

**SUMMARY OF 2021 RCRA CORRECTIVE
ACTION ECONOMIC BENEFITS STUDY AND
RESEARCH METHODOLOGY**

**U.S. Environmental Protection Agency
Office of Land & Emergency Management
Office of Resource Conservation & Recovery**

Summary of 2021 RCRA Corrective Action Economic Benefits Study and Research Methodology

The 2021 RCRA economic benefits study provides current, reliable, business-related information for a subset of RCRA Corrective Action (CA) facilities that are now either in reuse or continued use after cleanup and remediation. The project included these main components:

- Identification of RCRA CA facilities in reuse and continued use that have activities that support businesses, employ people, or generate sales revenues.
- Digitization of facility boundaries.
- Identification of businesses located at the facilities using the methodology developed for similar research on Superfund sites.
- Collection of economic information for facility businesses using reputable economic databases and websites. Examples of the types of business information gathered include but are not limited to: business names and addresses, business type, number of employees working at the businesses, annual sales revenues, and estimated annual employment income.
- Quality control/quality assurance (QA/QC) review of economic data collected during the effort.

This document includes a summary of the RCRA CA economic information collected in 2021, an overview of the general economic research methodology, and a recap of the 2020 economic totals. Table 1 shows the annual economic totals for the 2020 and 2021 RCRA CA economic research efforts. Economic information for the facilities researched in 2020 was not updated in 2021. The 35 facilities researched in 2021 differ from the 44 facilities researched in 2020. Cumulatively, as of October 2021, economic data have been collected for a total of 79 RCRA CA facilities.

Table 1. RCRA CA Economic Totals (2020-2021)

Year	Number of Facilities Researched with Economic Data ^a	Number of Businesses	Jobs	Actual Annual Sales	Adjusted Annual Sales ^b	Actual Annual Employment Income	Adjusted Annual Employment Income ^b
2020^c	44	724	52,289	\$26.9 billion	\$28.2 billion	\$5.2 billion	\$5.5 billion
2021	35	304	30,191	\$10.8 billion	\$10.8 billion	\$2.4 billion	\$2.4 billion

Notes:

- a. Federal and non-federal RCRA CA facilities are included in this study. The 35 facilities researched in 2021 differ from the 44 facilities researched in 2020. The economic totals in this table highlight the results of this limited study. They represent only a small percentage of actual economic activity currently occurring at all remediated RCRA CA facilities nationwide.
- b. Adjusted to 2021 U.S. dollars (USD) using the Consumer Price Index (CUUR0000SA0, not seasonally adjusted, U.S. city annual average).
- c. For reference, Appendix A includes the 2020 facility-level economic totals, including actual and inflation-adjusted sales and income totals.

2021 Project Summary

The goal of facility selection was to capture a range of different types and sizes of RCRA CA facilities. The facilities included a mix of facilities in continued use (businesses operated during cleanup and continue operations after cleanup) and new reuse (reuse/development happened after cleanup). Some facilities support a wide range of uses that result in significant economic activity. More typically, facilities support one or a few uses associated with moderate economic activity. Another goal of facility selection for this effort was to highlight a mix of those different types of facilities – illustrating some of the highest-profile redevelopment successes, as well as capturing facilities that represent average reuse/continued use scenarios. The number of RCRA CA facilities researched in 2021 represent only a small portion of all RCRA CA facilities currently in use.

Economic benefits associated with facilities in continued use highlight how cleanup performed under RCRA CA can facilitate safe, continued operations of long-time facility businesses, while also protecting human health and the environment through remediation. While many continued-use stories and the associated economic impacts may not be considered high profile, they most likely represent the majority of RCRA CA facilities that currently support businesses – making them a crucial contributor to the overall economic impacts associated with RCRA CA facility use. Significant examples of facilities in continued use include John Deere Waterloo Works in EPA Region 7 and IBM Corporation (Poughkeepsie) in EPA Region 2. The John Deere Waterloo Works facility is home to three major John Deere facilities – Drive Train Operations, the Foundry, and Service Parts Operations. The facility also supports some new commercial and public service reuses. Together, businesses operating at the John Deere Waterloo Works facility employ over 1,500 people and generate about \$655 million in annual sales revenue. The IBM Corporation’s Poughkeepsie facility employs 4,000 people and generates an estimated \$851 million in annual sales.

Economic impacts associated with facilities in new reuse highlight how cleanup performed under RCRA CA can set the stage for a wide range of new development. These developments can often attract new businesses, bolster local economies, and result in increased property values. In some cases, reuse priorities are incorporated into the remedial design process, resulting in cleanups that directly facilitate future reuse. Such facilities can serve as models of what is possible when EPA and RCRA-authorized states, other state and local entities, and facility stakeholders work together to address cleanup and consider reuse priorities early in the cleanup process. Examples of high-profile RCRA CA facilities that support new reuse include RACER Moraine in EPA Region 5 and the Duke Balt Vice General Motors Baltimore Assembly facility in EPA Region 3. Today, the former General Motors plant known as the RACER Moraine facility is home to Progress Park. The business park houses a wide range of industries, including Fuyao Glass, the second-largest automotive glass manufacturer in the world, and engine manufacturer DMAX. Together, facility businesses at RACER Moraine employ 2,750 people and generate nearly \$905 million in annual sales revenue. The Duke Balt Vice General Motors Baltimore Assembly facility is now home to two large Amazon fulfillment centers and other new uses. Together, facility businesses employ over 2,700 people and generate an estimated \$1 billion in annual sales. Table 2 lists facility-specific

economic totals for the 35 RCRA CA facilities researched in 2021. The number of RCRA CA facilities researched in 2021 represent only a small portion of all RCRA CA facilities currently in use.

Table 2. 2021 Facility-Level RCRA CA Economic Totals

Facility Name	EPA Region	State	Number of Businesses	Jobs	Annual Sales	Annual Employment Income
Austin-Bergstrom Airport (Former Bergstrom AFB)	6	Texas	78	3,902	\$274,802,021	\$118,265,836
BASF Agricultural Products of Puerto Rico	2	Puerto Rico	1	150	\$115,000,000	\$14,024,400
BASF Corp. (Wyandotte)	5	Michigan	3	1,232	\$1,342,821,787	\$86,333,988
BASF Freeport	6	Texas	1	900	\$861,226,000	\$92,757,600
Bristol Metals LLC	4	Tennessee	1	400	\$194,000,000	\$21,403,200
Colonial Bronze Company	1	Connecticut	1	55	\$8,700,000	\$3,231,800
Duke Balt Vice General Motors Baltimore Assembly	3	Maryland	4	2,724	\$1,018,942,857	\$191,596,496
Encycle Texas	6	Texas	1	NA	NA	NA
Ethyl Capitol Products Corporation	3	Pennsylvania	5	304	\$58,938,000	\$9,713,496
Exelon Corp. (Chem Clear Incorporated)	3	Pennsylvania	9	601	\$101,334,939	\$49,494,068
Fisher Scientific	2	New Jersey	1	20	\$23,714,000	\$2,061,280
Florida Tile Inc.	4	Kentucky	2	184	\$19,757,000	\$10,369,216
Former Appliance Park East (General Electric Company)	3	Maryland	10	103	\$9,975,596	\$5,985,044
Former Kelly AFB	6	Texas	60	2,764	\$677,767,994	\$217,361,248
Former Lawrence Nitrogen Plant	7	Kansas	1	NA	NA	NA
Harley-Davidson Motor Company Incorporated	3	Pennsylvania	2	1,070	\$782,297,436	\$80,806,440
Henniges Automotive Iowa Inc.	7	Iowa	1	500	\$60,000,000	\$24,440,000
Hutchinson Sealing Systems	1	New Hampshire	1	150	\$117,166,000	\$8,314,800
IBM Corporation (Manassas)	3	Virginia	9	1,445	\$659,010,000	\$190,062,392
IBM Corporation (Poughkeepsie)	2	New York	1	4,000	\$851,344,319	\$670,592,000
INVISTA Seaford Plant	3	Delaware	2	200	\$135,447,000	\$25,292,800
John Deere Waterloo Works – Drivetrain Operations	7	Iowa	12	1,509	\$654,666,000	\$116,231,856
Kelly-Springfield Tire Company	3	Maryland	10	411	\$28,744,000	\$17,247,516
Martinsville DuPont	3	Virginia	3	42	\$246,000 ^a	\$2,697,708

Facility Name	EPA Region	State	Number of Businesses	Jobs	Annual Sales	Annual Employment Income
Microsemi Consortium Facility/Microsemi Consortium	8	Colorado	1	NA	NA	NA
Naval Weapons Industrial Reserve Plant (NWIRP) Dallas	6	Texas	4	562	\$161,438,294	\$18,508,412
Nutrien Ag Solutions	7	Kansas	1	20	\$1,855,000	\$740,480
Orbital ATK (Formerly: Alliant Techsystems Operations LLC)	3	Maryland	2	150	\$54,046,299	\$19,589,232
Pfizer Inc.	1	Connecticut	5	2,713	\$1,410,548,669	\$201,857,812
RACER Moraine	5	Ohio	12	2,750	\$904,758,263	\$147,396,860
Seagate Technology (Formerly Imprimis)	7	Nebraska	1	4	\$390,423	\$130,832
Sentinel Industries, Inc.	6	Arkansas	1	12	\$5,744,000	\$600,912
The Chemours Company	4	Mississippi	2	60	\$17,438,596	\$4,804,280
U.S. Electrical Motors	4	Mississippi	2	NA	NA	NA
Viasystems Technologies Corporation	3	Virginia	54	1,254	\$237,308,000	\$32,769,308
Totals^b			304	30,191	\$10,789,428,493	\$2,384,681,312
Notes:						
<p>a. While sales values typically exceed estimated totals of annual employment income, annual reported sales can sometimes be lower than estimated annual income. This atypical condition of estimated income exceeding sales can be a result of business type (i.e., government entities that do not generate sales revenue), business conditions, estimated business wages not accurately reflecting actual wages for the facility-specific business, annual sales being underreported, a business loss for the year, or a combination of those factors.</p> <p>b. The 2021 economic totals in this table highlight the results of this limited study and represent only a small percentage of actual economic activity currently occurring at all remediated RCRA CA facilities nationwide.</p> <p>NA = not available. Facilities with "NA" in economic total columns indicate that economic information for the confirmed facility business(es) could not be found.</p>						

Factors that contributed to the 2021 RCRA CA economic totals are discussed below.

Availability of Reuse Information Through Facility Visits and Online Sources

Most business data are obtained from reputable economic information databases, such as Dunn & Bradstreet/Hoovers and ReferenceUSA (now Reference Solutions). In some cases, economic research will confirm that a specific business operates at a facility (for example, a business website or facility visit will confirm an on-site location); however, online economic data sources may not report business information for that business. In those cases, the business is captured as a facility business, but economic data are not included. This is an example of how data availability through online sources can impact the ability to capture economic information for facility businesses.

Economic Business Conditions

Broader national and regional economic conditions affecting businesses are usually independent of facility-related factors, such as cleanup and redevelopment efforts. However, such independent economic conditions can sometimes play a major role in the economic activity at facilities. The 2021 RCRA CA economic totals provide a snapshot in time of economic activities at the selected subset of facilities.

Overview of Economic Research Methodology

EPA worked with the Regions to identify facilities appropriate for this study. Appropriate facilities include facilities that have been subject to RCRA CA and have activities that support businesses, employ people, or generate sales revenues. The goal of facility selection was to capture a range of different types and sizes of RCRA CA facilities, including a mix of facilities in continued use and new reuse, facilities that support a wide range of uses, and facilities that support one or a few uses associated with moderate economic activity. Economic research focuses solely on areas within established RCRA facility boundaries. Facility boundaries used for economic research were provided by the respective EPA Regions or obtained from EPA's [Cleanups in My Community](#) website. In cases where the Regions provided facility boundary figures, GIS was used to digitize the facility boundaries to facilitate economic research. EPA Regions approved all facilities selected for 2021 economic research. Below is a general summary of the economic research methodology used for the economic benefits study of RCRA CA facilities. The same methodology would apply if more economic research is conducted in the future.

Digitized facility boundaries are overlaid on aerial maps to facilitate the identification of facility businesses. Aerial imagery and street view images of facility areas allow researchers to accurately identify facility uses. Facility businesses can also be identified through existing documents that highlight reuse, such as case studies and fact sheets, and through online business directories. Economic information is then collected for facility businesses using economic databases and websites. Examples of the types of business information gathered include, but are not limited to, business names and addresses, business type, the number of employees working at the businesses, annual sales revenues, and estimated annual employment income. The primary economic data information sources used include the Dun & Bradstreet (Hoovers) and Reference Solutions economic databases, the Manta website, the Bureau of Labor Statistics (BLS) website (used to obtain wage information to calculate income estimates), business publications (such as annual reports), and online research (including business websites and news articles).¹ The economic databases have tools that help identify all businesses located within facility boundaries (for example, the databases can identify all businesses located at a confirmed facility address).

The economic research process emphasizes the use of conservative economic values and includes multiple rounds of QA/QC review. The collection of economic data for this analysis also includes tracking

¹ Any mention of trade names, manufacturers or products in this document does not constitute an endorsement by the United States Government or the U.S. Environmental Protection Agency. EPA and its employees do not endorse any commercial products, services or entities.

the source of each piece of data for every business operating at each facility to allow for additional value verification, if needed. PDF copies of data sources are created and saved to further support key pieces of data. For example, dated PDF copies of information source webpages are saved for all businesses that employ over 500 people or generate over \$1 billion in sales. In addition, for businesses that employ over 500 people or generate more than \$1 billion in annual sales, all attempts are made to identify additional supporting information to confirm those values. Additional supporting information can include business-authored annual reports, information from business websites, news articles, and other resources. PDF copies of those additional supporting information sources are also saved for reference, if needed. QA/QC review is performed for facility-level and business-level data. QA/QC review involves going back through the research process steps to check the accuracy of each piece of economic information against the original information sources. Business-level economic data include information for individual facility businesses. Facility-level economic data are a summation of available business-level data for a given facility. Currently, the QA/QC review process involves reviewing economic information for each facility. Moving forward, if the number of facilities researched increases, a percentage of facilities will be reviewed. For facilities that support over 25 businesses, 50% of those businesses are reviewed. For facilities that support over 100 businesses, 25% of those businesses are reviewed. The final QA/QC review phase includes an overarching review of the entire economic dataset. All business-level and facility-level economic data are compiled to identify outliers and minimum, maximum, and median values for each type of value, and to make sure the values are appropriate. All large economic values are reviewed for accuracy and to ensure the documentation of supporting evidence to confirm the values. Documentation of QA/QC review steps is saved for future reference.

After identification of all facility businesses and QA/QC review, economic totals for the individual businesses are added to calculate facility-level economic totals. Following completion of economic research at all facilities, facility-level economic totals are added to calculate an estimate of the national beneficial economic effects associated with the cleanup and reuse of RCRA CA facilities.

Conclusion

The 2021 RCRA CA economic research effort enabled the capture of business data and reuse information for a subset of RCRA CA facilities in continued use and new reuse. The results of the project quantify some of the economic benefits associated with both new and long-time businesses operating at remediated RCRA CA facilities across the nation. Looking forward, options to expand on the initial 2020 and 2021 economic research efforts include updating business information for the facilities researched to date and expanding the number of facilities researched. Future research efforts would also facilitate the tracking of facility business data and reuse information over time.

Appendix A includes the 2020 facility-level economic totals, including actual and inflation-adjusted sales and income totals.

Appendix A – 2020 Facility-Level RCRA CA Economic Totals

Facility Name	Number of Businesses	Jobs	Actual Annual Sales^a	Adjusted Annual Sales^b	Actual Annual Employment Income	Adjusted Annual Employment Income^b
Chevron Oil Co @ Perth Amboy Refinery	3	123	\$149,287,000	\$156,300,537	\$12,250,056	\$12,825,566
Novartis Pharmaceuticals Corp	1	4,000	\$1,828,358,065	\$1,914,254,745	\$802,048,000	\$839,728,399
Sparrows Point Terminal LLC	18	3,320	\$1,039,444,500	\$1,088,277,840	\$143,108,316	\$149,831,577
DC Department of Corrections (Formerly: Lorton Correctional Complex)	23	482	\$19,466,000	\$20,380,517	\$20,998,692	\$21,985,215
Edgewater Steel Company	6	17	\$2,152,000	\$2,253,101	\$1,419,548	\$1,486,239
Willow Run Arsenal of Democracy Landholdings LP	1	10	\$787,000	\$823,973	\$983,320	\$1,029,517
Former Allison Plant 2 / Speedway Redevelopment Commission	3	32	\$1,218,000	\$1,275,222	\$1,292,200	\$1,352,908
M1 Concourse LLC (formerly Pontiac Center Point)	1	14	\$208,000	\$217,772	\$403,312	\$422,260
Syngenta Crop Protection	6	1,008	\$222,203,679	\$232,642,859	\$112,538,660	\$117,825,752
Polaroid Corp. DBA	12	629	\$165,862,500	\$173,654,758	\$32,865,664	\$34,409,700
Yarde Metals	1	425	\$165,316,045	\$173,082,631	\$24,398,400	\$25,544,642
General Dynamics Armament & Tech Product	10	154	\$8,744,000	\$9,154,795	\$11,878,724	\$12,436,789
U S M Machinery Division	220	2,423	\$343,247,534	\$359,373,382	\$206,209,900	\$215,897,688
American Hoist & Derrick Co.	9	213	\$34,832,286	\$36,468,715	\$15,496,780	\$16,224,822
Waterbury Brownfields Redev. LLC	5	18	\$2,268,000	\$2,374,551	\$956,280	\$1,001,206
Revere Transducers Inc.	4	227	\$100,365,000	\$105,080,171	\$4,842,188	\$5,069,675
UTC Fire and Security Americas Corporation, Inc.	1	400	NA	NA	\$19,427,200	\$20,339,894
Sulfco (Former Tronox Pigments)	6	43	\$4,388,000	\$4,594,149	\$3,856,632	\$4,037,817
First Chemical Corporation	2	135	\$1,500,000	\$1,570,470	\$11,526,840	\$12,068,374
Chevron Products Company	1	3,312	\$10,368,022,561	\$10,855,114,633	\$401,970,816	\$420,855,497

Facility Name	Number of Businesses	Jobs	Actual Annual Sales ^a	Adjusted Annual Sales ^b	Actual Annual Employment Income	Adjusted Annual Employment Income ^b
MOOG Components Group (fka Litton Systems Inc, Clifton Precision)	1	400	\$89,263,000	\$93,456,596	\$30,305,600	\$31,729,364
Former GM/Delphi Energy and Engine / Anderson Redevelopment Commission	6	46	\$7,849,000	\$8,217,748	\$2,533,804	\$2,652,843
Gates Rubber Co	1	2	\$162,000	\$169,611	\$183,976	\$192,619
McDonald AY Disposal Site - Former Site of	3	53	\$20,892,000	\$21,873,511	\$2,985,788	\$3,126,061
Nucor Corporation (Nucor Steel - Nebraska)	3	463	\$224,835,606	\$235,398,434	\$41,546,388	\$43,498,247
Ninigret Technologies Park, LC.	45	1,219	\$314,079,601	\$328,835,133	\$71,743,568	\$75,114,097
BP Casper Former Refinery	34	244	\$69,920,658	\$73,205,547	\$15,899,728	\$16,646,701
GTE Operations Support Incorporated (OSI)	2	11	\$1,548,000	\$1,620,725	\$743,912	\$778,861
Tyco Electronics (TE Connectivity)	1	2,800	\$3,768,066,395	\$3,945,091,016	\$374,483,200	\$392,076,506
Safety Kleen Systems Inc. Lynnwood 709201	2	4	\$1,780,000	\$1,863,625	\$357,136	\$373,914
Safety Kleen Systems Inc. Auburn 118101	7	34	\$6,426,000	\$6,727,895	\$2,205,424	\$2,309,035
Honeywell Baltimore Inner Harbor	18	2,597	\$2,487,867,073	\$2,604,747,637	\$486,590,260	\$509,450,382
U.S. Steel Corporation MVW Fairless Works	32	901	\$905,094,368	\$947,615,909	\$62,281,596	\$65,207,600
Remington Arms Company, LLC	2	1,001	\$384,890,000	\$402,972,220	\$54,630,420	\$57,196,970
Union Pacific Railroad	21	365	\$51,088,520	\$53,488,670	\$10,436,504	\$10,926,813
Clean Harbors Arizona	1	20	\$80,946	\$84,749	\$1,257,360	\$1,316,431
Onyx Environmental Services	1	25	\$1,900,000	\$1,989,262	\$1,205,100	\$1,261,716
Fairchild Republic Co.	27	1,010	\$201,591,222	\$211,062,024	\$44,152,576	\$46,226,874
Brooks City-Base (Former Brooks AFB)	86	1,322	\$293,157,156	\$306,929,746	\$72,443,436	\$75,846,845
EEIDD (Former England Air Force Base)	19	327	\$75,870,077	\$79,434,471	\$14,327,924	\$15,001,053

Facility Name	Number of Businesses	Jobs	Actual Annual Sales ^a	Adjusted Annual Sales ^b	Actual Annual Employment Income	Adjusted Annual Employment Income ^b
U.S. Naval Weapons Industrial Reserve Plant (NWIRP) McGregor	8	1,198	\$136,166,216	\$142,563,336	\$101,264,332	\$106,021,753
General Services Administration	46	5,374	\$48,139,630	\$50,401,241	\$714,020,580	\$747,565,430
Volunteer Army Ammunition Plant	18	8,111	\$2,907,880,404	\$3,044,493,291	\$551,392,660	\$577,297,213
Denver Federal Center	7	7,777	\$431,287,000	\$451,548,962	\$760,397,924	\$796,121,592
Totals^c	724	52,289	\$26,887,505,042	\$28,150,686,181	\$5,245,860,724	\$5,492,312,461

Notes:

- a. While sales values typically exceed estimated totals of annual employment income, annual reported sales can sometimes be lower than estimated annual income. This atypical condition of estimated income exceeding sales can be a result of business type (i.e., government entities that do not generate sales revenue), business conditions, estimated business wages not accurately reflecting actual wages for the facility-specific business, annual sales being under-reported, a business loss for the year, or a combination of those factors.
- b. Adjusted to 2021 U.S. dollars (USD) using the Consumer Price Index (CUUR0000SA0, not seasonally adjusted, U.S. city annual average). Facility-level adjusted sales and income values in the above table are rounded to the nearest dollar. Totals presented in this summary may not sum exactly due to rounding.
- c. The 2020 economic totals in this table highlight the results of this limited study and represent only a small percentage of actual economic activity currently occurring at all remediated RCRA CA facilities nationwide.

NA = not available.