Technical Review/Critique

EPA Proposed Rule

Financial Responsibility Requirements Under CERCLA Section 108(b) for Facilities in the Chemical Manufacturing Industry (85 FR 10128, February 21, 2020)

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Prepared for:

The Society of Chemical Manufacturers and Affiliates
The American Chemistry Council
The American Fuel and Petrochemical Manufacturers
The American Coke and Coal Chemicals Institute

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OPTIMA ANALYTICS

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Executive Summary

On February 21, 2020, EPA announced its proposed rule on "Financial Responsibility Requirements under Section 108(b) of CERCLA for Facilities in the Chemical Manufacturing Industry" (proposed rule).[1] In support of that proposal, EPA performed an analysis of federally funded response actions at Superfund sites associated with chemical manufacturing facilities. As a result of this analysis, EPA concluded that industry practices put in place over the last four decades already address the financial risk of the government having to fund cleanups from chemical manufacturing facilities and that imposing financial responsibility requirements under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Section 108(b) is not warranted. Therefore, EPA is proposing not to issue such requirements for these facilities.

Optima Analytics, Inc. (Optima) was retained to conduct an independent review and critique of the record underlying the proposed rule. Based on this review/critique, Optima finds that EPA's overall conclusions are sound: future industry operations are unlikely to trigger federally funded response actions. Optima agrees with the Agency that the combination of modern federal and state regulatory programs, voluntary industry programs, industry financial performance and existing financial responsibility requirements have reduced the future risk of federally financed environmental response actions to the point where imposing financial responsibility requirements on every chemical manufacturing facility is unwarranted.

Significant findings of the review/critique are, as follows.

- There are about 13,480 chemical manufacturing establishments operating in the United States.[2] EPA's screening and analysis indicated that only 34 sites subject to Superfund-financed response actions had releases under the modern regulatory framework.[3] This is an extremely small percentage (~0.25%) of the universe of establishments subject to financial responsibility requirements.

- The total federally funded expenditures for response actions to date at the 34 identified sites is approximately $104 million. This amount represents about 10% of a typical year's Superfund budgetary authority. For example, the FY 2018 Superfund budget authority was $1.057 billion.[4] Optima's analysis identified potential future expenditures totaling $135 million associated with seven of the 34 sites having Superfund financed response actions. This future amount still represents less than 13% of a typical year's Superfund budgetary authority.

[1] 85 Fed. Reg 10128, https://www.federalregister.gov/d/2020-03401/.
[2] IBID, p. 10145.
[3] IBID, p. 10145.
[4] IBID, p. 10145.

- No site appears to have been listed on the NPL for releases occurring under the modern regulatory framework, whether that framework is deemed to have begun in 1980 or 1990.

- Only six other facilities where Superfund response costs have been incurred had hazardous releases that can reasonably be deemed to have occurred under the modern regulatory framework, again regardless of whether that framework is deemed to have begun in 1980 or 1990. Those costs amounted to a total of $2.8 million.

- The proposed rule does not affect EPA's authority to take a response or enforcement action under CERCLA with respect to any individual facility and to impose financial responsibility requirements on the potentially responsible parties for such response actions.[5] The proposed rule pertains only to the class of facilities in the chemical manufacturing industry, not to individual facilities within that class.

- EPA still has the authority to impose financial assurance requirements on individual facilities under the Resource Conservation and Recovery Act (RCRA). As a result, the chemical manufacturing industry already provides a total of $3.94 billion in financial assurance for 287 RCRA facilities.

- The proposed rule does not reflect the important fact that Securities and Exchange Commission (SEC) regulations and United States Generally Accepted Accounting Principles (GAAP) require all public corporations to estimate and report environmental remediation and asset retirement obligations (AROs) as part of their annual reports.

  - The environmental remediation and ARO estimates reported in accordance with SEC regulations and GAAP requirements include costs of other federal and state regulatory programs, as well as RCRA financial assurance estimates.

  - These environmental and ARO estimates not only inform investors, but also aid company management in anticipating and managing these costs.

- Taken together, the overall size of the industry, the small percentage of sites having hazardous substances releases under the modern regulatory framework, and the low total cost of taxpayer funded response actions at these sites, combined with the significant dollar amount of financial assurance provided under RCRA and SEC Regulation/GAAP requirements, eliminate any basis for additional financial responsibility requirements under CERCLA 108(b).

[5] 85 FR 10128 February 21, 2020 https://www.federalregister.gov/d/2020-03401/p. 10129.

1.0 Introduction

On February 21, 2020, EPA announced its proposed rule on "Financial Responsibility Requirements under Section 108(b) of CERCLA for Facilities in the Chemical Manufacturing Industry" (proposed rule) (85 Fed. Reg 10128). This proposed rule would forego imposing financial assurance requirements on facilities in the industry.

The proposed rule based this decision on an analysis performed by EPA which determined that the future risk of federally financed response actions at chemical manufacturing facilities has been greatly reduced as a result of existing:

- Federal and state regulatory programs;
- Industry financial performance;
- Existing financial responsibility requirements; and,
- Voluntary industry stewardship programs.

1.1 Objective and Focus of Optima's Technical Review/Critique

This report discusses the results and conclusions from an independent review and critique of the record underlying the proposed rule by Optima. Optima agrees with the Agency that the combination of modern federal and state regulatory programs, industry financial performance, existing financial responsibility requirements, and voluntary industry stewardship programs have greatly reduced the future risk of federally financed response actions to the point where imposing financial responsibility requirements on every chemical manufacturing facility is unwarranted.

This review and critique focused on federal and state regulatory programs and existing financial responsibility requirements (i.e. the first and third bullets above). These two areas of focus provide some of the most significant information regarding EPA's proposed rule. The other two areas, industry financial performance and voluntary industrial stewardship programs, are also important and provide support for the proposed rule. These areas are well covered in reports contained within the rulemaking record (Docket ID No. EPA-HQ-OLEM-2019-0086), however, and so are not the focus of this review.

2.0 Optima's Review/Critique of EPA's Process for Identifying Federally Funded Superfund Sites

2.1 Summary of EPA's Screening Process to Identify Sites with Environmental Impacts under Modern Regulations

EPA developed a screening process to identify sites where pollution occurred under the "modern regulatory framework." The Agency began this process by focusing on identifying response actions that occurred at sites listed on the Superfund National Priorities List (NPL) and sites using the Superfund Alternative Approach (SAA). EPA chose to focus on NPL and SAA at the start of its process because NPL and SAA sites generally involve larger cleanups in terms of both amounts of contaminants requiring remedial action and costs to carry out these cleanups. EPA's analysis also included a review of federally funded removal actions at non-NPL sites.[6]

2.1.1 Summary of EPA's Screening Process for NPL Sites

EPA's process for identifying NPL sites that experienced environmental impacts under the modern regulatory framework and required federally funded response actions included the following steps:

1. Begin with the list of NPL sites identified in EPA's 2010 Advance Notice of Proposed Rule Making (ANPRM);[7]
2. Supplement the ANPRM list with NPL and SAA sites identified since 2010;
3. Filter out sites identified as having releases of hazardous materials prior to 1980 (the cutoff date conservatively chosen by EPA as the beginning of the modern regulatory framework); and,
4. Filter out sites where potentially responsible parties (PRPs) paid the costs of response actions.

The first two steps identified a total of 207 sites. The third step filtered out 110 sites identified as having environmental impacts that occurred before 1980. This left 97 sites with possible pollution that occurred in 1980 or later. The fourth step filtered out 90 sites that had PRP-funded response actions. This left 117 sites identified as having federally funded response actions. The sites remaining after applying the screens associated with steps three and four substantially overlapped each other, and yielded 34 sites belonging to both categories. Figure 1 shows the overlap of these two categories of sites.[8]

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[6] 85 FR 10128 February 21, 2020 https://www.federalregister.gov/d/2020-03401/p. 10135

[7] 75 FR 816 January 6, 2010 Identification of Additional Classes of Facilities for Development of Financial Responsibility Requirements Under CERCLA Section 108(b). https://www.federalregister.gov/documents/2010/01/06/E9-31399/identification-of-additional-classes-of-facilities-for-development-of-financial-responsibility

[8] Environmental Protection Agency. (2020, February 24). Identification and Evaluation of CERCLA 108(b) Additional Classes National Priorities List (NPL) Cleanup Case Sites: Chemical Manufacturing [EPA-HQ-OLEM-2019-0086-1018] https://www.regulations.gov/document?D=EPA-HQ-OLEM-2019-0086-1018 p. 10

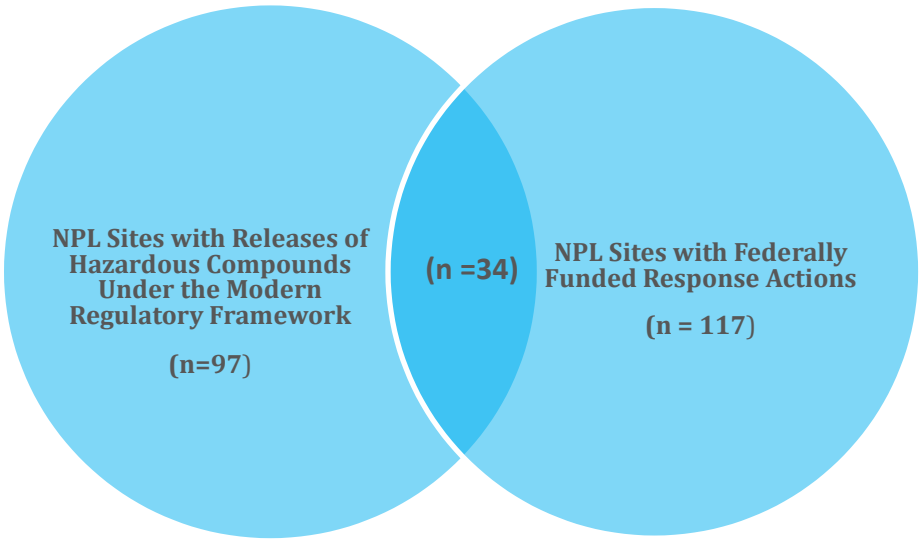

Figure 1- EPA's Analysis - NPL Sites with Environmental Impacts Under the Modern Regulatory Framework & Federally Funded Response Actions

Next, EPA performed a case-by-case review of the 34 NPL sites resulting from the screening process. This review involved creating case narratives describing the history of site releases and response actions at each site. To create these narratives, the Agency relied on information contained within the Superfund Environmental Management System (SEMS) database, Superfund site documents, and the Agency's RCRAInfo database. EPA then analyzed these narratives regarding regulations that are applicable under the modern regulatory framework to chemical manufacturing facilities and the key implementation dates for those regulations.

Based on its analysis of the case narratives, EPA concluded that, notwithstanding the prior screens, the environmental impacts at 30 of the 34 sites reflected significant legacy chemical manufacturing activities that predated the modern regulatory framework.[9] In other words, only four NPL sites survived this final screening. The four NPL sites identified as having significant environmental impacts under the modern regulatory framework are Diaz Chemical Corporation, Eldorado Chemical Company, Mississippi Phosphate Company, and White Chemical Corporation.[10]

2.1.2 Summary of EPA's Screening Process for Non-NPL Sites

EPA used a process similar to that used for NPL sites to identify non-NPL sites having environmental impacts under the modern regulatory framework. The Agency began by querying the Superfund Enterprise Management System (SEMS) database for non-NPL sites in the chemical

[9] Environmental Protection Agency. (2020, February 24). Identification and Evaluation of CERCLA 108(b) Additional Classes National Priorities List (NPL) Cleanup Case Sites: Chemical Manufacturing [EPA-HQ-OLEM-2019-0086-1018] https://www.regulations.gov/document?D=EPA-HQ-OLEM-2019-0086-1018 p. 11

[10] Environmental Protection Agency. (2020, February 24). Identification and Evaluation of CERCLA 108(b) Additional Classes National Priorities List (NPL) Cleanup Case Sites: Chemical Manufacturing [EPA-HQ-OLEM-2019-0086-1018] https://www.regulations.gov/document?D=EPA-HQ-OLEM-2019-0086-1018 p. 11

manufacturing industry (i.e., North American Industry Classification System [NAICS] 325 facilities). This query resulted in 290 chemical manufacturing facilities not on the NPL list that experienced environmental impacts. EPA then screened PRP-funded assessments and actions out of these 290 facilities, which resulted in 52 sites. Next, EPA performed a case-by-case review of the 52 non-NPL sites that remained. This review involved creating case narratives describing the history of releases of hazardous materials and response actions at each site.

As a result of this final analysis, EPA determined that 18 of the 52 sites had "legacy" chemical manufacturing-related environmental impacts predating the modern regulatory framework. Therefore, 34 sites remained following the screening for legacy impacts. As part of its detailed analysis of the 34 sites, EPA concluded that the releases at four of the facilities (5 N Plus, Landrum Chemical, Technic and Champion Technologies) were one-time events that did not require significant Fund expenditures.[11] As a result, these four sites were screened out. Therefore, a total of 30 non-NPL sites survived EPA's screening process.

2.2 Optima's Critique of EPA's Analysis of Federally Funded Actions

Overall, EPA undertook a thorough screening analysis of both the NPL and non-NPL sites. This is especially true in terms of identifying the "short list" of 34 NPL sites and 52 non-NPL sites that required detailed analysis. EPA's analysis ultimately led to the identification of four NPL sites and 30 non-NPL sites that had federally funded response actions and may have experienced environmental impacts under the modern regulatory framework.

There are two areas of EPA's screening analysis that are worthy of comment. The first pertains to the selection of 1980 as the cutoff date for modern regulatory framework. The second concerns the conclusions drawn from the case narratives.

2.2.1 Optima's Critique of EPA's Choosing 1980 as the Cutoff Date

EPA chose 1980 as the cutoff date to initially screen out legacy contamination for three reasons. First, 1980 was the year when CERCLA was enacted. Second, it was the year when EPA promulgated the initial regulations under RCRA Subtitle C governing the generation, treatment, storage, and disposal of hazardous waste.[12] And, third, it would be a conservative screen (i.e., it would retain more sites in the analysis).

EPA acknowledges in the proposed rule that only the initial RCRA regulations were in place in 1980 (indeed, they only became effective in November 1980), and that those regulations were refined, expanded and enhanced several times over the next several decades. Moreover, EPA acknowledges that its enforcement authorities expanded in the 1980s as the RCRA program matured. Most notably, enactment of the Hazardous and Solid Waste Amendments (HSWA) in 1984 resulted in many regulatory changes and enhanced enforcement mechanisms. HSWA created the Land

[11] 85 FR 10128 https://www.federalregister.gov/d/2020-03401/p. 10138
[12] 85 FR 10128 February 21, 2020 https://www.federalregister.gov/d/2020-03401/p. 10135

Disposal Restrictions (LDR) program, codified in 40 CFR part 268, which prohibits the land disposal of untreated hazardous wastes. HSWA also substantially expanded corrective action authorities for permitted RCRA treatment, storage and disposal (TSD) facilities, as well as facilities operating under interim status,[13] requiring facilities to address the release of hazardous wastes and demonstrate financial responsibility for completing the required corrective actions which, as a result, further reduced the risks that sites would have to be addressed under CERCLA.[14]

Of all the environmental laws enacted during that timeframe that might have minimized the number of future Superfund sites, by far the most relevant is RCRA. Superfund sites generally were created by improper disposal of hazardous wastes, and RCRA stringently regulated how hazardous waste could be managed.

The RCRA regulations most relevant to preventing Superfund sites were the LDRs, which prohibit the land disposal of most hazardous wastes unless those wastes have been treated to meet technology-based treatment standards "which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (42 U.S.C. § 6924[m][1]). These LDRs were not fully phased-in until the "third third" rules were issued in July 1990. Thus, 1990 marks the "inflection point" when the regulations with the greatest propensity to minimize the creation of future Superfund sites were in place.

EPA's decision to use 1980 as the cutoff date in order to apply a conservative screen and retain more sites for the analysis was, thus, overly conservative. If the purpose of the analysis was to assess the risk of federally funded response options by identifying those sites that required funding under the modern regulatory framework, it is clear that this framework was not fully in place until 1990. By choosing a cutoff date a decade before the modern regulatory framework was fully in place, EPA's analysis retains sites that did not have a record of releases under the modern framework and, thus, overstates the actual risk of taxpayer-funded cleanups.

2.2.2 Optima's Critique of EPA's Case Study Narratives

In the time available for reviewing EPA's screening process, Optima focused on reviewing, summarizing and analyzing the information provided within the 34 site case narratives. Optima created two summary tables based on the information found in the case narratives. These tables are provided in Appendix I. Table 1 summarizes the four NPL case narratives and Table 2 summarizes the 30 non-NPL site narratives.

Section 2.2.2.1 below provides an analysis of the four NPL sites summarized in Table 1. Section 2.2.2.2 provides an analysis of the 30 non-NPL sites summarized in Table 2.

Optima analyzed EPA's case study narratives in order to assess:

[13] "Interim status facilities" are facilities that were in existence on the effective date of the regulations and subject to the requirement to have a RCRA permit.

[14] IBID https://www.federalregister.gov/d/2020-03401/p. 10140

- Validity of EPA's analytical approach for identifying sites that experienced hazardous releases under the modern regulatory framework;
- Relevance of EPA's data on the timing and nature of releases at identified sites;
- Accuracy of information presented by EPA on Superfund expenditures; and,
- Whether the identified releases might have been prevented by applicable regulations and enforcement authorities in effect under the modern regulatory framework.

Tables 1 and 2 (see Appendix I) were created to facilitate this analysis. In addition to the metadata identifying the facility name, state, EPA identification number, and operations type, these tables include the following columns (fields) that enable an at-a-glance analysis of the individual facilities and a comparison of the facilities across these fields:

- Operations Start Year
- Operations End Year
- Events that Led to Either Release of Hazardous Substances or Site Discovery
- Event Year
- Expenditures
- Review Comments
- Confirmed Cost
- Release before 1980
- Release before 1990

The "Operations Start Year" and "Operations End Year" columns are important because they provide an indication of the possibility that environmental impacts may be attributable to releases occurring prior to 1980 (EPA cutoff year) or 1990 (year when RCRA LDRs where fully in place).

The "Events that Led to Either Release of Hazardous Substances or Site Discovery " and the "Event Year" columns are also important because they show in many cases that environmentally hazardous releases may have occurred years earlier than when they were discovered. Discoveries of releases are often the result of regulatory inspections following events such as bankruptcy, property purchase, fires or community complaints. In other words, the year that hazardous releases are discovered often does not coincide with the likely time frame of the environmental impact. However, EPA's analysis of the case narratives often appears to take the position that the "release" and "site discovery" dates are one and the same. The result is that EPA appears to have overestimated the number of sites at which Fund-financed responses were required for releases occurring only during the period of modern regulation.

The costs reported in the "Expenditures" field are taken directly from the case narratives. The "Confirmed Cost" field contains information regarding whether these costs could be confirmed via a search of the Superfund Site profile database or the proposed rule docket (EPA-HQ-OLEM-2019-0086).

The "Review Comments" column provides additional information from the case study narratives and additional comments regarding the information contained in the narratives.

And, the "Release before 1980/1990" fields report Optima's opinions regarding the likelihood of releases occurring before these dates, based on a review of the case narratives.

2.2.2.1 Optima's Critique of EPA's Case Study Narratives of NPL Sites

Table 1 shows that all four of the NPL sites that remained following the application of EPA's screening process had operation start dates prior to the development of the modern regulatory framework. This is true regardless of whether 1980 or 1990 is used as the cutoff date for this framework. Diaz Chemical Corporation and Eldorado Chemical Company began operations in the 1970s (1974 and 1978, respectively). Mississippi Phosphate Company began operations in 1958 and White Chemical Company began operations in 1931.

All four companies ceased operations either as result of bankruptcy or, in the case of Eldorado, simply going out of business with abandonment of the site. All four facilities had a long history of regulatory non-compliance prior to bankruptcy/abandonment.

Based solely on EPA's data, it is likely that the Diaz, Eldorado and Mississippi Phosphate facilities had environmentally hazardous releases prior to the 1980 cutoff date. Given the time frame of the startup of the White Chemical facility (1931) and industry practices in the 1930s, '40s and '50s, this facility likely had releases prior to 1980. In sum, all facilities likely had hazardous releases prior to 1990, as well.

In conclusion, all four NPL sites either had or likely had hazardous releases prior the modern regulatory framework, regardless of the year chosen as the cutoff year for the start of this framework. All had a long history of non-compliance, which further supports the conclusion that releases occurred prior to the modern framework. *Therefore, it appears that no site was placed on the NPL based solely on environmental releases occurring under the modern regulatory framework*.

Operations and hazardous releases at facilities such as the four NPL sites examined by EPA likely would have been detected much earlier under the current regulatory framework. Federally funded response actions at these sites totaled $84.4 million as of the time of EPA's analysis for the proposed rule (~2019). The current regulatory framework would minimize the likelihood of companies operating in this manner and creating future risk of taxpayer-funded response actions.

2.2.2.2 Optima's Critique of EPA's Case Study Narratives of non-NPL Sites

Table 2 is a summary of the case study narratives for the 30 non-NPL sites identified by EPA's screening process as having federally funded response actions and possibly experiencing environmental impacts under the modern regulatory framework. The start of operations for 15 of these sites is unknown. This fact alone makes it difficult to say whether impacts at these sites occurred prior to the modern regulatory framework. Seven of these sites had start years of 1980 or later (highlighted on the table).

Five of these sites experienced releases associated with fires or other one-time events (highlighted on the table). All of these one-time events occurred in 2000 or later. These events exposed larger

issues at the sites related to improper handling of hazardous material. Releases due to the 2015 Oregon Chemical Barn fire event appear to be a direct result of the fire.

Analysis of the totality of the information associated with each site leads to the conclusion that only six of these facilities had releases under the modern regulatory framework, regardless of the chosen cutoff date (see highlights on the last two columns of the table). These facilities include:

- Advanced Asymmetrics;
- Maine Alum Grand Isle;
- Oregon City Chemical Barn;
- Queen Avenue Property Absorbent Technology;
- CES PACES – Port Arthur; and
- Indmar Coatings.

In conclusion, detailed analysis of EPA's case study narratives indicates that only six of the facilities had hazardous releases that can be reasonably deemed to have occurred under the modern regulatory framework. These six sites required *a total fund expenditure of only $2.8 million.*

2.3 OPTIMA'S ESTIMATION OF POTENTIAL FUTURE EXPENDITURES

As previously stated in Section 2.2.2.1; federally funded response actions at the four NPL sites totaled $84.4 million. Also, at the time of EPA's analysis, federally funded expenditures at the 30 non-NPL sites totaled $20 million (see Appendix I, Table 2). Therefore, a total of $104 million in Fund expenditures had occurred as of the proposed rule.

In the proposed rule, EPA noted that future Fund expenditures are likely to continue at several sites. In particular, the Agency noted that Fund expenditures at the Mississippi Phosphates facility, which totaled $8.4 million as of the proposed rule, could end up totaling $132.6 million.[15]

Optima performed an analysis to estimate the potential future Fund expenditures at the identified four NPL and 30 non-NPL sites. To complete this analysis, Optima sought to confirm the actual cost expenditures to date and obtain information regarding potential future expenditures for each facility. Information on actual expenditures was not readily available via online data searches. Therefore, Optima accepted the values provided in the case narratives. Optima was able to locate a number of removal action memoranda and pollution reports (POLREPs) in the proposed rule docket that provided information such as budget ceilings, project budgets and, in some cases, actual expenditures, although not necessarily final expenditures.

The difference between project cost ceilings (or project budgets) and the case narratives expenditures was used to estimate total potential future Fund expenditures. Table 1 below indicates estimated potential future Fund expenditures of about $135 million. This future amount still only represents 12.7% of one year's Superfund budgetary authority.

[15] 85 FR 10128 February 21, 2020 https://www.federalregister.gov/d/2020-03401/p. 10137

Facility Name	Site Type	Expenditures as of Proposed Rule	Approved or Budgeted Expenditures	Potential Future Expenditures
Diaz Chemical Corporation	NPL	$28,053,505	$37,000,000	$8,946,495
Mississippi Phosphate Company	NPL	$8,642,738	$132,600,000	$123,957,262
Advanced Asymmetrics Removal	Non-NPL	$316,000	$1,050,000	$734,000
Petri Paint	Non-NPL	$99,000	$360,000	$261,000
Karl Industries	Non-NPL	$111,000	$585,454	$474,454
Reilly Coal Tar	Non-NPL	$33,000	$150,000	$117,000
McMurray Road Chemical Removal	Non-NPL	$216,700	$331,000	$114,300
Total		$37,471,943	$172,076,454	$134,604,511

Table 1 - Potential Federally Funded Future Expenditures

Production of Table 1 required a significant amount of analysis and interpretation due to the limited availability of some data and the poor quality of other data. For example:

- Some sites had a project ceiling greater than Fund expenditures and the project was completed many years in the past (see Smith Chemical non-NPL site). In such cases, the Fund expenditure amount was assumed accurate and potential future Fund expenditures were not estimated.
- For other sites, the Fund expenditures exceeded the project budget and the work was also performed a number of years in the past (see Traylor Chemicals non-NPL site). In such cases, the Fund expenditure amount was assumed accurate and potential future Fund expenditures were not estimated.
- For other sites the project cost ceiling and Fund expenditures were reasonably close and there was no need to estimate potential future Fund expenditures (see Dye Specialties Inc. non-NPL site).
- Lastly, for some sites, a project cost ceiling or a budget could not be identified. In such cases, potential future Fund expenditures were not estimated (see Eldorado Chemical Company NPL site).

2.4 Overall Conclusions from Optima's Critique of EPA's Case Study Narratives of Federally Funded Response Sites

Detailed analysis of the case narratives indicates that:

- No site appears to have been listed on the NPL for releases occurring under the modern regulatory framework, whether that framework is deemed to have begun in 1980 or 1990; and.

- Only six other facilities where Superfund response costs have been incurred had hazardous releases that can be reasonably deemed to have occurred under the modern regulatory framework, again regardless of whether that framework is deemed to have begun in 1980 or 1990. Those costs amounted to a total of $2.8 million.

Based on these findings, EPA reasonably concluded that it would not be appropriate to impose financial responsibility requirements on the more than 13,000 currently operating chemical facilities, given the very small likelihood that any significant amount of federally funded response costs will be incurred at any of these sites.

3.0 Other Financial Assurance Mechanisms Not Recognized/Considered by EPA

3.1 Financial Assurance Under RCRA

The final rule explains that the RCRA regulations "were designed to prevent the[] types of releases" that are "most prevalent" among the cleanup cases that EPA analyzed, and to "assure that past spills are cleaned up by facility owners and operators."[16] This is undoubtedly part of the reason that, so far as Optima can determine, only two of the 34 facilities on which EPA focused were RCRA-permitted hazardous waste treatment, storage and disposal (TSD) facilities.[17] As discussed in Section 2.2.1, the Hazardous and Solid Waste Amendments of 1984 substantially expanded corrective action authorities for both permitted RCRA treatment, storage and disposal (TSD) facilities and facilities operating under interim status. Of particular interest to Optima's review, these refinements required all such facilities to demonstrate financial responsibility for completing any needed RCRA corrective actions.

Optima performed an analysis to determine the number of chemical manufacturing facilities that are currently providing financial assurance under RCRA, the amount of assurance each facility is providing, and the total value of this financial assurance for the entire industry. This was performed by extracting data from two online databases: the RCRAInfo database and ECHO database.

The RCRAInfo database contains a financial assurance module which includes the EPA ID number, financial assurance cost estimate amount, and year of the financial assurance cost estimate for every facility (not just chemical manufacturing facilities) currently required to have financial assurance under RCRA. The cost estimates can go up or down each year depending on remedial activities occurring at a given site or discoveries of new environmental impacts. Therefore, the data extracted from this database had to be scrubbed to ensure that only the most recent cost estimate amount and year were retained.

The ECHO database includes information such as EPA ID number, site name, NAICS number and compliance status. Optima utilized this database only for NAICS 325 facilities (i.e., the chemical manufacturing industry). Extracts from the two databases were combined using the EPA ID number as the key code. The result was a listing of the most recent RCRA financial assurance estimate for all chemical industry facilities that currently have such estimates. This list appears in Appendix II.

The chemical manufacturing industry currently provides more than $3.94 billion in financial assurance for 287 facilities. Table 2 below presents the total amount of RCRA financial assurance that the chemical manufacturing industry provides, by state. Figures 2, 3 and 4 provide alternative depictions of the relative magnitude of the cost for the RCRA financial assurance provided, by state.

[16] *Id.* at 10139.

[17] Optima identified two sites, Westwood Chemical Corporation and Reilly Coal Tar, both of which are non-NPL sites, by integrating data extracted from the ECHO database for both active and inactive sites with Appendix I, Tables 1 and 2.

State	FA Cost
FL	$1,771,309,994
TX	$501,232,962
MI	$318,133,349
NY	$237,773,599
IL	$141,388,292
WV	$116,067,144
LA	$105,905,807
AL	$91,350,049
OH	$86,338,012
MS	$77,541,571
GA	$61,671,297
IA	$49,158,167
NJ	$35,648,850
KS	$35,229,476
VA	$32,702,688
MN	$30,798,151
DE	$30,397,240
KY	$29,342,198
NC	$24,108,841
TN	$22,914,409
AR	$22,283,759
SC	$20,301,741
MO	$17,908,159
WI	$17,587,586
IN	$11,704,893
PA	$10,728,175
MD	$10,395,900
CT	$9,361,379
AZ	$8,427,474
WA	$4,959,256
ND	$3,244,624
OK	$2,302,652
NE	$2,293,523
MA	$2,000,000
MT	$1,404,600
SD	$376,297
Total	$3,944,290,000

Table 2 - Chemical Manufacturing Industry RCRA Financial Assurance Cost, by State

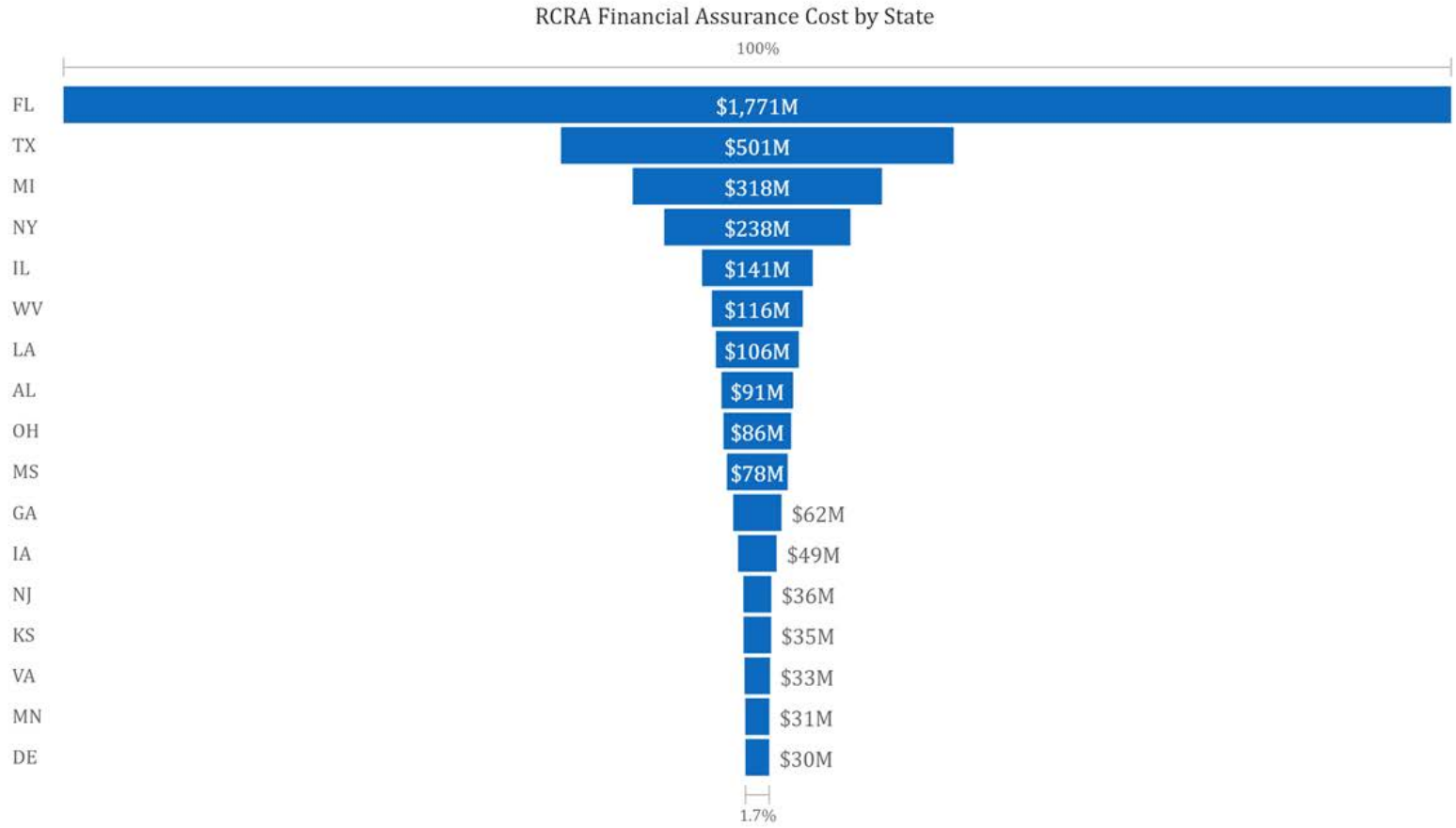

Figure 2 - Tornado Diagram - Relative Magnitude of RCRA Financial Assurance Cost, by State

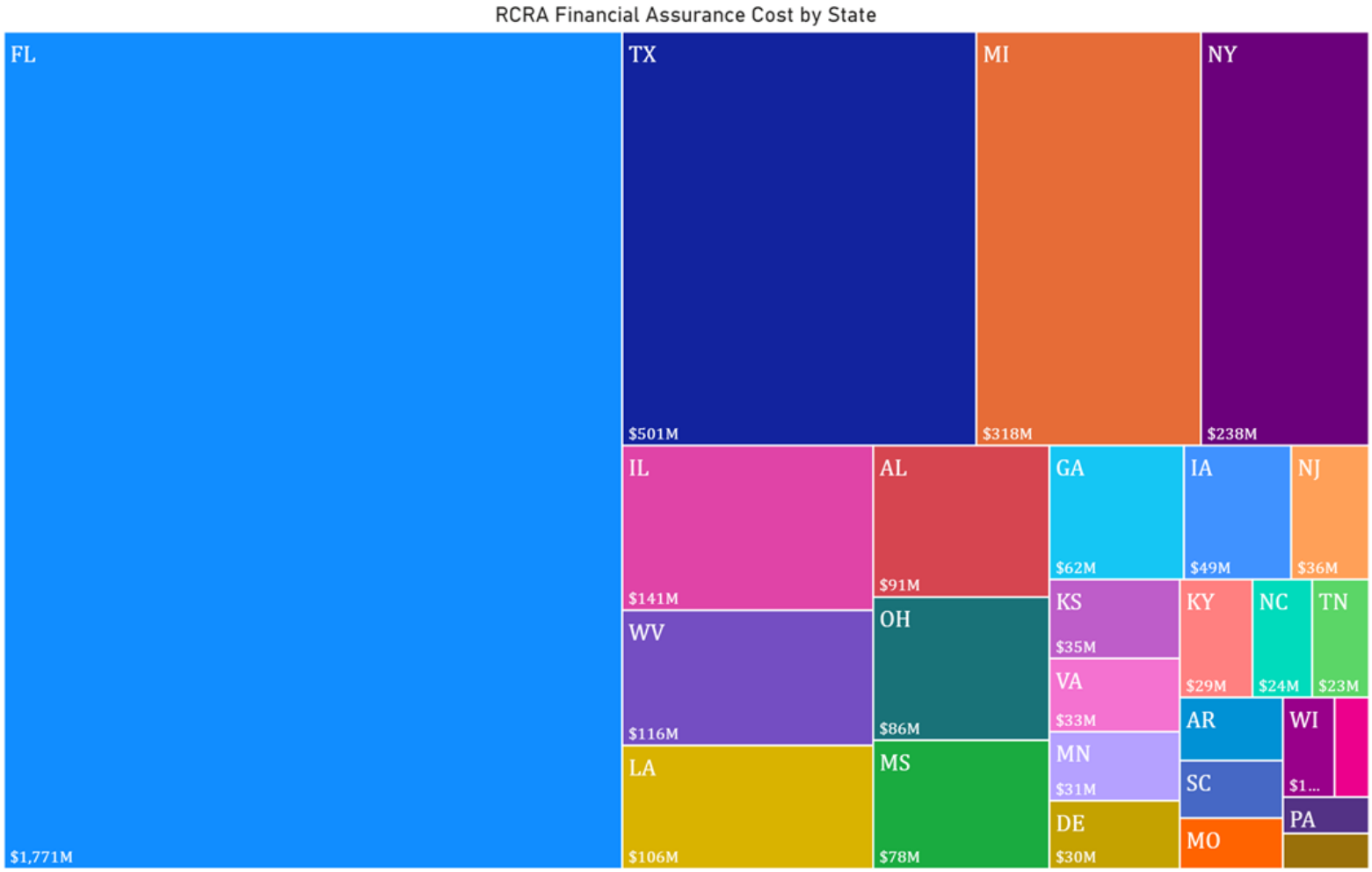

Figure 3 - Treemap Diagram - Relative Magnitude of RCRA Financial Assurance Cost, by State

Figure 4 - United States Map - Relative Magnitude of RCRA Financial Assurance Cost, by State

3.2 SEC and GAAP Financial Reporting Requirements

EPA's proposed rule does not recognize that all public corporations are required by United States Securities and Exchange Commission (SEC) Regulation S-K and United States Generally Accepted Accounting Principles (GAAP) to estimate and report annually their environmental and asset retirement obligations. Regulation S-K is generally focused on qualitative descriptions, while the related regulation S-X focuses on financial statements. However, these qualitative descriptions are typically included within a corporation's annual report.

The S-K regulations that pertain to the reporting of environmental liabilities are:

- S-K Item 101 – Descriptions of Business
- S-K Item 103 – Legal Proceedings
- S-K Item 303 – Management's Discussion and Analysis (MD&A) of financial condition and results of operations

These regulations are codified in 17 CFR Sections 229.101, 229.103, and 229.303.

Accounting and auditing standards in the United States are promulgated and regulated by various federal, state, and self-regulatory organizations (SROs). Throughout its history, the SEC has relied on SROs to establish financial reporting standards for the private sector; these are known as Generally Accepted Accounting Principles (GAAP). Currently, the SEC recognizes the Financial Accounting Standards Board (FASB) as the designated authority for establishing GAAP.[18]

The Accounting Standards Codification, maintained by FASB, is the only current source of United States GAAP. Guidance on reporting environmental obligations (e.g., remediation) is provided by Accounting Standards Codification (ASC) 410-30. Guidance on reporting asset retirement obligations is provided by ASC 410-20. Disclosure of these obligations is used by investors and shareholders to evaluate the overall financial health of a company. Private companies may perform similar analyses for purposes of borrowing, and mergers and acquisitions.

Reporting environmental and asset retirement obligations, even with the aid of ASC 410-30 and ASC-410-20, can be challenging. This is because of the uncertain nature of remediation and decommissioning projects. To produce reasonable estimates, a significant degree of expert judgment and, in some cases, probabilistic financial modeling, is required. To assist with this estimating and disclosure process, ASTM International (formerly known as the American Society for Testing and Materials) has produced two guidance documents:

[18] Congressional Research Service. (2017, July 19) Accounting and Auditing Regulatory Structure: U.S. and International, Gnanarajah, R., p. 1

- Standard Guide for Estimating Monetary Costs and Liabilities for Environmental Matters – ASTM Designation E2137-17; and,

- Standard Guide for Disclosure of Environmental Liabilities – ASTM Designation E2173-16.

Corporations commonly use the ASC 410-30 and 410-20 guidance, along with the above ASTM standards and in consultation with external auditors, to make high quality representative estimates of their environmental and asset retirement obligations. These estimates can be larger than the RCRA financial assurance estimates, because they include the impact of not only RCRA but other federal and state environmental regulations (e.g. underground storage tank regulations). They also include estimates associated with voluntary cleanup programs. Lastly, asset retirement obligations include the full cost of demolishing and decommissioning items such as building structures and processing equipment – not just the cost of environmental response obligations.

As a result of these SEC and FASB requirements, public companies are already required to demonstrate to the investing public that they are maintaining financial responsibility for material environmental response liabilities.

4.0 Summary and Conclusions

Optima's technical review and critique supports EPA's proposed determination that the combination of modern federal and state regulatory programs, the industry's solid financial performance, existing financial responsibility requirements, and voluntary industry stewardship programs have greatly reduced the future risk of federally financed response actions. It demonstrates that EPA has a sound factual and technical basis for the proposed rule.

The review and critique included an analysis of the screening process developed by EPA to identify sites where pollution occurred under the modern regulatory framework. Overall, EPA provided a thorough screening approach for both NPL and non-NPL sites. This is especially true in terms of identifying the "short list" of 34 NPL and 52 non-NPL sites that required detailed analysis. This detailed analysis ultimately led to the identification of four NPL and 30 non-NPL sites that had federally funded response actions and may have experienced environmental impacts under the modern regulatory framework.

EPA chose 1980 as the cutoff date for implementation of the modern regulatory framework. A strong case can be made for using 1990 as the cutoff year because, by this date, the RCRA LDRs were fully implemented. However, further review of the case study narratives indicated that the choice of cutoff date had little impact on the findings of this technical review.

A detailed review of the case narratives for the four NPL that remained following EPA's screening indicates that all four NPL sites either had or likely had hazardous releases prior to the modern regulatory framework. This is regardless of the year chosen as the cutoff year for the start of this framework. All of these sites had a long history of non-compliance. These sites are not representative of sites having hazardous releases under the modern regulatory framework. The current regulatory framework would not allow new company startups to operate in such a manner and create future risk of taxpayer-funded response actions.

Detailed review of the case narratives for the 30 non-NPL sites that remained after EPA's screening indicates that only six of the facilities had environmental impacts that can reasonably be deemed as occurring under the modern regulatory framework. These six facilities had a total fund expenditure of $2.8 million. Under RCRA, the chemical manufacturing industry currently provides more than $3.94 billion in financial assurance associated with 287 facilities.

Finally, all public corporations are required by United States Securities and Exchange Commission (SEC) S-K regulations and United States Generally Accepted Accounting Principles (GAAP) to estimate and report annually their environmental and asset retirement obligations. This effectively requires these companies to demonstrate annually their financial responsibility for material environmental response liabilities.

Based on Optima's review and critique of the analysis performed by EPA and the additional information presented here, the Agency was amply justified in concluding that it would not be appropriate to impose additional financial responsibility requirements under CERCLA 108(b).

Appendix I

Table 1 – Summary of NPL Site Case Study Narratives

Table 2 – Summary of Non-NPL Site Case Study Narratives

Appendix I, Table 1 – Summary of NPL Site Case Study Narratives

Facility Name	State	EPA ID	Operations Type	Operations Start Year	Operations End Year	Event(s) that Led to Either Release of Hazardous Materials or Site Discovery	Event Year(s)	Fund Expenditures	Review Comments	Confirmed Cost	Hazardous Materials Releases before 1980	Hazardous Materials Releases before 1990
Diaz Chemical Corporation	New York	NYD067532580	Manufacturer of specialty organic intermediates for the agricultural, pharmaceutical, photographic, color and dye, and personal care products industries	1974	2003	Diaz filed for bankruptcy and abandoned the facility in June 2003. The company left behind a multitude of chemicals in drums and tanks. Following the bankruptcy filing EPA, under its removal authority, mobilized to the site and began providing 24-hour security at the Diaz Chemical facility to prevent public access.	2003	$28,053,505	The Diaz Chemical facility had a long history of chemical releases to the environment, extending from 1975 to 2002. In 2003 EPA began operating and maintaining the groundwater extraction and treatment system at the Diaz Chemical facility. In addition, the EPA performed extensive removal actions including the removal of drums, bulk waste from tanks, reactor vessel, tanks facility piping, transformers containing polychlorinated biphenyls and the demolition of various site buildings.	Could not locate actual cost data. A March 2017 EPA document titled *Explanation of Significant Differences - Diaz Chemical Corporation Superfund Site* indicates site response actions to cost approximately $37 million	Likely	Likely
Eldorado Chemical Company	Texas	TXD057567216	Cleaning products manufacturer	1978	2007	As a result of compliance inspections in the 1980s, three areas of concern (contaminated soils) at the site were identified by the Texas Water Commission, a predecessor agency to the Texas Commission on Environmental Quality (TCEQ). The site was inspected and listed as a RCRA Significant Non-Complier in May 1999. Preliminary Assessment/Site Investigation was completed on November 29, 2011. The site was proposed to the National Priorities List on April 7, 2016 and finalized on September 9, 2016.	1980s, 1994, 1999, 2011, 2016	$568,524	It appears that this company went out of business in 2001 after a long history of non-compliance.	Could not locate actual cost data. An April 2017 EPA document tilted *EPA Region 6 Begins Field Work for Remedial Investigation* indicates that field work for the remedial investigation began on April 24, 2017.	Likely	Yes
Mississippi Phosphate Company	Mississippi	MSN000403508	Diammonium phosphate (DAP) fertilizer producer	1958	2014	The plant that ceased operations in December 2014 following bankruptcy, leaving more than 700 million gallons of low-pH contaminated wastewater behind.	2014	$8,642,738	Region 4 prepared a Hazard Ranking System (HRS) package and the Site was proposed for inclusion on the National Priorities List (NPL) on August 3, 2014. EPA was formally added the MPC Site to the Superfund National Priorities List and proposed a cleanup plan for portions of the MPC Site in January 2018. Before going out of business in 2010 this company had a long history of non-compliance	Could not locate actual cost data. An Action Memorandum for a Non-Time Critical Removal Action, Consistency Exemptions Request and Ceiling Increase at the Mississippi Phosphates Corporation National Priorities List Site, Pascagoula, Jackson County, Mississippi dated April 17, 2018 indicates that the cost of the removal action at the site could be as high as $132.6 million.	Likely	Yes
White Chemical Corp	New Jersey	NJD980755623	Manufactured a variety of acid chlorides, brominated organics, mineral acids, most notably hydriodic acid, and fire-retardant compounds.	1931	1988	Company entered Chapter 11 Bankruptcy in 1988 and operated site until 1990. Beginning in 1989, the site was the subject of numerous inspections, environmental assessments, investigations, and removal actions.	1989	$47,091,201	Site operations date back until 1931. Before going out of business in 1990, this company had a long history of non compliance.	Could not locate actual cost data. However, three different RODs have been issued for this site. In 1991 a ROD was issued for Operable Unit 1 (OU1) to address the stabilization of the site and removal of leaking drums and other containers of chemical waste (completed in 1993). The cost of this remedial action was estimated at $22 Million In 2005 a ROD was issued for OU2 to address contaminated surface and sub-surface soils, demolition and disposal of nine on-site buildings and above-ground storage tanks (completed in 2009) . The cost of this remedial action was estimated at $7.7 million. The 2012 ROD for OU3 was issued to address contaminated groundwater at the site. The cost of this remedial action was estimated at $22.3 million. The total estimated cost for all three OUs is $52 million. Data for actual costs could not be located. The estimated cost is reasonably close to the $47 million in Fund expenditures identified by EPA during the its analysis for the proposed rule. Therefore the $47 million may be the total cost for this site.	Yes	Yes

Appendix I, Table 2 – Summary of Non-NPL Site Case Study Narratives

Facility Name	State	EPA ID	Operations Type	Operations Start Year	Operations End Year	Event(s) that Led to Either Release of Hazardous Substances or Site Discovery	Event Year(s)	Fund Expenditures	Review Comments	Confirmed Cost	Hazardous Materials Releases before 1980	Hazardous Materials Releases before 1990
Moss Soap & Chemical	Florida	FLN000407422	Product packaging and mixing lines, chemical storage and shipping	1940	2002	Operations ceased in 2002 following an inspection of the site on February 28, 2002 by the Dade County Buildings Department. The Buildings Department declared the building unsafe and ordered the cessation of operations at the site.	2002	$516,000	Site had long history of improper drum storage. Operations ceased following site inspection in 2002.	Yes. Able to confirm through a progress report dated 4/5/2014 a total cost of $563,676	Yes	Yes
Oz Technology, Inc.	Idaho	IDN001002848	Production of hydrocarbon refrigerants	Unknown	Unknown	Fire & Explosion	2009	$130,000	Improper storage, disposal and handling	No. Could not locate data via online search	Unknown	Unknown
Advanced Asymmetrics Removal	Illinois	ILN000506124	Synthesized specialty chemicals for the pharmaceutical industry and university research.	1994	2011	Inspection by Illinois EPA following call from purchaser of site who was unaware of contamination	2016	$316,000	Improper storage and handling of drums and containers	No. Docket contains an Action Memorandum dated 11/9/2015 requesting $1.05 million.	No	No
National Lacquer and Paint	Illinois	ILN000508951	Site was used to manufacture lacquers and paints for over forty years	1950	2002	Operations ceased in 2002 following an inspection of the site on February 28, 2002 by the Dade County Buildings Department. The Buildings Department declared the building unsafe and ordered the cessation of operations at the site.	2004	$2,915,000	Improper storage and handling of drums, pails and jars of hazardous substances	Yes, able to confirm at least $2,862,800 in an Action Memorandum dated 11/2/2003	Unknown	Yes
Hoopeston Fertilizer	Illinois	ILN000510084	Agricultural product supply company	Unknown	2002	Inspection by Illinois and Federal EPA in 2007	2007	$481,000	Improper handling of drum and containers	No. Docket contains an Action Memorandum dated 10/10/2014 requesting $664,000.	Unknown	Unknown
Livingston Paint	Indiana	INN000510065	Manufacturer of paint products	1985	2005	EPA Inspection	2005	$85,000	Improper storage and handling of drums and containers. Site also included two 5,000 gal tanks	No. Docket contains an Action Memorandum dated 9/26/2006 requesting $423,000.	Unknown	Yes
Traylor Chemicals Site	Indiana	INN000510934	Custom fertilizer manufacturing plant.	Unknown	Abandoned sometime before 2009	EPA and Indiana Department of Environmental Management conducted a site reconnaissance in January 2013. EPA then performed a Site Assessment, including sample collection, in April 2013.	2013	$835,000	Improper storage and handling of drums and containers	No. Docket contains Pollution Report (POLREP) #16 dated 5/31/2014 indicating total cost at that time of $672,550.	Unknown	Unknown
Coco Resources Fire	Louisiana	LAN000607076	Chemical recycling	Unknown	Unknown	Warehouse fire and evacuation of more than 1,000 residents in 2010.	2020	$1,768,900	Nearly 4,000 drums compromised as result of fire. EPA assisted with proper removal and disposal of drums and liquids and soil removed from drainage ditches.	Yes. Docket contains a removal action memorandum dated 11/17/2012 indicating a total cost less than $2.0 Million	Unknown	Unknown
Davis Avenue Fire Response Site	Massachusetts	MAN000101941	Abandoned industrial facility that had operated as a dye and soap manufacturer, tannery, and pool chemical storage site, among other uses	Unknown	2016	Fire on June 10, 2016.	2016	$471,500	Site abandoned for 10 to 15 years prior to fire. MassDEP managed runoff from fire suppression and chemicals stored onsite. Mass DEP also disassembled building and removed drums and hazardous materials	No. Docket contains an Action Memorandum dated 6/21/16 requesting $545,000.	Unknown	Unknown
CAI Inc. Site	Massachusetts	MAN000105236	Two operators sharing site. On manufactured inks and coatings the other manufactured surface coatings.	Unknown	2006	On November 22, 2006, an explosion completely destroyed both facilities and the surrounding area. Both operations ceased operations due to the explosion that destroyed the facility.	2006	$1,943,000	Following the testing and demolition operations, drums, containers, and contaminated soil were removed. Demolition also allowed for site stabilization with hazardous material removal.	Yes, reasonably close estimate located. Docket contains an Action Memorandum dated 11/29/2006 indicating an estimated $2.3 million total cost.	Unknown	Unknown
Maine Alum Grand Isle	Maine	MEN000105236	Aluminum sulfate manufacturing operations	1999	2009	Site inspection discovered improper storage of corrosive liquids	2010	$321,000	EPA personnel mobilized at the site in November 2010 to address the removal sulfuric acid and other containers holding hazardous substances.	Yes, reasonably close estimate obtained. Docket contains Pollution Report (POLREP) # dated 9/23/2011 indicating expenditures of $245,00 at that time and a total budget of $425,000	No	No
Saran Protective Coatings	Michigan	MIN000509094	Manufacture of protective coatings for metal products.	1987	2002	EPA site inspection	2003	$372,000	EPA and the Michigan Department of Environmental Quality (MDEQ) inspected and noted environmental compliance issues at the site both during the site's period of operation and after its abandonment.	Yes. Docket contains a removal action memorandum dated 6/18/2004 indicating a project ceiling of $339,000.	Unknown	Yes
Evergreen Products Inc.	Michigan	MIN00510388	Cleaning chemical manufacturing and packaging	Unknown	2008	Owner abandoned site after default on taxes	2009	$205,000	Improper handling of drums and containers of hazardous material	Yes, reasonably close estimate obtained. Docket contains a removal action memorandum dated 9/29/2009 indicating a project ceiling of $252,000	Unknown	Unknown
Lyndon Street Drum Site	Michigan	MIN000510622	Chemical manufacturing facility	Unknown	Unknown	Detroit Fire Department received complaint of odors from the site. EPA site removal assessment	2012	$796,000	Improper storage and handling of drums and containers of hazardous material	Yes, reasonably close estimate obtained. Docket contains a final POLREP dated 1/31/2012 indicating an expenditure to date of $650,000 and a budget of $720,000.	Unknown	Unknown
White Rox Chemical	New Jersey	NJC200400786	Repackaging operation, reducing volumes of high concentrated sodium hypochlorite	Unknown	2006	While fighting a transformer fire caused by lighting, fire department discovered improper drum storage. New Jersey Department of Environmental Protection (NJDEP) inspection following fire.	2011	$347,000	Improper storage and handling of drums and containers of hazardous material	No. Docket contains a final POLREP dated 9/29/2011 indicating an expenditure to date of $192,00 and a budget of $250,000.	Unknown	Unknown
Dye Specialties Inc.	New Jersey	NJD981563687	Manufacturer of aniline dyes for use in printed ink and other industrial products	1927	2003	New Jersey DEP and EPA Site Inspection in 2003	2003	$1,279,000	Improper storage and handling of drums and containers of hazardous materials	Yes, obtained reasonably close estimate. Docket contains a removal action memorandum dated 1/6/2004 indicating a project ceiling of $1,579,000.	Likely	Likely
Petri Paint	New Jersey	NJR000037960	Polyurethane varnish, wood finish, and plastic coating manufacturing	Unknown	2012	Company abandoned facility in 2012 and went into Chapter 7 Bankruptcy proceeding in 2017. NJDEP and EPA inspections of site in 2017	2017	$99,000	Improper storage and handling of drums and containers of hazardous materials	No. Docket contains a final POLREP dated 5/15/2018 indicating an expenditure to date of $249,00 and a budget of $360,000.	Unknown	Unknown

Appendix I, Table 2 (Continued) – Summary of Non-NPL Site Case Study Narrative

Facility Name	State	EPA ID	Operations Type	Operations Start Year	Operations End Year	Event(s) that Led to Either Release of Hazardous Substances or Site Discovery	Event Year(s)	Fund Expenditures	Review Comments	Confirmed Cost	Hazardous Materials Releases before 1980	Hazardous Materials Releases before 1990
Westwood Chemical Corporation	New York	NYD072710502	Manufactured ingredients used in the cosmetic and toiletry industry and flocculent agents used by municipal water suppliers. An involuntary petition filed by creditors on January 28, 2005 put Westwood into bankruptcy.	1973	2004	Bankruptcy and EPA Inspection	2005	$2,952,000	Two known releases occurred at the site during the period Westwood was conducting business operations. In the mid-1980s, an explosion occurred in one of the reactor vessels for production of aluminum chloralhydrate. In 1989, a hydrochloric acid delivery over-filled the on-site storage tank and the acid impacted the surrounding soil. A release occurred during EPA response action in 2005. The site had many signs of improper storage and handling of hazardous materials in tanks, drums and other containers	No. Docket contains a removal action memorandum dated 10/31/2005 indicating a project ceiling of $2,450,000.	Likely	Likely
Karl Industries	Ohio	OHN000507766	Specialty chemical manufacturer	Unknown	2016	On December 30, 2016, a fire destroyed the laboratory on site. The fire resulted in the destruction of the lab and all chemicals within. Runoff from the fire damaged laboratory contained elevated levels of chemicals such as acetone, nickel and cyanide. Ohio EPA oversaw the cleanup of the laboratory. In January 2017, OEPA issued a Notice of Violation to Karl Industries for unauthorized release of a corrosive solution into a tributary of the Chagrin River and a wetland.	2016	$111,000	EPA lead cleanup and removal actions to address site contamination following the fire.	No Docket contains a removal action memorandum dated 6/18/2017 indicating a project ceiling of $585,454.	Unknown	Unknown
Smith Chemical	Ohio	OHN000509086	Chemical manufacturing, custom chemical blending, packaging and brokerage, and chemical distribution	1976	2001	On May 18, 1993, Smith filed Chapter 7 bankruptcy. Service Chem of Ohio (SCO) began facility operations around 1994, and ceased operations in November 2001. The owners and operators of SCO and Smith Chemical Corporation are one and the same.	2001	$355,000	Ohio EPA and Federal EPM lead cleanup and removal of drums other containers of hazardous material from the site.	No. Docket contains a removal action memorandum dated 11/18/2003 indicating a project ceiling of $1,119,601.	Likely	Likely
DeSanti Paint Company	Ohio	OHN000510594	Paint Manufacturing Company	1947	2010	EPA Inspection	2011	$184,000	Inspection discovered improper storage and handling of hazardous materials in tanks, drums and other containers	No. Could not locate data via online search	Likely	Likely
Superior Cleaning Solutions	Ohio	OHN00510610	Chemical distribution facility	Unknown	2008	The Dayton Fire Department inspected the SCS property in June of 2011 and noted that the site contained abandoned flammable and corrosive materials stored in excess of the code for inside storage.	2007	$161,000	Improper storage of hazardous ignitable materials	Yes. Docket contains a final POLREP dated 2/28/2012 indicating an expenditure to date of $97,263 and a budget of $174,953.	Likely	Likely
Oregon City Chemical Barn	Oregon	ORN001001384	Blending and packaging of chemicals used in boiler maintenance and boiler water treatment	1970	2015	On April 17, 2015, a fire occurred in the barn. The fire seems to have begun as a result of the contact of incompatible chemicals which had leaked from the containers and reacted with one another and nearby combustible materials. Event lead to assessment and removal operations by Oregon Department of Environmental Quality and EPA	2015	$38,000	Improper storage and handling of hazardous compounds	No. Docket contains a final POLREP dated 4/23/2015 which described removal actions but did not include cost data.	No	No
Queen Avenue Property Absorbent Technology	Oregon	ORN001003165	Manufacturer of an absorbent soil additive and fertilizer that improved the efficiency of crop irrigation	2004	2013	Absorbent Technologies entered bankruptcy and ceased operations in 2013. Company abandoned the site after bankruptcy.	2013	$605,500	Improper storage of acrylonitrile – a flammable and corrosive chemical that is a threat to human health.	No. Docket contains a final POLREP dated 4/18/2014 which described removal actions but did not include cost data.	No	No
Thunder Products	Texas	TXN000606768	Abandoned chemical mixing and repackaging facility	Unknown	1991	EPA Inspection	2007	$131,000	Abandoned drums and other containers of hazardous materials	No. Docket contains a final POLREP dated 6/11/2007 which described removal actions but did not include cost data.	Unknown	Likely
CES PACES - Port Arthur	Texas	TXP490351276	Supplier of chemicals to the paper manufacturing industry	2008	2011	Bankruptcy and abandonment in September 2011. Fifteen process vessels and storage tanks varying in capacity up to 30,000 gallons and drums in various states of degradation left after site abandonment	2011	$1,447,700	EPA lead cleanup and removal actions of large quantities of hazardous materials from process vessels, drums and tanks.	No. Docket contains a final POLREP dated 11/12/2012 which described removal actions but did not include cost data.	No	No
Reilly Coal Tar	Utah	UTD009087644	Producer of creosote oil, electrode binder pitch, and various light-end and heavy-end oils	1924	2002	In 1996, the owner/operator of the site entered into a Corrective Action Agreement (CAA) with the State of Utah for the investigation and remediation of the contamination at the site. In 2016, the owner/operator entered bankruptcy and no remedial actions had been initiated.	2017	$33,000	In June 2017, EPA conducted a removal site inspection at the site in conjunction with the Utah Department of Environmental Quality (UDEQ). EPA observed subsurface contamination consisting of semi-volatile organic compounds (specifically, PAHs) and volatile organic compounds (primarily benzene) throughout the site	No. Docket contains a removal action memorandum dated 11/2/2017 indicating a project ceiling of $150,000.	Likely	Likely
Indmar Coatings	Virginia	VAN000306552	Paint manufacturing and blending facility	1993	Present	EPA Site Inspection	2007	$79,000	In June of 2017, EPA and Indmar Coatings entered into a Consent Agreement over four counts of alleged RCRA and Virginia Hazardous Waste Management Program violations noted during 2014 and 2016 Compliance Evaluation Inspections.	No. Docket contains a final POLREP dated 1/9/2017 which described removal actions but did not include cost data.	No	No
NanoChemonics	Virginia	VAN000306716	Manufactured nanoparticle iron oxides for various industries	Unknown	2020	The company ceased operations in July 2010. The Virginia Department of Emergency Management and EPA visited the site in August 2010	2010	$819,000	During site visit EPA observed an unknown amount of residual chemical substances in tanks, containers, lagoons, trenches, drains, equipment, piping systems and other places that posed a threat of release. Consent Order for site remediation signed with new site owner, STNP LLC, in April 2011	No. Docket contains a removal action memorandum dated 9/30/2010 indicating a project ceiling of $1,959,400.	Unknown	Unknown
McMurray Road Chemical Removal	Washington	WAN001001501	May have been a fireworks manufacturing facility or chem	Unknown	Unknown	Site visits in 2016 by Washington Department of Ecology and EPA	2016	$216,700	Improper storage of various containers of hazardous materials	Yes, obtained reasonably close estimate. Docket contains a removal action memorandum dated 3/3/2016 indicating a project ceiling of $331,000.	Unknown	Unknown

Appendix II

RCRA Financial Assurance Cost, by Facility

Appendix II - RCRA Financial Assurance Cost, by Facility

Site Number	Site Name	EPA ID	City	State	Year Estimated	Cost
1	MOSAIC FERTILIZER LLC NEW WALES FACILITY	FLD084717545	MULBERRY	FL	2019	$528,840,000
2	MOSAIC FERTILIZER LLC - RIVERVIEW FACILITY	FLD064696107	RIVERVIEW	FL	2019	$387,660,000
3	MOSAIC FERTILIZER LLC - BARTOW FACILITY	FLD003952033	BARTOW	FL	2019	$387,090,000
4	THE DOW CHEMICAL COMPANY	MID000724724	MIDLAND	MI	2018	$284,659,900
5	MOSAIC FERTILIZER, LLC PLANT CITY FACILITY	FLD046088829	PLANT CITY	FL	2018	$233,698,208
6	DOW TEXAS OPERATIONS FREEPORT	TXD008092793	FREEPORT	TX	2018	$149,485,400
7	MOSAIC FERTILIZER LLC GREEN BAY FACILITY	FLD043055003	BARTOW	FL	2019	$139,610,000
8	HONEYWELL INTL INC	ILD006278170	METROPOLIS	IL	2018	$127,712,016
9	MOSAIC FERTILIZER LLC SOUTH PIERCE FACILITY	FLD092980150	MULBERRY	FL	2019	$92,200,000
10	M P M SILICONES LLC	NYD002080034	WATERFORD	NY	2019	$86,250,520
11	FMC CORPORATION	NYD002126845	MIDDLEPORT	NY	2019	$70,000,000
12	BAYER CROPSCIENCE GOFF MOUNTAIN LANDFILL	WVR000533836	NITRO	WV	2019	$43,600,000
13	FORMOSA PLASTICS POINT COMFORT PLANT	TXT490011293	POINT COMFORT	TX	2019	$36,862,198
14	OCCIDENTAL CHEMICAL-NIAGARA PLANT PO BOX 344 NIAGARA FALLS NY	NYD000824482	NIAGARA FALLS	NY	2019	$34,671,639
15	ROHM AND HAAS CHEMICALS, LLC	MSD008186587	MOSS POINT	MS	2019	$33,011,800
16	3M COMPANY	ALD004023164	DECATUR	AL	2018	$31,469,374
17	3M COMPANY	MND006172969	COTTAGE GROVE	MN	2017	$30,798,151
18	GB BIOSCIENCES GREENS BAYOU PLANT	TXD000836486	HOUSTON	TX	2018	$29,549,000
19	ROHM AND HAAS DEER PARK PLANT	TXD065096273	DEER PARK	TX	2018	$28,827,200
20	OCCIDENTAL CHEMICAL CORPORATION	DED003913266	NEW CASTLE	DE	2019	$28,528,240
21	DOW SILICONES CORP/DOW CHEMICAL	MID000809632	MIDLAND	MI	2018	$28,086,300
22	COVESTRO LLC	WVD056866312	PROCTOR	WV	2018	$26,528,481
23	EQUISTAR CHEMICALS LP	IAD045372836	CLINTON	IA	2019	$26,417,191
24	CHEVRON PRODUCTS COMPANY	MSD054179403	PASCAGOULA	MS	2019	$22,157,876
25	BASF CORPORATION	ALD001221902	MCINTOSH	AL	2019	$21,343,773
26	INVISTA SARL VICTORIA SITE	TXR000057968	VICTORIA	TX	2019	$20,997,498
27	UNION CARBIDE TEXAS CITY	TXD000461533	TEXAS CITY	TX	2019	$20,771,200
28	UNION CARBIDE CORPORATION - WOODBINE PROPERTY	GAD981235294	WOODBINE	GA	2019	$19,599,674
29	MONSANTO COMPANY	IAD005273594	MUSCATINE	IA	2019	$19,100,000
30	SI GROUP	NYD002070118	ROTTERDAM JUNCTION	NY	2018	$19,067,700
31	EAGLE US 2 LLC	LAD008086506	WESTLAKE	LA	2019	$19,009,282
32	UNION CARBIDE SEADRIFT PLANT	TXD041515420	SEADRIFT	TX	2019	$18,692,600
33	CHEMOURS BEAUMONT WORKS INDUSTRIAL PARK	TXD008081101	NEDERLAND	TX	2019	$17,273,447
34	OLIN CORPORATION	GAD040690737	AUGUSTA	GA	2017	$17,089,377
35	CYTEC INDUSTRIES, INC	WVD004341491	WILLOW ISLAND	WV	2019	$17,060,200
36	OCCIDENTAL CHEMICAL CORPORATION	KSD007482029	WICHITA	KS	2019	$15,902,232
37	EASTMAN CHEMICAL COMPANY, TENNESSEE OPERATIONS	TND003376928	KINGSPORT	TN	2019	$15,583,041
38	ETHYL HOUSTON PLANT	TXD008096158	PASADENA	TX	2019	$15,446,098
39	TICONA POLYMERS BISHOP FACILITY	TXD008113441	BISHOP	TX	2019	$15,368,894
40	MONSANTO LULING FACILITY	LAD001700756	LULING	LA	2018	$14,764,000
41	SOLVAY SPECIALTY POLYMERS USA LLC	OHD981529688	MARIETTA	OH	2017	$14,761,434
42	EASTMAN CHEMICAL	TXD007330202	LONGVIEW	TX	2018	$14,639,520
43	THE DOW CHEMICAL COMPANY	LAD008187080	PLAQUEMINE	LA	2019	$13,997,700
44	PPG INDUSTRIES OHIO INC	OHD004304689	CIRCLEVILLE	OH	2019	$13,774,844
45	EXXONMOBIL OIL CORP 99BAYWAY	NJD062037031	LINDEN	NJ	2019	$13,524,611
46	MITSUBISHI POLYESTER FILM INC	SCD097631691	GREER	SC	2019	$13,395,000
47	OCCIDENTAL CHEMICAL CORPORATION	LAD092681824	GEISMAR	LA	2019	$12,807,789
48	TYCO SAFETY PRODUCTS - ANSUL STANTON ST FAC	WID006125215	MARINETTE	WI	2018	$12,500,229
49	DUPONT SPRUANCE PLANT	VAD009305137	RICHMOND	VA	2019	$12,306,960
50	FIRST CHEMICAL CORPORATION	MSD033417031	PASCAGOULA	MS	2019	$11,464,895
51	UNION CARBIDE	TXD980626782	TEXAS CITY	TX	2019	$11,306,000
52	EVONIK CORPORATION TIPPECANOE LABS	IND006050967	LAFAYETTE	IN	2018	$10,834,905
53	UNION CARBIDE CORPORATION - TECK PARK OPERATIONS	WVD060682291	SOUTH CHARLESTON	WV	2019	$10,710,000
54	MERCK SHARP & DOHME CORP. - ELKTON FACILITY	VAD001705110	ELKTON	VA	2019	$10,526,000
55	GABRIEL PERFORMANCE PRODUCTS LLC	OHD003913308	ASHTABULA	OH	2017	$10,143,515
56	AIR PRODUCTS PASADENA PLANT	TXD990757486	PASADENA	TX	2019	$10,116,496
57	EXCALIBUR REALTY	GAD980843155	VALDOSTA	GA	2015	$9,850,000
58	BASF CORP HANNIBAL SITE	MOD050226075	PALMYRA	MO	2018	$9,779,080
59	CABOT CORP	ILD042075333	TUSCOLA	IL	2019	$9,707,254
60	FMC CORPORATION MOBILE MANUFACTURING CENTER	ALD093179315	AXIS	AL	2019	$9,546,445
61	OLIN CHLOR ALKALI PRODUCTS AND VINYL, INC. - MCINTOSH PLANT	ALD008188708	MCINTOSH	AL	2019	$9,505,255
62	CALGON CARBON CORPORATION	KYD005009923	CATLETTSBURG	KY	2016	$9,294,029
63	HERCULES/ CIBA	NYD002069748	QUEENSBURY	NY	2019	$9,242,470
64	PPG INDUSTRIES INC	OHD004198917	BARBERTON	OH	2019	$9,029,364
65	ALTIVIA PETROCHEMICALS LLC	OHD005108477	HAVERHILL	OH	2017	$8,985,977
66	ARKEMA INC	KYD006370159	CALVERT CITY	KY	2016	$8,949,731
67	GREAT LAKES CHEMICAL CENTRAL PLANT	ARD043195429	EL DORADO	AR	2019	$8,879,844
68	CHEMOURS COMPANY FC LLC	WVD045875291	WASHINGTON	WV	2019	$8,674,225
69	CHS MCPHERSON REFINERY INC	KSD007145956	MCPHERSON	KS	2018	$8,603,858
70	RUBICON LLC - GEISMAR PLANT	LAD008213191	GEISMAR	LA	2018	$8,601,844
71	CELANESE CLEAR LAKE PLANT	TXD078432457	PASADENA	TX	2019	$8,509,600
72	FMC AGRICULTURAL PRODUCTS GROUP	MDD003071875	BALTIMORE	MD	2018	$8,495,900
73	ADVANSIX INC.	VAD065385296	HOPEWELL	VA	2015	$8,328,460

Appendix II (Cont.) - RCRA Financial Assurance Cost, by Facility

Site Number	Site Name	EPA ID	City	State	Year Estimated	Cost
74	UNIVERSAL PROPULSION	AZD980814479	PHOENIX	AZ	2018	$8,171,142
75	ARMTEC COUNTERMEASURES COMPANY	ARD980867873	EAST CAMDEN	AR	2018	$8,082,279
76	ROHM AND HAAS - LOUISVILLE PLANT	KYD006390017	LOUISVILLE	KY	2017	$8,000,000
77	KOCH FERTILIZER DODGE CITY LLC	KSD044625010	DODGE CITY	KS	2018	$7,943,898
78	OXY VINYLS DEER PARK VCM PLANT	TXD981911209	DEER PARK	TX	2019	$7,508,010
79	SOLUTIA INC, C/O EASTMAN CHEMICAL COMPANY	NJD001700707	BRIDGEPORT	NJ	2015	$7,500,000
80	SABINE RIVER OPERATIONS	TXD008079642	ORANGE	TX	2019	$7,402,129
81	ASCEND PERFORMANCE MATERIALS CHOCOLATE BAYOU PLANT	TXD001700806	ALVIN	TX	2019	$7,296,042
82	OLIN CORPORATION - CHLOR ALKALI PRODUCTS	NYD002123461	NIAGARA FALLS	NY	2018	$6,880,622
83	ARKEMA CLEAR LAKE	TXR000057414	PASADENA	TX	2019	$6,710,962
84	ECO SERVICES OPERATIONS HOUSTON	TXD008099079	HOUSTON	TX	2018	$6,445,656
85	REICHHOLD, INC.	MSD001661719	GULFPORT	MS	2016	$6,000,000
86	PINOVA, INC. (FORMERLY HERCULES INCORPORATED)	GAD004065520	BRUNSWICK	GA	2016	$5,589,326
87	UNION CARBIDE CORPORATION - INSTITUTE OPERATIONS	WVD005005509	INSTITUTE	WV	2019	$5,564,000
88	LYONDELL CHEMICAL CHANNELVIEW	TXD083472266	CHANNELVIEW	TX	2018	$5,395,679
89	ARCH WOOD PROTECTION INC	GAD000821934	CONLEY	GA	2016	$5,234,816
90	SABIC INNOVATIVE PLASTICS US LLC	ALD981026677	BURKVILLE	AL	2016	$5,166,500
91	LYONDELL CHEMICAL BAYPORT CHOATE PLANT	TXD058265067	PASADENA	TX	2018	$5,156,227
92	INEOS NITRILES USA LLC	OHD042157644	LIMA	OH	2017	$4,967,207
93	THE CHEMOURS COMPANY FC, LLC	MSD096046792	PASS CHRISTIAN	MS	2019	$4,907,000
94	AREVA NP INC	WAD990828402	RICHLAND	WA	2017	$4,806,320
95	CATALYST RECOVERY OF LA, LLC	LAD980622161	LAFAYETTE	LA	2017	$4,727,442
96	SAFETY KLEEN SYSTEMS INC	NJD002182897	LINDEN	NJ	2019	$4,722,188
97	OCCIDENTAL CHEMICAL CORPORATION- MUSCLE SHOALS PLANT	ALD004019642	MUSCLE SHOALS	AL	2019	$4,661,419
98	MALLINCKRODT RALEIGH PHARMACEUTICAL PLANT	NCD042091975	RALEIGH	NC	2019	$4,651,429
99	HYDRITE CHEMICAL CO	WID000808824	COTTAGE GROVE	WI	2019	$4,649,642
100	COVESTRO INDUSTRIAL PARK	TXD058260977	BAYTOWN	TX	2018	$4,619,193
101	LANXESS SOLUTIONS US INC.	CTD001449826	NAUGATUCK	CT	2017	$4,243,000
102	AMRI SPRINGFIELD	MOD095038329	SPRINGFIELD	MO	2018	$4,111,126
103	CYTEC INDUSTRIES INC	OHD004341509	MARIETTA	OH	2016	$4,065,318
104	DYSTAR HILTON DAVIS	OHD004240313	CINCINNATI	OH	2015	$4,034,387
105	CELANESE CHEMICAL GROUP PAMPA PLANT	TXD007376700	PAMPA	TX	2019	$3,702,800
106	LUBRIZOL DEER PARK	TXD041067638	DEER PARK	TX	2019	$3,633,010
107	SYNGENTA CROP PROTECTION LLC	LAD053783445	SAINT GABRIEL	LA	2016	$3,580,567
108	GLAXOSMITHKLINE- SOUTH CAMPUS	NCD052547635	DURHAM	NC	2019	$3,459,697
109	THE SCOTTS COMPANY LLC	OHD990834483	MARYSVILLE	OH	2015	$3,419,400
110	FUTUREFUEL CHEMICAL COMPANY	ARD089234884	BATESVILLE	AR	2019	$3,415,872
111	CELANESE BAY CITY PLANT	TXD026040709	BAY CITY	TX	2019	$3,283,694
112	DAKOTA GASIFICATION COMPANY - GREAT PLAINS SYNFUELS PLANT	NDD000690594	BEULAH	ND	2019	$3,244,624
113	SPARTECH LLC	IAD005277231	PLEASANT HILL	IA	2019	$3,212,172
114	GOODYEAR BEAUMONT CHEMICAL PLANT	TXD008077190	BEAUMONT	TX	2019	$3,194,713
115	ECO-SERVICES OPERATIONS, CORP	LAD008161234	BATON ROUGE	LA	2019	$3,190,992
116	MONUMENT CHEMICAL KENTUCKY, LLC	KYD006396246	BRANDENBURG	KY	2017	$3,098,438
117	HERCULES INCORPORATED	NJD002156925	KENVIL	NJ	2017	$2,997,116
118	FORMOSA PLASTICS CORPORATION, LOUISIANA	LAD041224932	BATON ROUGE	LA	2019	$2,979,800
119	EASTMAN CHEMICAL TEXAS CITY OPERATIONS	TXD008079527	TEXAS CITY	TX	2018	$2,915,352
120	MERCK SHARP & DOHME CORP	PAD002387926	WEST POINT	PA	2019	$2,909,500
121	THE CHEMOURS COMPANY FC, LLC	NCD047368642	FAYETTEVILLE	NC	2019	$2,900,168
122	CORNERSTONE CHEMICAL CO - FORTIER MANUFACTURING COMPLEX	LAD008175390	WAGGAMAN	LA	2019	$2,855,257
123	NOURYON	ALD008161176	AXIS	AL	2019	$2,839,895
124	OLIN CHLOR-ALKALI PRODUCTS	TND003337292	CHARLESTON	TN	2019	$2,833,835
125	MERCK SHARP & DOHME CORP	NJD001317064	RAHWAY	NJ	2019	$2,763,294
126	CORTEVA VICTORIA PLANT	TXD008123317	VICTORIA	TX	2019	$2,760,428
127	BASF CORPORATION	OHD004203519	ELYRIA	OH	2019	$2,682,491
128	DUPONT INDUSTRIAL BIOSCIENCES USA, LLC KINSTON PLANT	NCD003190386	GRIFTON	NC	2019	$2,679,275
129	UNION CARBIDE CORPORATION, ST. CHARLES OPERATIONS	LAD041581422	HAHNVILLE	LA	2019	$2,671,500
130	TOTAL PETROCHEMICALS USA LA PORTE PLANT	TXD086981172	LA PORTE	TX	2019	$2,652,122
131	WYETH PHARMACEUTICALS	NYD002081396	ROUSES POINT	NY	2019	$2,614,143
132	SHINTECH LOUISIANA, LLC - PLAQUEMINE PLANT	LAD081419418	PLAQUEMINE	LA	2019	$2,554,675
133	EAGLE NATRIUM LLC	WVD004336343	PROCTOR	WV	2019	$2,553,542
134	ALLWORTH, LLC	ALD094476793	BIRMINGHAM	AL	2019	$2,535,309
135	THE DOW CHEMICAL LA PORTE SITE	TXD000017756	LA PORTE	TX	2019	$2,535,000
136	CHEVRON ORONITE COMPANY, LLC	LAD034199802	BELLE CHASSE	LA	2018	$2,527,629
137	ROHM & HAAS CHEMICALS LLC	PAD002292068	BRISTOL	PA	2019	$2,509,500
138	BASF PASADENA PLANT	TXD980808778	PASADENA	TX	2018	$2,426,081
139	OCCIDENTAL CHEMICAL OXYCHEM INGLESIDE PLANT	TXD982286932	GREGORY	TX	2019	$2,379,930
140	AUSTIN POWDER COMPANY - RED DIAMOND PLANT	OHD004293775	MCARTHUR	OH	2017	$2,364,837
141	CHEROKEE PHARMACEUTICLS LLC	PAD003043353	RIVERSIDE	PA	2019	$2,289,000
142	HUNTSMAN PETROCHEMICAL CONROE PLANT	TXD008076853	CONROE	TX	2019	$2,277,592
143	ST MARKS POWDER INC	FLD047096524	CRAWFORDVILLE	FL	2019	$2,211,786
144	EXPAL TEXARKANA	TXR000083437	HOOKS	TX	2017	$2,200,300
145	EASTMAN BUSINESS PARK	NYD980592497	ROCHESTER	NY	2019	$2,160,816
146	E.I. DUPONT DE NEMOURS & CO.	LAD001890367	LA PLACE	LA	2018	$2,158,040
147	AMERICAS STYRENICS LLC ALLYN'S POINT STYRENICS PLANT	CTD001159730	GALES FERRY	CT	2018	$2,149,781
148	ISP TECHNOLOGIES TEXAS CITY PLANT	TXD044452324	TEXAS CITY	TX	2018	$2,133,090
149	BP HUSKY REFINING LLC - TOLEDO REFINERY	OHD005057542	OREGON	OH	2017	$2,131,349
150	INDORAMA VENTURES OXIDES PORT NECHES	TXD008076846	PORT NECHES	TX	2019	$2,130,167

Appendix II (Cont.) - RCRA Financial Assurance Cost, by Facility

Site Number	Site Name	EPA ID	City	State	Year Estimated	Cost
151	EURECAT US (WAS TRICAT INC.)	OKD987097151	MCALESTER	OK	2019	$2,121,785
152	MILLIKEN CHEMICAL DEWEY PLANT	SCD069314045	INMAN	SC	2019	$2,120,578
153	BAYER CROPSCIENCE LP	MOD056389828	KANSAS CITY	MO	2017	$2,087,710
154	SOLUTIA INC	ALD004019048	ANNISTON	AL	2016	$2,015,000
155	ZAMBELLI FIREWORKS MANUFACTURING CO	PAR000522326	EDINBURG	PA	2016	$2,011,000
156	FMC LITHIUM USA CORPORATION	NCD000771964	BESSEMER CITY	NC	2019	$2,000,000
157	SOLVAY USA INC	SCD003358389	CHARLESTON	SC	2019	$2,000,000
158	ZENECA INC	MAD051505477	DIGHTON	MA	2015	$2,000,000
159	GAGE PRODUCTS CO	MID005338801	FERNDALE	MI	2019	$2,000,000
160	SASOL CHEMICALS USA GREENS BAYOU PLANT	TXD008106999	HOUSTON	TX	2017	$2,000,000
161	DUREZ CORPORATION	NYD002103216	NIAGARA FALLS	NY	2019	$2,000,000
162	AXIALL LLC - PLAQUEMINE FACILITY	LAD057117434	PLAQUEMINE	LA	2019	$1,916,940
163	R B H DISPERSIONS INC	NJD002444958	BOUND BROOK	NJ	2017	$1,900,000
164	EVANS CHEMETICS LP	NYD002234763	WATERLOO	NY	2019	$1,899,500
165	LION COPOLYMER GEISMAR LLC	LAD008194060	GEISMAR	LA	2019	$1,884,986
166	CHEMTRADE SOLUTIONS LLC	DED154576698	CLAYMONT	DE	2017	$1,869,000
167	BASF GEISMAR SITE	LAD040776809	GEISMAR	LA	2019	$1,867,010
168	SCHLUMBERGER WELL SERVICES PERFORATING AND TESTING	TXD987988318	FORT STOCKTON	TX	2018	$1,847,444
169	EQUISTAR CHEMICALS CHANNELVIEW COMPLEX	TXD058275769	CHANNELVIEW	TX	2018	$1,827,419
170	BASF FREEPORT SITE	TXD008081697	FREEPORT	TX	2018	$1,814,687
171	DDP SPECIALTY ELECTRONIC MATERIALS US9, LLC	NCD003221546	GREENSBORO	NC	2019	$1,754,800
172	RADIATOR SPECIALTY COMPANY	NCD091245969	INDIAN TRAIL	NC	2019	$1,719,523
173	VAN DIEST SUPPLY COMPANY LIQUID PLANT	NER000500439	MCCOOK	NE	2019	$1,662,826
174	FIBRANT, LLC	GAD051011609	AUGUSTA	GA	2016	$1,601,320
175	OLIN CORPORATION	ARD006354542	N LITTLE ROCK	AR	2017	$1,596,083
176	DAK AMERICAS LLC CAPE FEAR SITE	NCD047369046	LELAND	NC	2018	$1,544,759
177	VANDERBILT CHEMICALS LLC	CTD001181205	BETHEL	CT	2017	$1,495,624
178	DYNO NOBEL INC	NYD000799122	ULSTER PARK	NY	2017	$1,471,419
179	DUPONT CIRCLEVILLE PLANT	OHD004287322	CIRCLEVILLE	OH	2018	$1,467,900
180	VENATOR CHEMICALS LLC	NCD048467427	HARRISBURG	NC	2019	$1,437,735
181	LOVELAND PRODUCTS INC	MTD079711198	BILLINGS	MT	2019	$1,404,600
182	VELSICOL CHEMICAL CORP.	TND061314803	CHATTANOOGA	TN	2018	$1,346,912
183	3M COLUMBIA	MOD054950670	COLUMBIA	MO	2018	$1,326,187
184	HARCROS CHEMICALS INC	KST210010062	KANSAS CITY	KS	2016	$1,305,180
185	SILBOND CORPORATION	MID005039458	WESTON	MI	2018	$1,304,813
186	SHERWIN WILLIAMS CO	KSD007163355	COFFEYVILLE	KS	2019	$1,204,754
187	CITY OF WATERBURY	CTD001164599	WATERBURY	CT	2016	$1,200,000
188	INVISTA S A R L	TXR000057752	ORANGE	TX	2018	$1,196,076
189	HEXION INC.	LAD980622104	NORCO	LA	2016	$1,177,571
190	THE LUBRIZOL CORPORATION	OHD004172623	PAINESVILLE	OH	2017	$1,167,415
191	CYTEC AEROSPACE MATERIALS	MDD003075942	HAVRE DE GRACE	MD	2019	$1,150,000
192	FORMER DUPONT WAYNESBORO	VAD003114832	WAYNESBORO	VA	2019	$1,095,539
193	EMD MILLIPORE CORP	OHD086438538	NORWOOD	OH	2018	$1,092,484
194	ROHM & HAAS CHEMICALS LLC	TND058660390	KNOXVILLE	TN	2019	$1,075,583
195	SHERWIN WILLIAMS CO	ILD005456439	CHICAGO	IL	2018	$1,074,000
196	E I DUPONT DE NEMOURS LA PORTE PLANT	TXD008079212	LA PORTE	TX	2019	$1,047,938
197	OXEA BAY CITY PLANT	TXR000077784	BAY CITY	TX	2017	$1,040,107
198	PHIBRO TECH INC	SCD070371885	SUMTER	SC	2019	$1,018,942
199	AUGUSTA CHEMICAL PLANT	GAD042125146	AUGUSTA	GA	2019	$1,008,110
200	NUCLEAR FUEL SERVICES, INC. (NFS)	TND003095635	ERWIN	TN	2019	$963,220
201	EQUISTAR CHEMICALS LA PORTE COMPLEX	TXR000025809	LA PORTE	TX	2017	$951,811
202	SI GROUP INC ORANGEBURG	SCD043384072	ORANGEBURG	SC	2019	$946,223
203	OCCIDENTAL CHEMICAL CORPORATION	ALD008163388	MOBILE	AL	2019	$896,635
204	DUREZ CORPORATION	OHD990747859	KENTON	OH	2017	$864,617
205	GENERAL DYNAMICS- OTS, A13	IL8143609487	MARION	IL	2017	$857,583
206	AKZO NOBEL POLYMER CHEMICALS LLC	NYD043815158	BURT	NY	2018	$855,437
207	WACKER CHEMICAL CORP	MID075400671	ADRIAN	MI	2018	$837,373
208	CLARIANT CORPORATION - MOUNT HOLLY WEST	NCD085074821	MOUNT HOLLY	NC	2019	$833,561
209	INEOS USA GREEN LAKE FACILITY	TXD000751172	PORT LAVACA	TX	2016	$819,380
210	VERTELLUS INTEGRATED PYRIDINES LLC	IND000807107	INDIANAPOLIS	IN	2018	$772,547
211	SI GROUP USA (USAA), LLC	ALD010394021	BAY MINETTE	AL	2019	$758,640
212	CHEMOURS MEMPHIS PLANT	TND007024672	MEMPHIS	TN	2019	$758,474
213	W.R.GRACE	MDD001710227	CURTIS BAY	MD	2016	$750,000
214	SASOL CHEMICALS (USA) LLC - LAKE CHARLES CHEMICAL COMPLEX	LAR000041087	WESTLAKE	LA	2017	$721,072
215	PATHEON MANUFACTURING SERVICES LLC	NCD047373766	GREENVILLE	NC	2019	$696,216
216	CHEMICAL RESEARCH TECHNOLOGY CO (CRT; FORMERLY ARIZONA CHEMICAL)	GAD003299526	VALDOSTA	GA	2017	$688,943
217	BLUE CUBE OPERATIONS	TXR000083481	FREEPORT	TX	2018	$679,006
218	SAFETY-KLEEN ENVIROSYSTEMS CO.	NJD002153922	NEWARK	NJ	2016	$669,465
219	NOURYON SURFACE CHEMISTRY LLC	ILD065237851	MORRIS	IL	2019	$667,579
220	ER SQUIBB & SONS INC	NJD011550092	NEW BRUNSWICK	NJ	2019	$654,281
221	DUPONT SPECIALTY PRODUCTS USA LLC	WVR000532440	WASHINGTON	WV	2019	$645,372
222	LOVELAND PRODUCTS, INC.	NED000610550	FAIRBURY	NE	2015	$630,697
223	PHIBRO-TECH INC	GAD981027055	POWDER SPRINGS	GA	2019	$629,210
224	DYNO NOBEL INC	ILD982624777	WOLF LAKE	IL	2017	$613,901
225	HONEYWELL INTERNATIONAL INC. FAIRFIELD TAR PLANT	ALD031499833	BIRMINGHAM	AL	2016	$611,804

Appendix II (Cont.) - RCRA Financial Assurance Cost, by Facility

Site Number	Site Name	EPA ID	City	State	Year Estimated	Cost
224	DYNO NOBEL INC	ILD982624777	WOLF LAKE	IL	2017	$613,901
225	HONEYWELL INTERNATIONAL INC. FAIRFIELD TAR PLANT	ALD031499833	BIRMINGHAM	AL	2016	$611,804
226	GE ELECTROMATERIALS	OHD004302428	COSHOCTON	OH	2017	$568,767
227	THE DOW CHEMICAL COMPANY	OHD045566098	WEST ALEXANDRIA	OH	2018	$543,900
228	CYTEC INDUSTRIES INC	MID005360680	KALAMAZOO	MI	2016	$489,400
229	CELANESE	TXD069450278	CORPUS CHRISTI	TX	2019	$487,674
230	OLIN CORPORATION	LAD008080681	WESTLAKE	LA	2019	$473,801
231	CHEMOURS COMPANY FC LLC	WVD005012851	BELLE	WV	2019	$472,827
232	BETHLEHEM APPARATUS CO INC	PA0000453084	BETHLEHEM	PA	2016	$455,865
233	HONEYWELL INTERNATIONAL INC	PAD981739758	MARCUS HOOK	PA	2019	$435,640
234	ZOETIS LLC	IAD005275540	CHARLES CITY	IA	2019	$428,804
235	CHEMICAL PRODUCTS CORPORATION	GAD003275468	CARTERSVILLE	GA	2019	$380,521
236	HONEYWELL INC	NYD000632315	BUFFALO	NY	2018	$378,151
237	TECH ORD, A DIVISION OF AMTEC CORPORATION	SDD981549983	CLEAR LAKE	SD	2019	$376,297
238	DYNO NOBEL INC	MID041413154	ISHPEMING	MI	2018	$375,000
239	ANGUS CHEMICAL COMPANY	LAD020597597	STERLINGTON	LA	2019	$368,316
240	POLYNT COMPOSITES USA INC.	VAD055046049	CHATHAM	VA	2019	$358,789
241	SC JOHNSON & SON INC	WID006091425	STURTEVANT	WI	2019	$354,219
242	KORDSA INC.	TNR000018101	CHATTANOOGA	TN	2018	$353,345
243	GRH 2011 LLC	SCD003159928	ROCK HILL	SC	2017	$347,909
244	AXIALL LLC - WESTLAKE LAKE CHARLES NORTH	LAD086478047	WESTLAKE	LA	2019	$347,840
245	PIONEER AMERICAS LLC DBA OLIN CHLOR ALKALI PRODUCTS - ST GABRIEL FAC	LAD062666540	ST. GABRIEL	LA	2019	$331,592
246	INEOS USA CHOCOLATE BAYOU FACILITY	TXD050309012	ALVIN	TX	2016	$328,900
247	SIEMENS INDUSTRY INC	SCD078065117	ROEBUCK	SC	2017	$319,229
248	EQUISTAR CHEMICALS	ILD005078126	TUSCOLA	IL	2018	$309,809
249	AUSTIN POWDER COMPANY	ARD093417525	EAST CAMDEN	AR	2019	$309,681
250	ARKEMA INC GENESEO FACILITY	NYD002218436	PIFFARD	NY	2019	$281,182
251	DYNO NOBEL INC	CTD058509712	SIMSBURY	CT	2017	$272,974
252	UOP LLC SHREVEPORT PLANT	LAD057109449	SHREVEPORT	LA	2019	$272,898
253	PM RESOURCES	MOD085908259	BRIDGETON	MO	2018	$270,156
254	EVONIK CORPORATION	KSD007237746	HAYSVILLE	KS	2019	$269,554
255	BEAZER EAST INC	WVR000514471	FOLLANSBEE	WV	2019	$258,497
256	NAMMO TALLEY	AZD020132502	MESA	AZ	2017	$256,332
257	CHEMOURS COMPANY FC, LLC (THE)	NJD002385730	DEEPWATER	NJ	2019	$250,767
258	THE LUBRIZOL CORPORATION	OHD004172565	WICKLIFFE	OH	2017	$245,724
259	SOLVAY SPECIALTY POLYMERS USA LLC	NJD980753875	WEST DEPTFORD TWP	NJ	2019	$228,402
260	ENTHONE - OMI INC	NJD044654978	NUTLEY	NJ	2016	$228,000
261	DYSTAR CAROLINA CHEMICAL	NCD003168168	CHARLOTTE	NC	2019	$224,913
262	BASF	TXD067261412	BEAUMONT	TX	2018	$222,000
263	FMC CORP AGRICULTURAL CHEM GROUP	NJD009448432	MALAGA	NJ	2018	$210,726
264	PORCELANITE, INC	NCD986181451	LEXINGTON	NC	2019	$206,765
265	ACCESS BUSINESS GROUP LLC	MID006026793	ADA	MI	2016	$200,000
266	DYNO NOBEL INC.	MOD029719200	CARTHAGE	MO	2016	$183,437
267	XEROX CORPORATION	OKD079986568	YUKON	OK	2016	$180,867
268	PHARMACIA & UPJOHN COMPANY LLC	MID000820381	KALAMAZOO	MI	2019	$179,063
269	SANTOLUBES MANUFACTURING LLC	SCD003349065	SPARTANBURG	SC	2017	$153,860
270	SOLUTIA INC - JOHN F QUEENY PLANT	MOD004954111	ST LOUIS	MO	2019	$150,463
271	AEROSOLS DANVILLE INC	ILD005141726	DANVILLE	IL	2018	$134,283
272	GENERAL DYNAMICS- OTS TR	ILD000802801	MARION	IL	2017	$131,960
273	EMERALD KALAMA CHEMICAL LLC	WAD092899574	KALAMA	WA	2015	$130,000
274	E I DUPONT DE NEMOURS & CO INC	PAD003038056	TOWANDA	PA	2019	$117,670
275	BLUE CUBE OPERATIONS LLC	LAR000086074	PLAQUEMINE	LA	2018	$117,264
276	DIXIE METALS CO - GENERAL BATTERY CORP	TXD068999622	DALLAS	TX	2017	$111,496
277	ARKEMA BEAUMONT PLANT	TXD074180019	BEAUMONT	TX	2019	$104,493
278	APEX MATERIAL TECHNOLOGIES LLC	ILD062480850	JOLIET	IL	2016	$103,059
279	ELANCO CLINTON LABORATORIES	IND072040348	CLINTON	IN	2018	$97,441
280	LINDE GAS CLEAR LAKE PLANT	TXR000052175	PASADENA	TX	2018	$91,701
281	CHEMETRICS, INC	VAR000010165	MIDLAND	VA	2015	$86,940
282	ERCO WORLDWIDE (USA) INC - PORT EDWARDS PLT	WID046536231	NEKOOSA	WI	2018	$83,496
283	EQUISTAR CHEMICALS LP	ILD048296180	MORRIS	IL	2018	$76,847
284	NOURYON FUNCTIONAL CHEMICALS BATTLEGROUND	TXD057191199	LA PORTE	TX	2019	$59,502
285	UNITED INITIATORS INC	OHD046202602	ELYRIA	OH	2019	$27,082
286	ULTRA YIELD MICRONUTRIENTS	WAD027530526	MOXEE	WA	2016	$22,937
287	BLACK RIVER SCHOOLS	MID006411953	HOLLAND	MI	2017	$1,500