protective of public health.
- RMP Proximity: KMe is currently a Program Level 1 facility under RMP because no public receptors are predicted to be impacted in the event of a worst-case release scenario. Additionally, KMe will continue to comply with federal RMP requirements and the equivalent LDEQ program and will remain a Program Level 1 facility under RMP after the Project because the worst-case release scenario following the Project also would not impact public receptors.
- Wastewater Discharge: The very low EJScreen indicator value for wastewater discharge (a value of 0.0065, which is nearly two orders of magnitude lower than the average indicator values reported for the state [0.37] and three orders of magnitude lower than that for the US [12]) signifies that the baseline wastewater discharge condition in the study area does not pose an environmental justice concern for communities surrounding the KMe Facility. Furthermore, KMe operates in compliance with LPDES permit limits established at concentrations that have been determined by LDEQ to maintain compliance with applicable water quality criteria for each receiving waterbody. Discharges within permit limits do not cause adverse environmental effects. Continued compliance with the facility’s existing and future revised LPDES permit will ensure that wastewater discharges do not result in adverse environmental impacts.

While the KMe Facility operations following the Project will not result in adverse impacts on the surrounding community and, therefore, will not result in disproportionate impacts, beneficial social impacts will be realized through investments by Koch in the areas of education, community enrichment, entrepreneurship, and environment. In addition, economic benefits to the community will be gained through job creation and labor income during Project construction and continued operations. Koch's investments are informed, in part, through engagement with the community which has included community outreach specific to this permit application. This engagement also has included joint training with local emergency services personnel, employee outreach through volunteer activities, KMe's participation with the St. James Citizens Advisory Panel, and hosting two focus group meetings and a subsequent follow up meeting along with a Community Outreach Meeting. Future engagement with local advisory groups (e.g., CAP or CAB) will continue to be a priority, informing KMe's long-term community outreach efforts.

In conclusion, this analysis demonstrates that the proposed Project will not result in adverse impacts either directly or cumulatively considering existing conditions surrounding the KMe Facility. Accordingly, it also demonstrates that the proposed Project will not cause disproportionate impacts (adverse impacts borne disproportionately on the base of race, color, or national origin).

3. SOCIAL AND ECONOMIC BENEFITS

Does a cost benefit analysis of the environmental impact costs balance against the social and economic benefits of the proposed project demonstrate that the latter outweighs the former?

Yes. As noted in Section 2 above, environmental impact costs associated with the proposed Project will largely be avoided, and where the potential for environmental impact costs do exist, those impact costs have been minimized to the greatest extent feasible. Moreover, the social and economic benefits of the proposed optimization of the KMe Facility are significant and outweigh any remaining environmental impact costs. Specifically, the optimization Project strengthens the long-term viability of the Facility (including employment viability) such that the benefits from the original plant (as described below) will continue to be generated and, in many cases, increased. Benefits specifically attributable to the Project include additional property tax base from the capital investment, additional sales and use taxes for the parish and state, additional construction jobs, and an addition of up to 5 new permanent jobs.

3.1 Social Benefits

Social benefits resulting from the investment to build the KMe Facility in St. James Parish began early in the development with the agreement to buy the existing St. James Parish High School. Before the KMe Facility was planned, the St. James Parish School Board had decided to move the St. James High School to a new location; however, at the time funds were only available to buy the land and build a new football stadium at the new location. The developers of the project agreed to buy the high school for approximately $10 million, and this provided enough funds to allow the parish to design the new high school and partially fund its construction. Construction of the new high school was completed in 2018.

Koch believes that strong communities are good for business. The company's core philosophy is anchored in a belief that for a business to survive and prosper, it must develop and use its capabilities to create sustainable value for both its customers and society. Working directly with local organizations is a key focus, and Koch is investing locally in the following four key areas:

Education: Supporting programs that give students and future workers the skills necessary for today's workplace. This includes parish school initiatives, local scholarships, and STEAM programs, including:

- River Parishes Community College Scholarships (3 annually including both high school students and adult learners)

- Science, Technology, Engineering, Arts and Mathematics (STEAM) Camp (supported for two years pre-COVID; school has not reinstituted at this time)
- Support of Wildcat Productions which is a graphic design and video production certification curriculum for college and career bound high school students
- College and Career Center Initiatives financial support (e.g., students working with contractors designing and building the field press box)
- St. James High School Academic Champions in Education (ACE) Banquet (program starting in early high school years through graduation)
- St. James Parish Ag Day (educational support for students to learn via a classroom takeaway lesson including farm to table understanding of fast food)

Community Enrichment: Working with organizations that support community needs and allow for employee engagement through volunteering with various organizations, including:

- Hurricane Ida relief efforts[70]
- Food and toy drives
- Festival of the Bonfires (financial and volunteer)
- Veteran's Day Celebration (financial and volunteer)
- Emergency Preparedness services (donation for fire truck equipment & communication equipment upgrades)
- Food Bank
- St. James Arc, the community-based organization that advocates for and with people with intellectual and development disabilities (IDD) and serves them and their families

Entrepreneurship: Promoting entrepreneurial development while fostering economic and critical thinking skills, especially focused on initiatives that align with KII's Principled Based Management™ philosophy, including:

- Junior Achievement (financial education and work readiness) providing both financial and volunteer support; includes developing student's social and interviewing skills for both St. James High School and Lutcher High School

[70] https://newsdirect.com/news/out-of-the-storm-koch-employees-resilient-spirit-helps-hurricane-stricken-neighbors-236704107, accessed November 1, 2022.

Environment: Assist organizations that foster environmental responsibility and provide environmental learning opportunities, including those that promote environmental stewardship, including:

- St. James 4-H (including additional support for tree planting in celebration of Arbor Day at the new St. James High School that included live oak as well as magnolia trees to honor the old Magnolia High School which was an all-Black high school in St. James Parish that closed during desegregation),[71] and
- Pursuing Wildlife Habitat Council Conservation Certification at the KMe Facility (financial and volunteer); process has been initiated.

The Project that is the subject of this application will further optimize the existing KMe Facility and thereby contribute to the ongoing viability of the facility thus enabling Koch to continue these and other similar initiatives.

3.2 Economic Benefits

Capital expenditures to construct the KMe Facility were approximately $1.85 Billion. Now that initial construction of the KMe Facility is complete, operations and maintenance (O&M) supports approximately 135 jobs directly, $46 million annually in Gross State Product, and $3 million in state and local taxes per year. On a net present value basis, over approximately 30 years the facility will contribute approximately $1 billion in labor income to the Louisiana economy and $166 million in state and local tax impacts, including property taxes paid by the facility.[72]

Economists recognize that petrochemical jobs are some of the highest quality jobs in the United States as cited from the U.S. Department of Labor Bureau of Labor Statistics (May 2020).[73]

In addition to the direct economic impacts created in the form of new jobs at the KMe Facility, operation of the facility is resulting in positive indirect economic impacts such as spending in the local and state economy for ongoing operations and maintenance materials and services, income tax payments from facility workers, and increased development in local services and related businesses, including the creation of additional indirect jobs. Indirect economic effects are referred to as multiplier or ripple effects. The KMe Facility, supporting

[71] https://www.theadvocate.com/baton_rouge/news/environment/st-james-high-moved-to-make-way-for-chemical-plant-new-oaks-magnolias-echo-old/article_91512fde-9b57-11ed-94c3-87620df85d58.html, accessed February 17, 2023.

[72] The economic impacts of Koch Methanol St. James – M1, Dave E. Dismukes, Ph.D., Gregory B. Upton, Jr., Ph.D., Center for Energy Studies, Louisiana State University, October 2021.

[73] United States Department of Labor Occupational Employment Statistics, Occupational Employment and Wages, May 2020, http://www.bls.gov/oes/current/oes518091.htm, accessed February 16, 2023.

approximately 135 direct jobs to operate the facility results in a total economic impact of 300 new permanent jobs created.[72]

The construction of the KMe Facility spanned from 1st Quarter 2017 to commercial production in 3rd Quarter 2021 and is estimated to have supported 2,500 jobs, $611 million in labor income, $1 billion in Gross State Product, and $72 million in state and local taxes.

Although the KMe Facility is located in St. James Parish, the initial construction phase generated economic impacts across the state. Estimates suggest:

- $50+ million in labor income across three parishes
- $10-$50 million in labor income across an additional ten parishes
- $5-10 million in labor income across an additional seven parishes

As noted earlier, the Project represented in this application strengthens the Facility's long-term viability (including employment viability) such that the benefits from the original plant (as described above) will continue to be generated. Additionally, it is currently estimated that this Project will result in an additional $50 million in capital expenditures resulting in an additional annual tax revenue; an additional $100 million in non-capital expenditures, including labor, over the engineering, design and construction period (providing approximately 50-100 temporary jobs); associated sales and use tax revenue; and an addition of up to 5 new permanent jobs.

4. ALTERNATIVE PROJECTS

Are there alternative projects that would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?

No. There is no alternative project that would achieve the same goal as the proposed Project at the KMe Facility. The KMe Facility produces commercial grade methanol for sale to domestic and international customers. The facility is sized and situated to make an economically viable contribution to anticipated market demands for the product, with the flexibility to ship via truck, rail and barge to North American customers as well as to export product via oceangoing vessels to international customers. The KMe Facility licensed and installed Lurgi MegaMethanol® technology is a highly efficient process that results in reduced consumption of natural gas feedstock as compared to conventional methanol production technologies. This along with the air emissions controls that the facility utilizes results in lower emissions of GHG, NOx, CO, SO_2, PM and other pollutants per unit of methanol produced as compared to conventional methanol production technologies.

The proposed Project has been conceived and designed specifically to address opportunities for improved utilization and efficiency and increase capacity at the existing KMe Facility. The Project leverages the existing asset and infrastructure and will be constructed within the existing facility footprint. Building a greenfield facility or a new production train to achieve the same amount of additional methanol production would be highly inefficient relative to utilizing the KMe Facility's existing infrastructure (i.e., already invested in utility/base support such as steam system, flare, control rooms, water supply, electrical systems, etc.). Additionally, Koch does not own any other methanol production facilities where this Project could be executed. Accordingly, Koch is aware of no alternative projects that could achieve the Project goals with a lesser environmental impact.

The following sections discuss market supply and demand data that support the need for the KMe Optimization Project and future production increases along with alternative options that were evaluated for the ethane vaporizer portion of the proposed Project.

4.1 Market Supply and Demand

Global methanol demand is forecast to grow up to 6% compound annual growth rate (CAGR) over the next ten years.[74] Energy related demands create a growing

[74] https://www.globenewswire.com/en/news-release/2022/07/06/2475166/0/en/Demand-for-methanol-is-projected-to-register-a-CAGR-of-6-through-2032-Persistence-Market-Research.html, accessed October 31, 2022.

market for methanol supported by clean energy policies and commercialization of methanol as a lower emission fuel (e.g., marine fuel).[75] Energy related applications for methanol (e.g., fuel) are a growing sector of global methanol demand.[76]

Methanol to olefins (MTO) represents a stable demand for methanol, as historical MTO operating rates have been resilient through different methanol/olefin price cycles. High oil prices and a forecasted slowdown in olefin capacity additions should support MTO affordability leading to stable demand. Via the MTO process, methanol is an alternative feedstock to produce light olefins (ethylene and propylene), which are then used to produce various everyday products used in packaging, textiles, plastic parts/containers and auto components. MTO applications make up approximately 17% of the global methanol demand.

Traditional chemical applications of methanol have seen steady growth. Demand growth is linked to global economic growth. The International Monetary Fund (IMF) World Economic Outlook forecasts approximately 3-4% annual GDP growth post COVID-19 recovery. Traditional chemical applications for methanol make up approximately 56% of the global methanol demand.[77]

4.2 Alternative Processes Considered for Project Scope Items

Given that this Project is intended to increase the efficiency and capacity of an existing facility, alternatives are limited in scope. Any expansion projects beyond the current scope would require additional reactor capacity and infrastructure, thereby significantly increasing project cost, footprint and impacts. Notwithstanding this limitation, alternatives were considered for one of the primary Project scope items, namely injecting ethane into the natural gas feed to increase the carbon to hydrogen ratio. To accomplish this at the optimum temperature, liquid ethane needs to be vaporized into the natural gas feed. The following three technologies were evaluated to accomplish the vaporization:

- Shell and tube exchanger using low pressure steam (65# sat'd) with an estimated capital cost of $55,000
- Electric heater (5KV) with an estimated capital cost of $550,000
- Fired heater (Fuel gas) with an estimated capital cost of $250,000

The shell and tube exchanger option was selected as the technology for heating the ethane feed, as it was the most efficient and effective from an energy standpoint due to the fact that it would utilize excess steam or, worst case, require some additional firing of the existing boiler. Even if additional boiler firing is required, the

[75] https://eibip.eu/publication/methanol-fuel/, accessed October 31, 2022.

[76] https://www.methanol.org/wp-content/uploads/2020/03/Future-Fuel-Strategies-Methanol-Automotive-Fuel-Primer.pdf, accessed October 31, 2022.

[77] Chemical Market Analytics by OPIS, 2022 Edition: Spring 2022 Update

shell and tube exchanger option was determined to be significantly more energy efficient than the other two options. The electric heater was deemed to be economically unfavorable. Furthermore, it would result in additional electrical demand and increased emissions at the source of the third-party utility company. The fired heater was eliminated due to its cost compared to the shell/tube exchanger as well as its production of air emissions.

5. ALTERNATIVE SITES

Are there alternative sites that would offer more protection to the environment than the proposed project site without unduly curtailing non-environmental benefits?

No. As the Project involves modifications to an existing facility, a traditional alternative sites analysis as would be conducted for a "greenfield" facility is not relevant for this case. Because the proposed Project has been conceived and designed specifically to address increased design production rate and thereby further optimize the existing KMe Facility, the Project could not be conducted at any alternative sites, particularly because Koch does not own or operate any other methanol production facilities.

Furthermore, the KMe Facility site is located in close proximity to an existing ethane supply line, thereby making it ideally situated for the ethane feed gas project scope item. Additionally, the KMe Facility is newly constructed and is equipped with some of the most stringent air emissions controls as further explained in the BACT analysis in Part 4 of the November 2022 Application and Part 3 of the Addendum. The facility is located in an area designated attainment for all national NAAQS, thereby avoiding emissions increases in a nonattainment area, and the Air Quality Impacts Analysis demonstrates the Project will not cause or contribute to an exceedance of the NAAQS or LAAS. In addition, the Project will be constructed at an already developed site that is zoned for heavy industrial activity and located in an industrial zone[78], and it will be implemented without impacting any known archaeological sites.

The KMe Facility was constructed in close proximity to required infrastructure (e.g., natural gas pipeline, rail, and marine terminal), which minimized environmental impacts associated with construction. The facility was built on a site developed for agriculture, reducing potential impacts to wetlands as compared to selecting a site characterized by previously undisturbed marsh or bottomland forested areas. The facility is not located adjacent to or in the vicinity of any estuarine bodies. As discussed in Section 2.9, no threatened or endangered species will be impacted by the Project. Additionally, the KMe facility is over 100 kilometers away from the Breton Sound Class I Wildlife Management Area. Wildlife populations present near the facility are not substantial in terms of numbers, as the majority of the area has been cultivated for farmland.

Finally, as discussed above, the KMe Facility has brought significant economic and social benefits to the local community. The facility is located between the Baton Rouge and New Orleans metropolitan areas, with the I-10 interstate highway and

[78] https://www.stjamesla.com/DocumentCenter/View/690/Land-Use-Map-PDF, accessed October 31, 2022.

major state highways providing easy access for workers. Additionally, Louisiana, and St. James Parish in particular, provides a positive business climate, including collaborative efforts by state and local officials to support Koch in achieving the project goals, including Louisiana's workforce development programs and outreach by Louisiana Economic Development. In sum, there are no alternative sites that would offer more protection to the environment than the site of the existing KMe Facility without unduly curtailing non-environmental benefits.

6. MITIGATING MEASURES

Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits?

No. There are no additional mitigating measures which would offer more protection to the environment than the Project as proposed without unduly curtailing the Project's non-environmental benefits. The KMe Facility was constructed and is operated in a manner that ensures the potential and real adverse environmental effects are avoided to the maximum extent possible.

As discussed in detail under Section 2 above, the KMe Facility was designed and constructed with state-of-the-art pollution abatement equipment to meet stringent control standards. Once the proposed Project is implemented, environmental impacts will continue to be minimized by meeting or exceeding MACT and NSPS standards for emissions of NOx, CO, VOC, and methanol, as well as BACT for NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and GHG. As noted earlier, Koch has voluntarily completed a BACT analysis demonstrating that BACT level (and in some cases beyond BACT level) controls will be applied to all KMe Facility emissions units authorized by the permit thereby minimizing air emissions beyond what is required under applicable air permitting rules.

The KMe Facility was also designed to minimize methanol wastewater streams sent to wastewater treatment through the incorporation of recycling and reprocessing. Additionally, as discussed in detail in Section 2 above, the wastewater treatment plant is designed and operated to meet the stringent federal and state wastewater discharge requirements of the LPDES permit, which incorporates Technology Based Effluent Limits (TBELs). The proposed Project will not affect any permitted discharges to the St. James Canal.

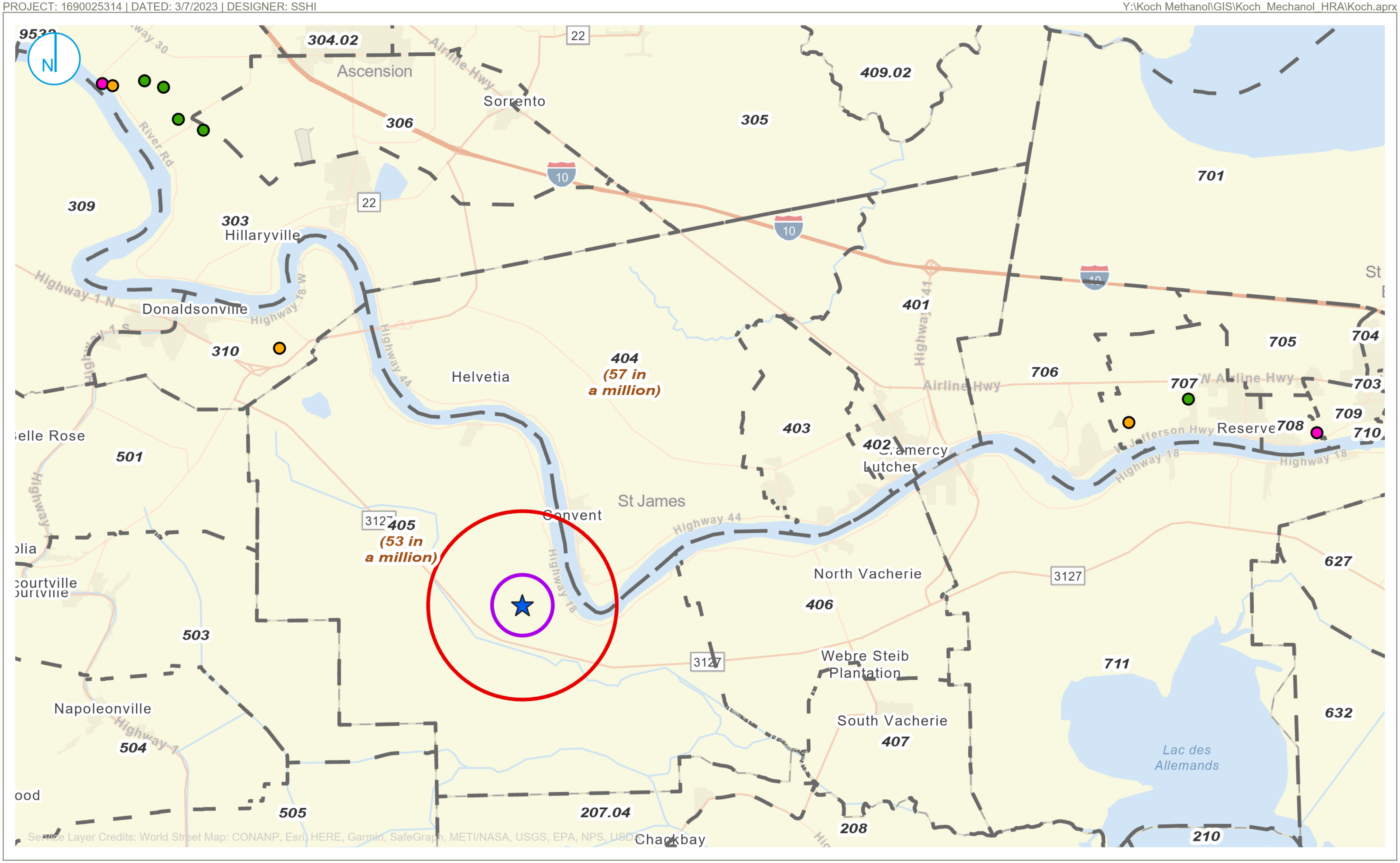
Meeting environmental standards for waste management will also assure environmental impacts are minimized. The KMe Facility is a Small Quantity Generator (SQG), as the facility produces less than 2,200 lb/month of hazardous waste. Koch also generates industrial solid wastes. Solid and hazardous waste minimization practices are implemented facility-wide through a variety of best management practices, from generation minimization to reuse where possible. The proposed Project is not anticipated to generate any new wastes, change the facility's generator status from SQG, or require any updates to current waste management practices. Wastes generated during construction of the Project will be managed in accordance with applicable regulations.

Koch is committed to design and construct the proposed Project and to continue operating the KMe Facility so as to minimize environmental impacts to the greatest extent practical, taking into consideration economic and energy costs. Beyond the regulatory and permitting requirements, Koch intends to continue driving stewardship at the site. This includes:

a. Further consideration of CCS opportunities for control of GHG emissions from the SMR and Boiler as CCS technology evolves and economic circumstances change, including potentially utilizing onsite or nearby sequestration
b. Periodic communication with LDEQ on progress of CCS considerations
c. Koch has invested in and has recently commissioned a steam condensing electrical generation turbine to leverage excess process steam (otherwise released to atmosphere) to reduce grid electricity consumption by 30-50% and is working to optimize up to 90% under normal operation
d. Continued community outreach (including initiation of a Community Advisory Board) to foster further discussions with members of the community, such as updates on local area monitoring performed by LDEQ
e. Koch is working with 3rd party suppliers to reduce trips resulting in loss of O_2 as well as adding an additional methane line at the site – these projects will mitigate flaring (from O_2 production trips or from primary supplier upsets) which will lead to the reduction of emissions associated with flaring
f. Koch recently invested in a Dissolved Air Flotation (DAF) unit to replace its Lamella Clarifier to further improve water quality by reducing suspended solids in the plant’s effluent. Additionally, installation of a DAF has resulted in improved solids handling which should also have reduced hydrogen sulfide emissions.
g. Koch is evaluating options for installing “fence line” monitoring at the site with the full intention to install such monitoring

Finally, the non-environmental social and economic benefits of the KMe Facility are substantial, with an initial capital investment in the local and state economy of approximately $1.85 billion and approximately 135 direct new permanent jobs created to operate the facility (resulting in a total increase of approximately 300 permanent jobs when indirect jobs are considered), $46 million in Gross State Product generated each year, and greater than $3 million in state and local taxes annually. The Project will include an additional investment of approximately $150 million ($50 million in equipment and $100 million in non-capital expenditures, including labor, providing approximately 50-100 temporary jobs), will provide additional property tax revenue as well as additional sales and use tax benefits, and will generate up to 5 new permanent jobs. As noted earlier, the Project strengthens the Facility’s long-term viability (including employment viability) such that the benefits from the facility will continue.

FIGURES



LEGEND

- ★ Koch Methanol Facility
- 1-Mile Radius Study Area
- 3.1-Mile Radius Study Area
- 2020 Census Tract *(Cancer Risk)*

Major Emitters (2017 AirToxScreen Facilities)
Risk Driving Chemical
- Chloroprene
- Ethylene Oxide
- Formaldehyde

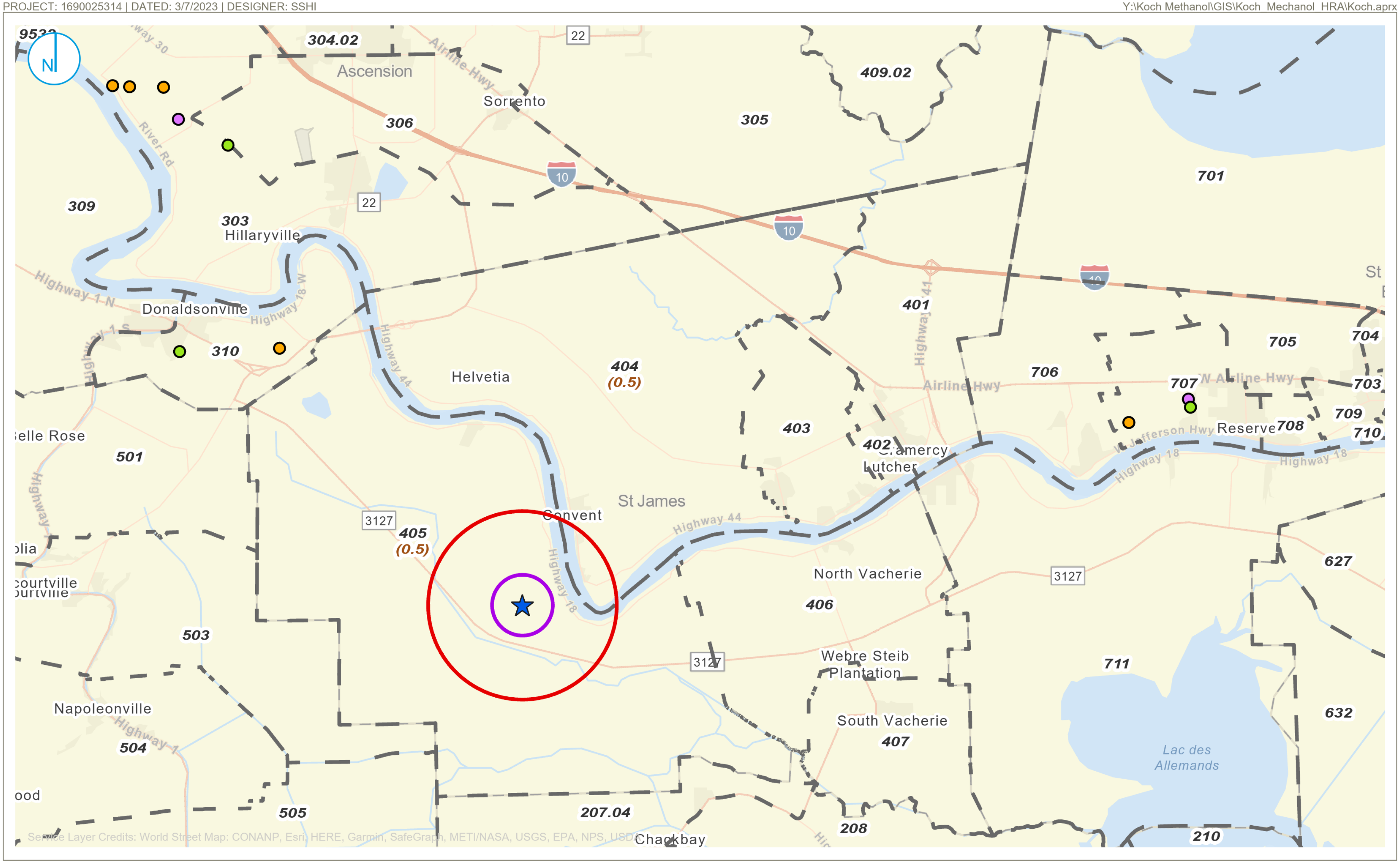
0 0.5 1 2 3 Miles

EJSCREEN STUDY AREAS AND NEARBY MAJOR SOURCES EMITTING CANCER RISK DRIVING AIR TOXIC CHEMICALS

Koch Methanol

FIGURE D-1

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY



LEGEND

- Koch Methanol Facility
- 1-Mile Radius Study Area
- 3.1-Mile Radius Study Area
- 2020 Census Tract *(Respiratory HI)*

Major Emitters (2017 AirToxScreen Facilities)

HI Driving Chemical

- Acetaldehyde
- Diesel PM
- Formaldehyde

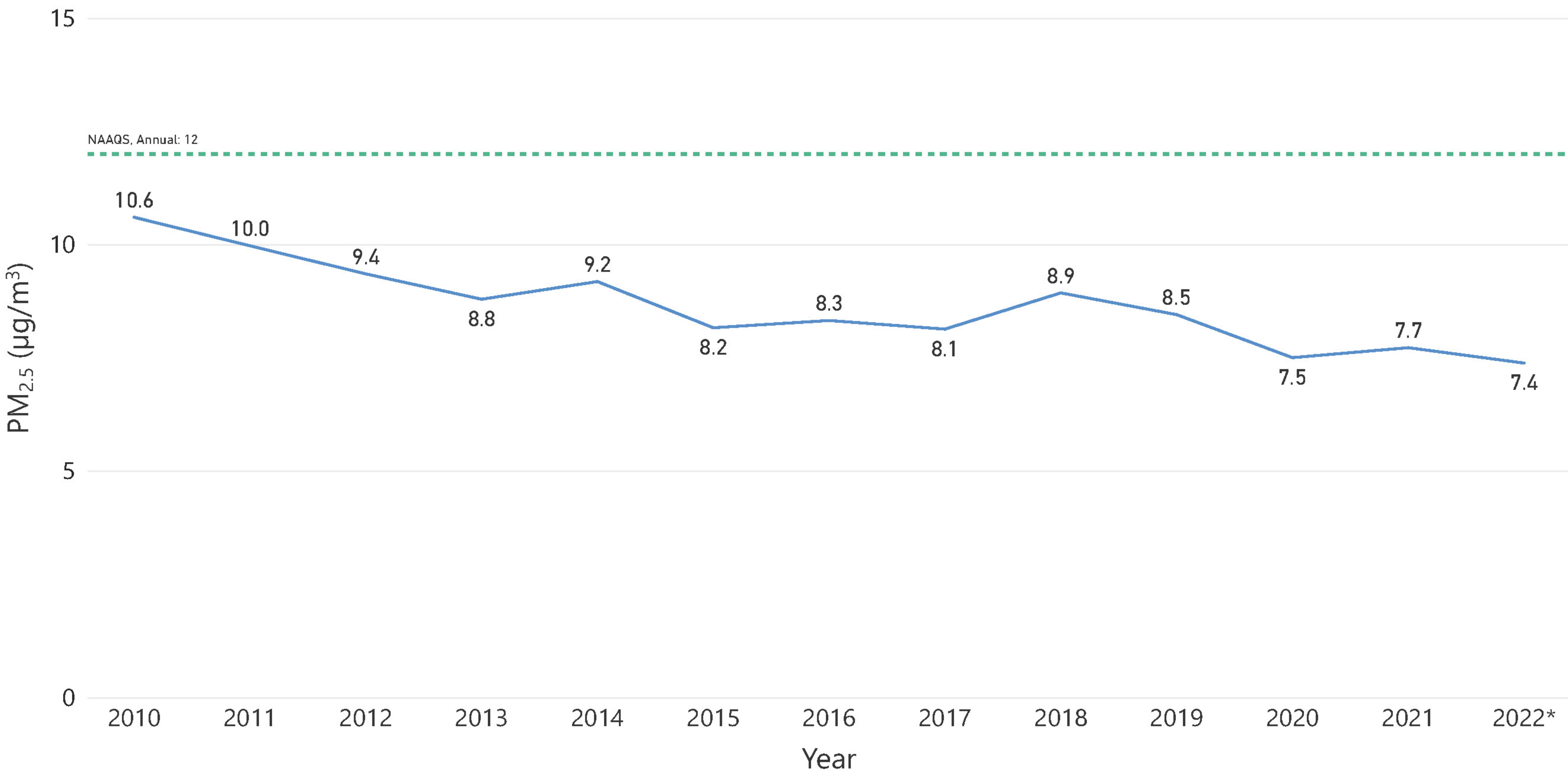
0 0.5 1 2 3 Miles

EJSCREEN STUDY AREAS AND NEARBY MAJOR SOURCES EMITTING RESPIRATORY HI DRIVING AIR TOXIC CHEMICALS

Koch Methanol

FIGURE D-2

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY



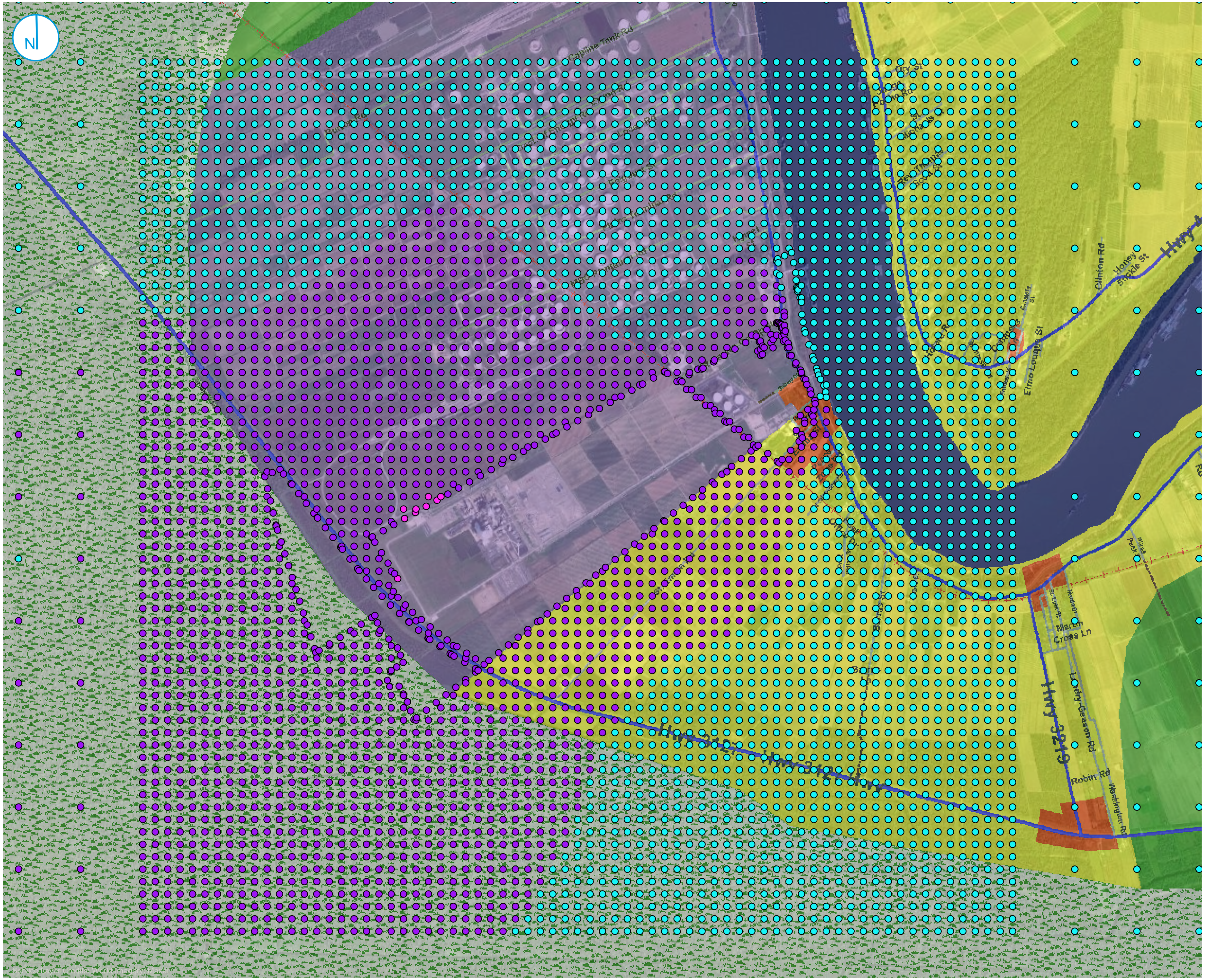
$PM_{2.5}$ ANNUAL AVERAGE CONCENTRATIONS AT GEISMAR MONITORING STATION NEAR KOCH METHANOL

FIGURE D-3

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY

*Note: 2022 values are not full-year values but values through the first three quarters of the year (January 1 - September 30). Value is therefore provisional.

Koch Methanol



LEGEND

Cancer Risk

- > 1 in one million and <= 2 in one million
- > 0.1 in one million and <= 1 in one million
- >= 0.006 in one million and <= 0.1 in one million

Land Use

- Commercial / Residential Mixed
- Commercial
- Industrial
- Agriculture
- Residential Growth
- Existing Residential / Future Industrial
- Water
- Wetlands

0 0.5 1 Miles

FACILITY AIR TOXIC RESIDENTIAL CANCER RISK ESTIMATES

Koch Methanol

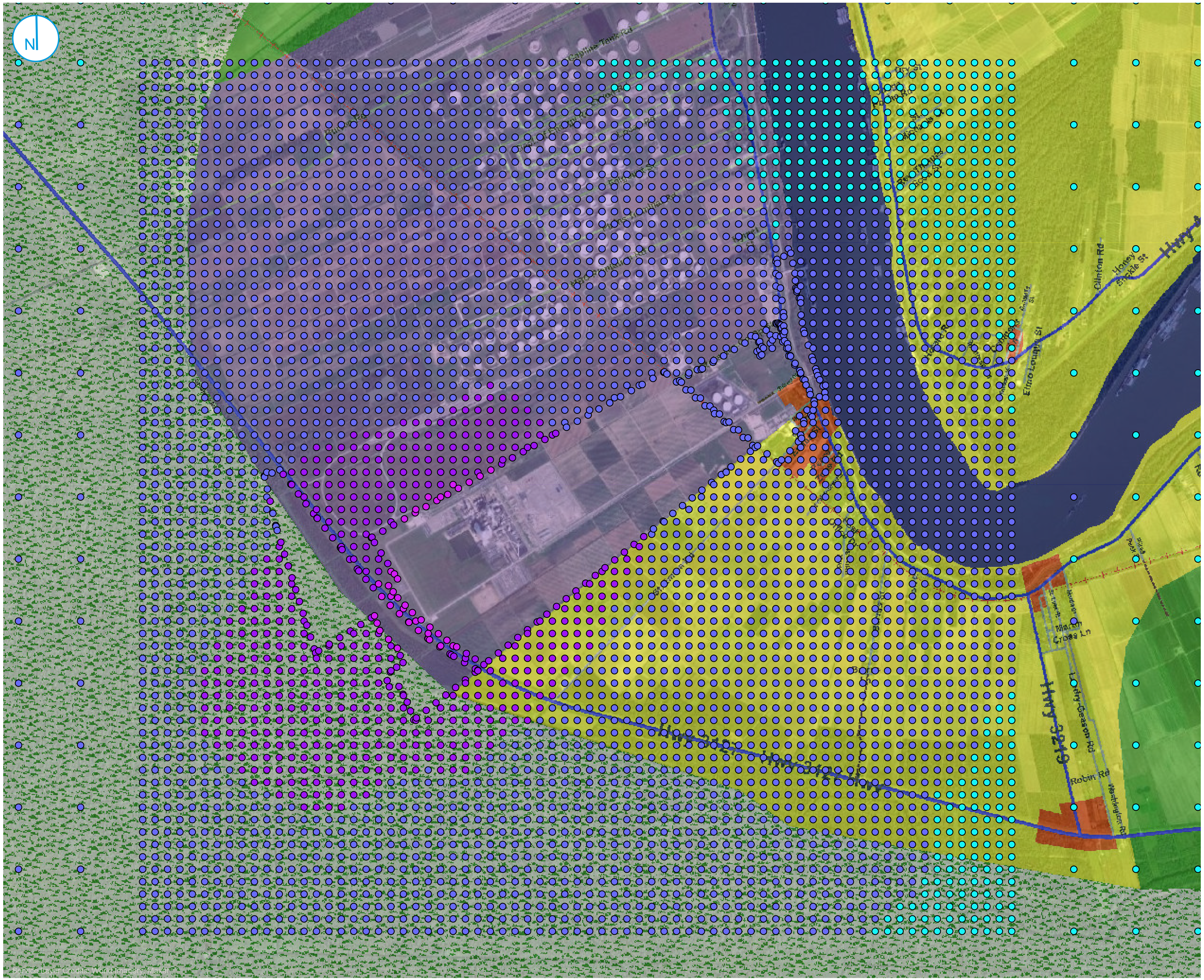
FIGURE D-4

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY

RAMBOLL

Y:\Koch Methanol\GIS\Koch_Mechanol_HRA\Koch_Mechanol_HRA.aprx

PROJECT: 1690025314 | DATED: 3/7/2023 | DESIGNER: SSHI



LEGEND

Chronic HI

- > 0.5 and <= 0.8
- > 0.1 and <= 0.5
- > 0.01 and <= 0.1
- >= 0.001 and <= 0.01

Land Use

- Commercial / Residential Mixed
- Commercial
- Industrial
- Agriculture
- Residential Growth
- Existing Residential / Future Industrial
- Water
- Wetlands

* HI = Hazard Index

0 0.5 1 Miles

FACILITY AIR TOXIC RESIDENTIAL RESPIRATORY HI ESTIMATES

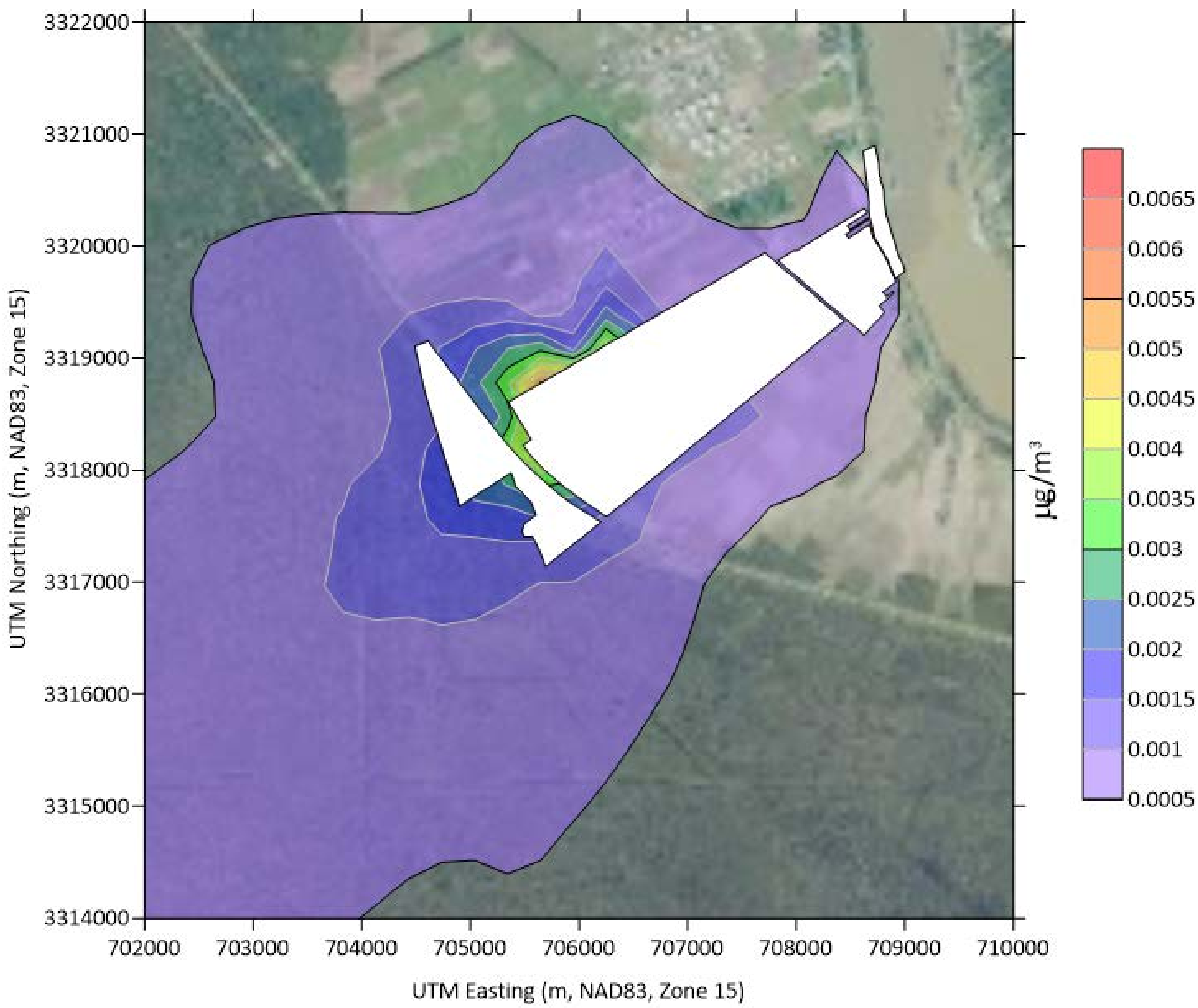
Koch Methanol

FIGURE D-5

RAMBOLL US CONSULTING, INC.
A RAMBOLL COMPANY

Y:\Koch Methanol\GIS\Koch_Mechanol_HRA\Koch_Mechanol_HRA.aprx

PROJECT: 1690025134 | DATED: 1/24/2023 | DESIGNER: SSHI

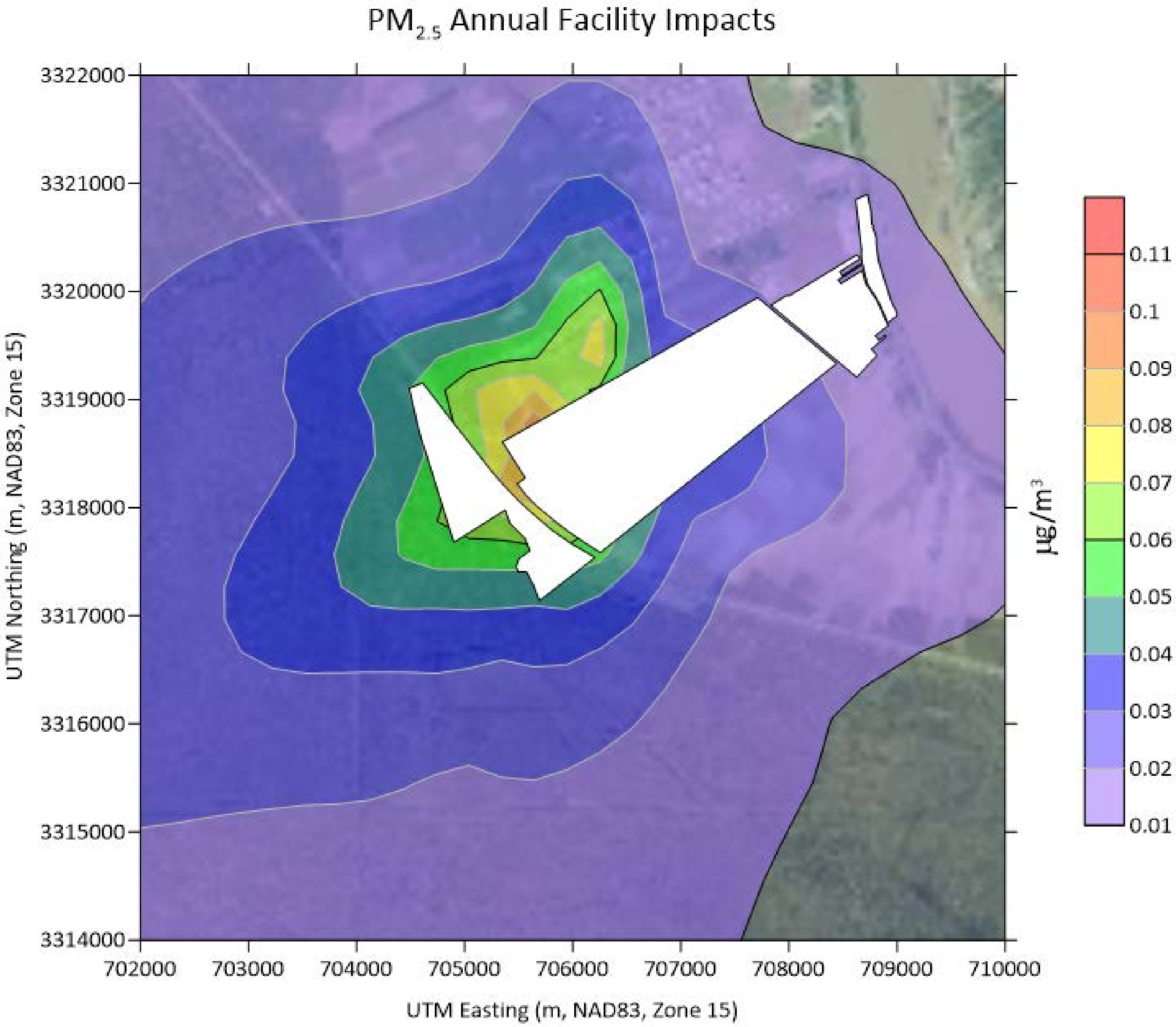


AERMOD-PREDICTED FACILITY ANNUAL DPM CONCENTRATIONS

FIGURE D-6

RAMBOLL US CONSULTING, INC
A RAMBOLL COMPANY

Koch Methanol



AERMOD-PREDICTED FACILITY ANNUAL PM2.5

FIGURE D-7

Koch Methanol

RAMBOLL US CONSULTING, INC
A RAMBOLL COMPANY

ATTACHMENT D-1
EJSCREEN REPORTS

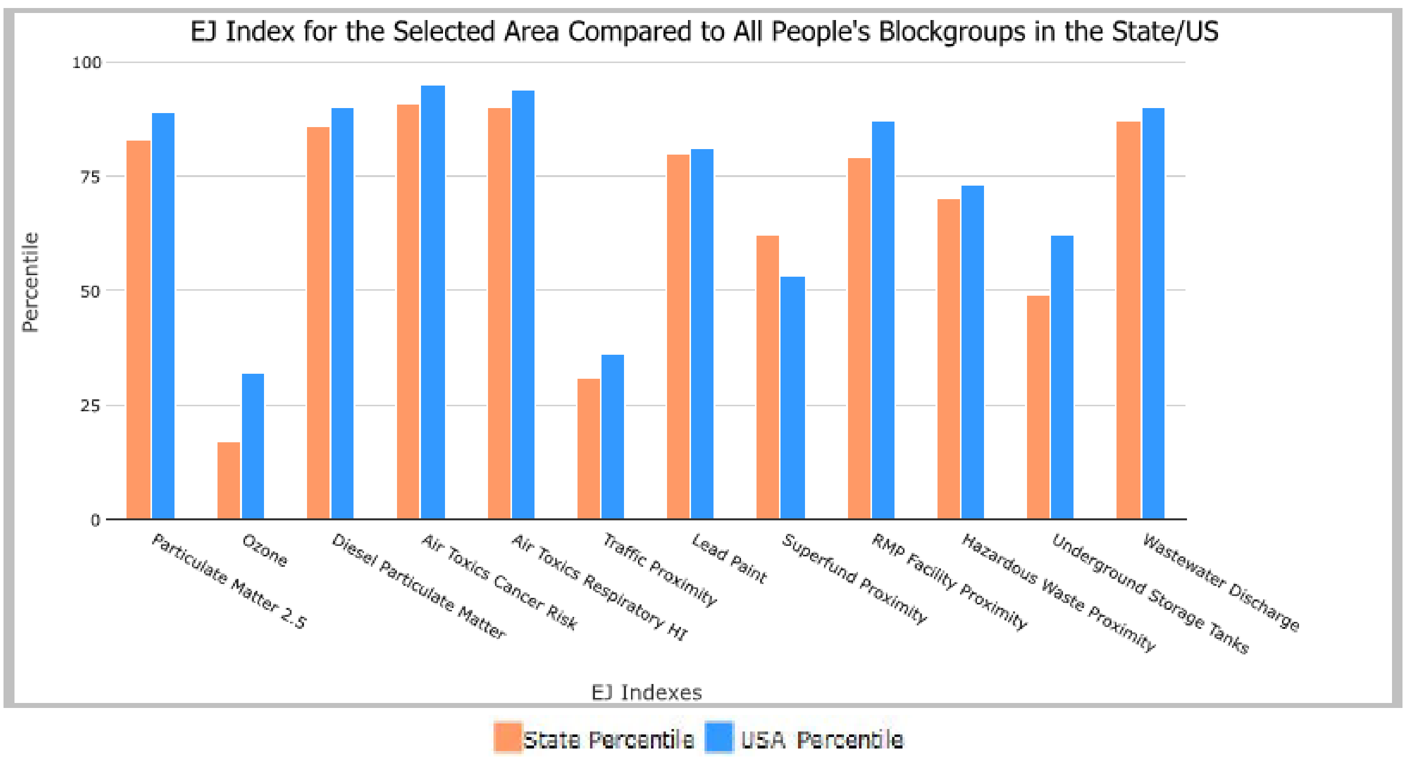
EJScreen Report (Version 2.1)

3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 1,142

Input Area (sq. miles): 30.18

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	83	89
EJ Index for Ozone	17	32
EJ Index for Diesel Particulate Matter*	86	90
EJ Index for Air Toxics Cancer Risk*	91	95
EJ Index for Air Toxics Respiratory HI*	90	94
EJ Index for Traffic Proximity	31	36
EJ Index for Lead Paint	80	81
EJ Index for Superfund Proximity	62	53
EJ Index for RMP Facility Proximity	79	87
EJ Index for Hazardous Waste Proximity	70	73
EJ Index for Underground Storage Tanks	49	62
EJ Index for Wastewater Discharge	87	90



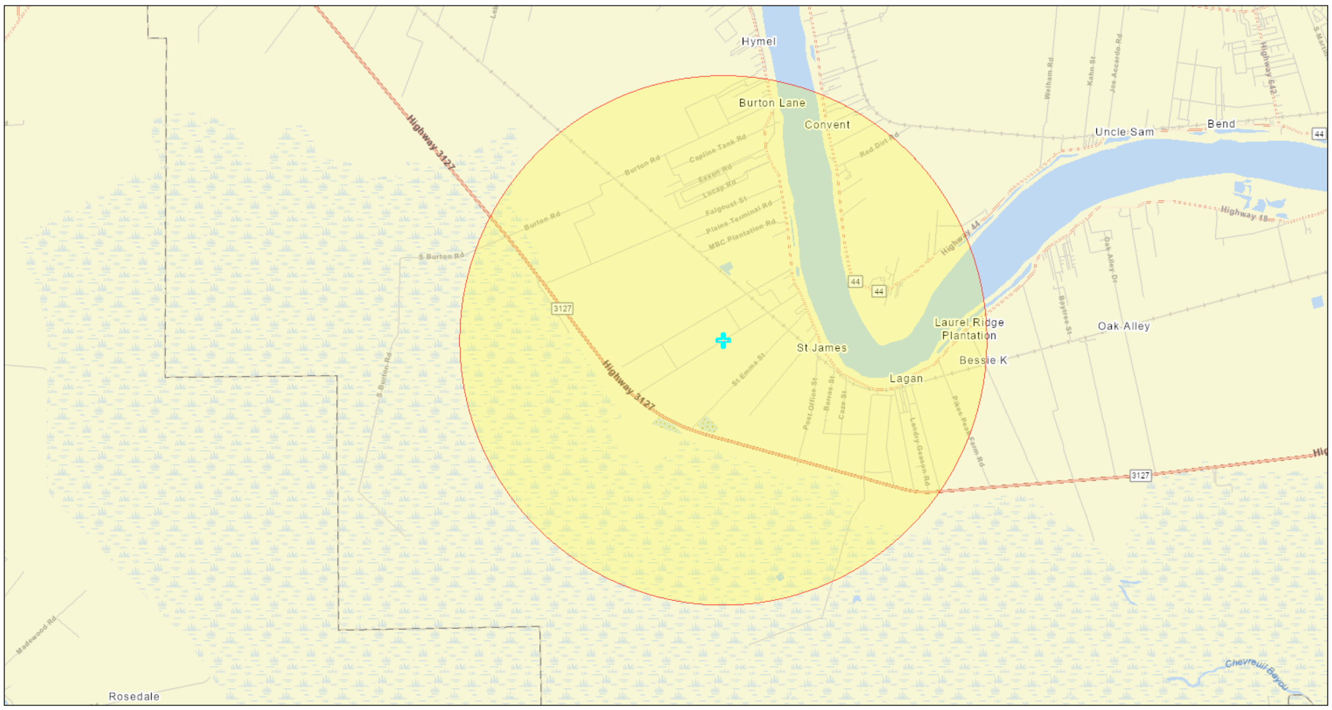
This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJScreen Report (Version 2.1)

3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 1,142

Input Area (sq. miles): 30.18



March 1, 2023

Search Result (point)

1:72,224

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)

3.1 miles Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 1,142

Input Area (sq. miles): 30.18

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (μg/m^3)	9.29	9.2	58	8.67	71
Ozone (ppb)	34.6	37	5	42.5	9
Diesel Particulate Matter* (μg/m^3)	0.388	0.297	73	0.294	70-80th
Air Toxics Cancer Risk* (lifetime risk per million)	54	40	92	28	95-100th
Air Toxics Respiratory HI*	0.5	0.45	90	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	31	640	20	760	18
Lead Paint (% Pre-1960 Housing)	0.23	0.2	65	0.27	51
Superfund Proximity (site count/km distance)	0.02	0.076	30	0.13	18
RMP Facility Proximity (facility count/km distance)	0.75	0.96	61	0.77	68
Hazardous Waste Proximity (facility count/km distance)	0.46	1.4	45	2.2	43
Underground Storage Tanks (count/km^2)	0.081	2.2	23	3.9	27
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0065	0.37	69	12	65
Socioeconomic Indicators					
Demographic Index	68%	41%	81	35%	88
People of Color	79%	42%	80	40%	83
Low Income	57%	38%	74	30%	86
Unemployment Rate	8%	7%	69	5%	76
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	20%	14%	70	12%	80
Under Age 5	6%	7%	58	6%	60
Over Age 64	16%	15%	57	16%	51

*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

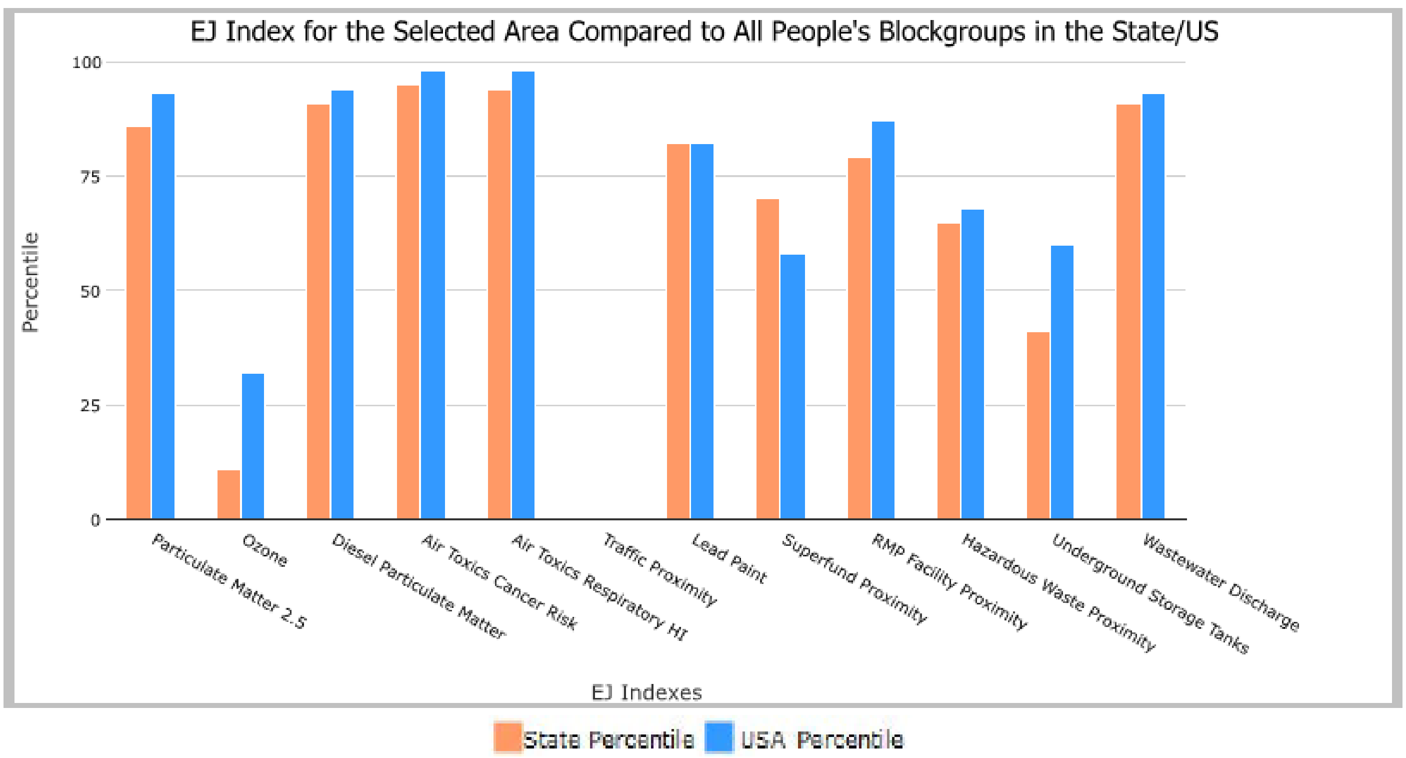
EJScreen Report (Version 2.1)

1 mile Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 41

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	86	93
EJ Index for Ozone	11	32
EJ Index for Diesel Particulate Matter*	91	94
EJ Index for Air Toxics Cancer Risk*	95	98
EJ Index for Air Toxics Respiratory HI*	94	98
EJ Index for Traffic Proximity	N/A	N/A
EJ Index for Lead Paint	82	82
EJ Index for Superfund Proximity	70	58
EJ Index for RMP Facility Proximity	79	87
EJ Index for Hazardous Waste Proximity	65	68
EJ Index for Underground Storage Tanks	41	60
EJ Index for Wastewater Discharge	91	93



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

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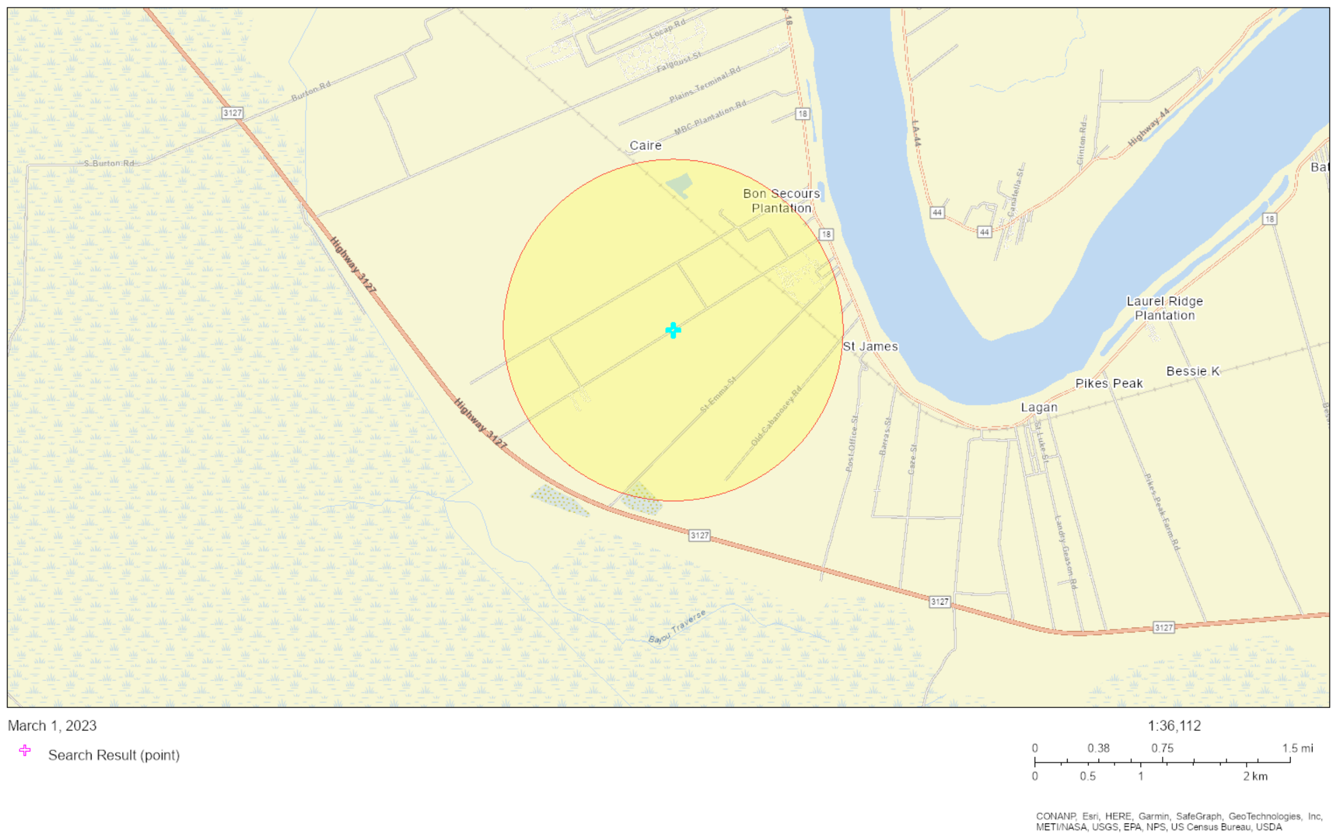
Approximate Population: 41

Input Area (sq. miles): 3.14



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)

1 mile Ring Centered at 29.984221,-90.850335, LOUISIANA, EPA Region 6

Approximate Population: 41

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (μg/m^3)	9.24	9.2	55	8.67	69
Ozone (ppb)	34	37	3	42.5	8
Diesel Particulate Matter* (μg/m^3)	0.387	0.297	73	0.294	70-80th
Air Toxics Cancer Risk* (lifetime risk per million)	50	40	89	28	95-100th
Air Toxics Respiratory HI*	0.5	0.45	90	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	N/A	640	N/A	760	N/A
Lead Paint (% Pre-1960 Housing)	0.16	0.2	54	0.27	42
Superfund Proximity (site count/km distance)	0.021	0.076	32	0.13	19
RMP Facility Proximity (facility count/km distance)	0.46	0.96	52	0.77	57
Hazardous Waste Proximity (facility count/km distance)	0.18	1.4	31	2.2	29
Underground Storage Tanks (count/km^2)	0.0066	2.2	14	3.9	0
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.007	0.37	70	12	66
Socioeconomic Indicators					
Demographic Index	78%	41%	90	35%	94
People of Color	86%	42%	85	40%	87
Low Income	70%	38%	87	30%	93
Unemployment Rate	2%	7%	36	5%	30
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	14%	14%	55	12%	68
Under Age 5	0%	7%	0	6%	0
Over Age 64	28%	15%	85	16%	85

*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

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ATTACHMENT D-2
EJ MODELING INPUT TABLES

Table 1. Point Source Parameters in EJ Modeling

Source	AERMOD ID	Location		Stack Parameters			
		UTM-x (m)	UTM-y (m)	Height (ft)	Temperature (F)	Velocity (ft/s)	Diameter (ft)
Steam Methane Reformer	M1_SMR	706279.00	3318808.00	213.25	336.00	78.93	10.66
Auxiliary Boiler	M1_BLR	706241.00	3318778.00	213.25	300.00	44.59	8.26
Process Condensate Stripper Vent	M1_PCV	706349.30	3318742.00	93.83	248	1.09	5.25
Flare	M1_FL_LT	705987.00	3318635.00	185.00	1832	65.60	4.45
Emergency Generator	M1_EGEN	706247.00	3318690.00	12.01	918	182.55	1.35
Fire Pump 1	M1_FP1	706440.00	3318692.00	12.01	918	173.85	0.49
Fire Pump 2	M1_FP2	706458.00	3318702.00	12.01	918	173.85	0.49
Fire Pump 3	M1_FP3	706468.00	3318707.00	12.01	918	173.85	0.49
Cooling Tower Cell 1	M1_CT_1	706192.00	3318720.00	46.00	68	22.13	34.38
Cooling Tower Cell 2	M1_CT_2	706198.00	3318709.00	46.00	68	22.13	34.38
Cooling Tower Cell 3	M1_CT_3	706205.00	3318697.00	46.00	68	22.13	34.38
Cooling Tower Cell 4	M1_CT_4	706211.00	3318687.00	46.00	68	22.13	34.38
Cooling Tower Cell 5	M1_CT_5	706217.00	3318675.00	46.00	68	22.13	34.38
Cooling Tower Cell 6	M1_CT_6	706224.00	3318664.00	46.00	68	22.13	34.38
Cooling Tower Cell 7	M1_CT_7	706230.00	3318653.00	46.00	68	22.13	34.38
Cooling Tower Cell 8	M1_CT_8	706236.00	3318642.00	46.00	68	22.13	34.38
Cooling Tower Cell 9	M1_CT_9	706243.00	3318632.00	46.00	68	22.13	34.38
Cooling Tower Cell 10	M1_CT_10	706248.00	3318620.00	46.00	68	22.13	34.38
Cooling Tower Cell 11	M1_CT_11	706233.00	3318610.00	46.00	68	22.13	34.38
Ammonia Tank	M1_TKNH3	706589.00	3318651.00	8.01	ambient	0.003	3.28
Methanol Scrubber	M1_D4001	706247.00	3318914.00	66.01	ambient	0.003	3.28
Admin Building Generator	M1ADGEN	708673.52	3319560.32	11.98	1175	264.51	0.04
Gasoline Tank	M1GASTK	706807.00	3318474.00	3.28	ambient	0.003	3.28
Generac 1	T1_EGEN1	708465.00	3319620.00	13.75	987	324.96	1.12
Generac 2	T1_EGEN2	708457.00	3319615.00	13.75	987	324.96	1.12
Vapor Combustion Unit	VCU	705814.20	3318792.60	45.00	1320	20.00	8.00
Trap Vents	TRAP	706341.82	3318718.17	9.84	212	0.003	0.06

Table 2. Polygon Area Source Parameters in EJ Modeling					
		Location		Release Parameters	
Source	AERMOD ID	UTM-x (m)	UTM-y (m)	Height (ft)	Number of Corners
M1 Area Fugitives	M1_FUG	706233.23	3318596.83	15.00	8
T1 Area Fugitives	T1_FUG	708143.78	3319773.28	15.00	8

Table 3. Volume Source Parameters in EJ Modeling						
	AERMOD	Location		Release Parameters		
Source	ID	UTM-x (m)	UTM-y (m)	Height (ft)	Initial Horiz. Dim. (ft)	Initial Vert. Dim. (ft)
Waste Water Treatment Plant Fugitives	WWTP	706488.00	3318658.00	15.00	155.64	13.94

Table 4. Circle Area Source Parameters in EJ Modeling					
		Location		Release Parameters	
Source	**AERMOD ID**	**UTM-x (m)**	**UTM-y (m)**	**Height (ft)**	**Radius (ft)**
Above ground storage vessel	TK26202A	708202.90	3319662.60	50	110
Above ground storage vessel	TK26202B	708298.30	3319717.80	50	110
Above ground storage vessel	TK26202C	708156.80	3319729.10	50	110
Above ground storage vessel	TK26202D	708236.30	3319761.60	50	110

Table 5. Annual Emission Rates for EJ Modeling

Source	AERMOD ID	Emission Rates (tpy)												
		Methanol	**Ammonia**	**H2S**	**Acetaldehyde**	**Benzene**	**Dichlorobenzene**	**Ethylbenzene**	**Formaldehyde**	**Hexane**	**Naphthalene**	**Toluene**	**224-Trimethylpentane**	**Aldehydes**
Steam Methane Reformer	M1_SMR	17.44	91.98	0.00	0.00	0.01	6.17E-03	0.00	0.39	9.25	3.13E-03	0.02	0.00	0.00
Auxiliary Boiler	M1_BLR	1.76	21.46	0.00	0.00	1.42E-03	8.76E-04	0.00	0.05	1.22	4.13E-04	2.30E-03	0.00	0.00
Process Condensate Stripper Vent	M1_PCV	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flare	M1_FL_LT	8.22	0.00	0.00	0.00	8.05E-04	4.60E-04	0.00	0.03	0.69	2.34E-04	1.30E-03	0.00	0.00
Emergency Generator	M1_EGEN	0.00	0.00	0.00	3.21E-05	9.87E-04	0.00	0.00	1.00E-04	0.00	1.65E-04	3.57E-04	0.00	0.00
Fire Pump 1	M1_FP1	0.00	0.00	0.00	1.61E-04	1.96E-04	0.00	0.00	2.48E-04	0.00	1.78E-05	8.59E-05	0.00	0.02
Fire Pump 2	M1_FP2	0.00	0.00	0.00	1.61E-04	1.96E-04	0.00	0.00	2.48E-04	0.00	1.78E-05	8.59E-05	0.00	0.02
Fire Pump 3	M1_FP3	0.00	0.00	0.00	6.71E-05	8.16E-05	0.00	0.00	1.03E-04	0.00	7.42E-06	3.58E-05	0.00	6.00E-03
Cooling Tower Cell 1	M1_CT_1	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 2	M1_CT_2	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 3	M1_CT_3	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 4	M1_CT_4	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 5	M1_CT_5	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 6	M1_CT_6	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 7	M1_CT_7	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 8	M1_CT_8	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 9	M1_CT_9	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 10	M1_CT_10	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 11	M1_CT_11	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ammonia Tank	M1_TKNH3	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methanol Scrubber	M1_D4001	10.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin Building Generator	M1ADGEN	1.99E-04	0.00	0.00	6.65E-04	3.50E-05	0.00	3.16E-06	4.20E-03	8.83E-05	5.92E-06	3.24E-05	1.99E-05	0.00
Gasoline Tank	M1GASTK	0.00	0.00	0.00	0.00	1.21E-03	0.00	6.60E-04	0.00	6.14E-04	0.00	1.42E-03	2.34E-03	0.00
Generac 1	T1_EGEN1	0.00	0.00	0.00	2.58E-05	7.94E-04	0.00	0.00	8.07E-05	0.00	1.33E-04	2.87E-04	0.00	0.00
Generac 2	T1_EGEN2	0.00	0.00	0.00	2.58E-05	7.94E-04	0.00	0.00	8.07E-05	0.00	1.33E-04	2.87E-04	0.00	0.00
Vapor Combustion Unit	VCU	15.93	0.00	0.00	0.00	1.72E-04	9.84E-05	0.00	6.15E-03	0.15	5.00E-05	2.79E-04	0.00	0.00
Trap Vents	TRAP	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M1 Area Fugitives	M1_FUG	27.26	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste Water Treatment Plant Fugitives	M1_WWTP	0.33	3.29	9.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T1 Area Fugitives	T1_FUG	11.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202A	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202B	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202C	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202D	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5. Annual Emission Rates for EJ Modeling													
		Emission Rates (tpy)											
Source	**AERMOD ID**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**	**Chromium-VI**	**Cobalt**	**Copper**	**Manganese**	**Mercury**	**Nickel**	**Zinc**	**Diesel PM**
Steam Methane Reformer	M1_SMR	1.48E-03	0.03	0.01	0.01	2.07E-03	6.22E-04	0.01	2.81E-03	1.93E-03	0.02	0.21	0.00
Auxiliary Boiler	M1_BLR	4.51E-04	0.01	2.48E-03	3.16E-03	6.31E-04	1.89E-04	1.92E-03	8.57E-04	5.86E-04	4.73E-03	0.07	0.00
Process Condensate Stripper Vent	M1_PCV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flare	M1_FL_LT	7.66E-05	1.69E-03	4.21E-04	5.36E-04	1.07E-04	3.22E-05	3.26E-04	1.46E-04	9.96E-05	8.05E-04	0.01	0.00
Emergency Generator	M1_EGEN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Fire Pump 1	M1_FP1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Fire Pump 2	M1_FP2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Fire Pump 3	M1_FP3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76E-03
Cooling Tower Cell 1	M1_CT_1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 2	M1_CT_2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 3	M1_CT_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 4	M1_CT_4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 5	M1_CT_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 6	M1_CT_6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 7	M1_CT_7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 8	M1_CT_8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 9	M1_CT_9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 10	M1_CT_10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling Tower Cell 11	M1_CT_11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ammonia Tank	M1_TKNH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methanol Scrubber	M1_D4001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin Building Generator	M1ADGEN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gasoline Tank	M1GASTK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generac 1	T1_EGEN1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Generac 2	T1_EGEN2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Vapor Combustion Unit	VCU	1.64E-05	3.61E-04	9.02E-05	1.15E-04	2.30E-05	6.89E-06	6.97E-05	3.12E-05	2.13E-05	1.72E-04	2.38E-03	0.00
Trap Vents	TRAP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M1 Area Fugitives	M1_FUG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste Water Treatment Plant Fugitives	M1_WWTP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T1 Area Fugitives	T1_FUG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above ground storage vessel	TK26202D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00