Ellsworth Air Force Base Superfund Site Community Profile

Introduction

EPA Region 8 is working with federal, state and local authorities to investigate and address contamination associated with the Ellsworth Air Force Base Superfund site (the Site) in Pennington and Meade Counties, South Dakota. Added to the Superfund Program's National Priorities List (NPL) in 1990, site cleanup actions were well underway when the U.S. Air Force (USAF) identified per- and polyfluoroalkyl substances (PFAS) contamination in soil and groundwater on base in 2011. The PFAS groundwater and surface water contamination has migrated beyond the Site boundaries and the plume is estimated to be about 25 miles long, extending south-southeast from the Site along Boxelder Creek to the Cheyenne River. Private drinking water wells have also been contaminated, with the first contamination detected in 2016.

PFAS are manufactured chemicals that have been used in many household and industrial products since the 1950s. PFAS are commonly associated with aqueous film-forming foam (AFFF) used primarily for firefighting. They can also be found in vapor suppression systems and in waste streams. In 2016, EPA established drinking water Lifetime Health Advisories (HAs) for two PFAS – perfluorooctane sulfonate (PFOS) and perfluorooctane sulfonic acid (PFOA) – of 70 parts per trillion (ppt). On June 15, 2022, EPA issued interim updated drinking water health advisories for PFOS (0.02 ppt) and PFOA (0.004 ppt) that replace those EPA issued in 2016. The updated advisory levels, which are based on new science and consider lifetime exposure, indicate that some negative health effects may occur with concentrations of PFOA or PFOS near zero in water. These interim health advisories will remain in place until EPA establishes a National Primary Drinking Water Regulation (NPDWRs). Currently, EPA is proposing the first-ever national drinking water standard to limit six PFAS, including PFOS and PFOA, as part of its PFAS Strategic Roadmap.

Figure 1: The New Underwood Community Center in New Underwood, South Dakota.

The purpose of this community profile is to better understand the communities located near the Site and how they interact with their environment to assess potential exposures to PFAS through their daily activities.

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Overview of the Site

Military and industrial processes contaminated the Site with hazardous substances such as solvents and jet fuels. These contaminated areas include landfills, a fire protection training area, spill sites, industrial areas and an explosive-ordnance disposal area. EPA added the Site to the Superfund Program's National Priorities List (NPL) in 1990 and has worked with the Air Force to select and implement remedies for all 14 operable units at the Site. Soil and surface material cleanup has included landfill covers, soil treatment systems, excavation and removal, and institutional controls. In 2012, EPA partially deleted all soil and surface areas of the Site from the NPL.

Since 1997, the USAF has performed remedial action at OU-11, which addresses base-wide groundwater. A chlorinated solvent contaminant plume (the East Off-Base Plume), primarily trichloroethylene (TCE), was identified in 1996 and extended 4.5 miles southeast of the Base boundary. Cleanup of the East Off-Base Plume was completed in 2021. EAFB obtains potable water from the Rapid City Municipal Distribution System.

The USAF first detected PFAS groundwater contamination on base in 2011. The PFAS groundwater contamination has migrated beyond the Base boundaries and contaminated local private drinking water wells, with the first detection in 2016. The plume is estimated to be about 25 miles long. Removal of emerging contaminant PFAS (OU-13) began in 2019. A remedial investigation for OU-13 is underway.

Potential for PFAS Exposure

Concerns about potential PFAS exposure through routine activities in the plume area include:

- Residential soils (landscape) irrigated by contaminated wells.
- Agricultural soils irrigated by contaminated wells.
- Groundwater consumption by humans.
- Groundwater consumption by animals.
- Uptake of PFAS into vegetables and other comestible crops for humans.
- Uptake of PFAS into hay, alfalfa and other sources of feed for livestock.
- Ingestion of meat (fish, cattle, pork) raised on water and/or feed with PFAS contamination.
- Children playing in contaminated surface water.

Figure 2: Boxelder Creek south of Owanka.

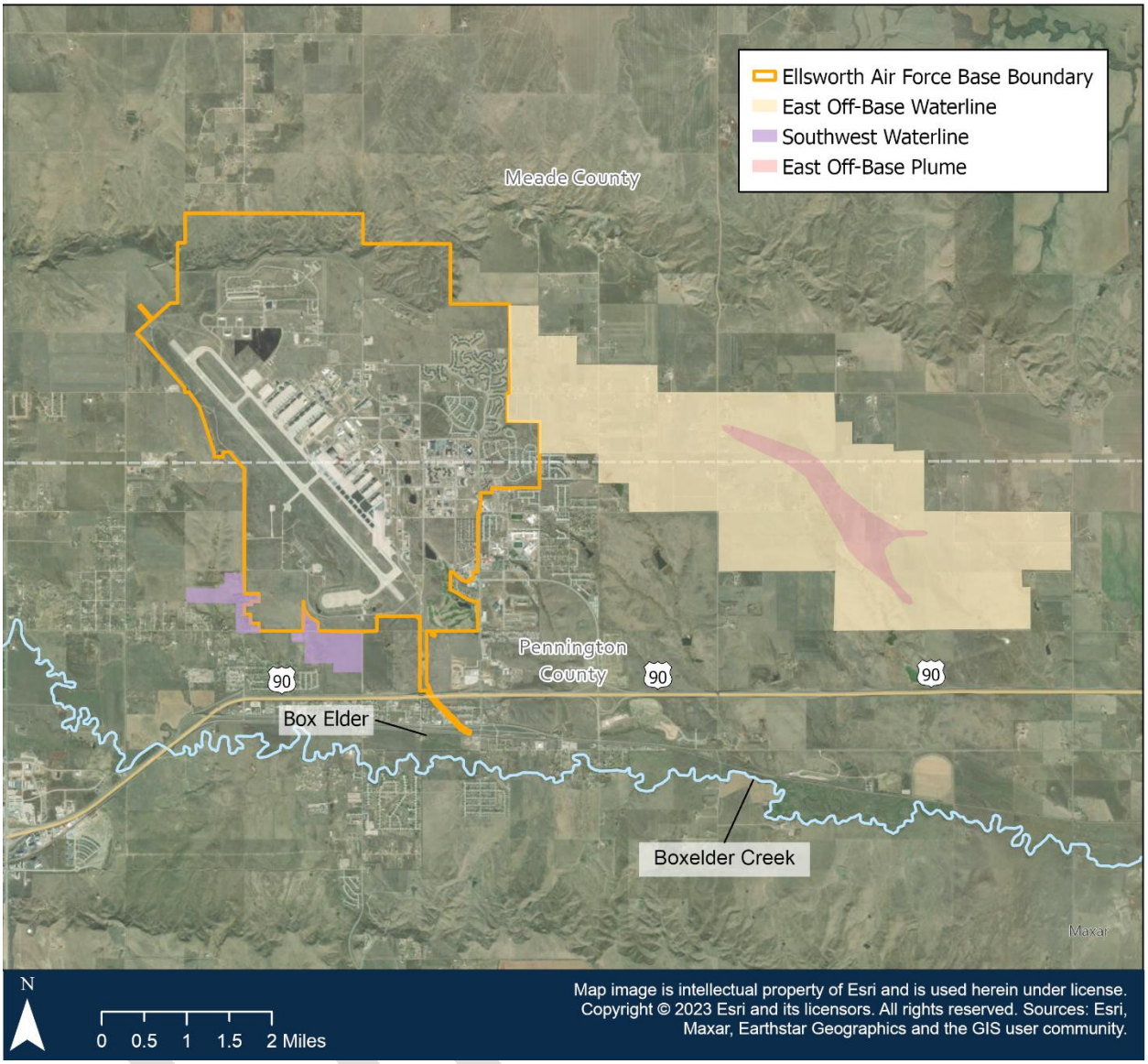

Figure 3: Map showing the location of Ellsworth Air Force Base, along with the off-Base groundwater contamination (chlorinated solvents, predominantly TCE) in the East Off-Base Plume, circa 2010. Cleanup of the East Off-Base Plume was completed in 2021.

Overview of the Surrounding Communities

This report reviewed three surrounding community profiles for:

1. Ellsworth Air Force Base
2. Ellsworth Air Force Base + a 3-mile Radius (includes Box Elder)
3. New Underwood

The areas are identified in Figure 9. The inset of Figure 9 shows the aerial extent of sampling for PFAS in private drinking water wells from the area immediately around Ellsworth Air Force Base southeast along Boxelder Creek to the Cheyenne River.

Methods for the analyses, as well as the reports generated for each of these three areas, can be reviewed in the Appendices.

For ease of comparison, some community information is summarized in Table 1, and presented in greater detail in the community subsections that follow.

Table 1: Summary Community Information Across Three Areas Analyzed

Community Information	Ellsworth Air Force Base	Ellsworth Air Force Base + 3-mile Buffer	New Underwood
Population	3,697	13,689	859
# of Households	1,074	4,619	198
% Owner Occupied	8	61	80
% Identifying as White Only	74	80	86
% Identifying as People of Color/Two or More Races	32	24	33
% Limited English Proficiency Households	2	0	0
Per Capita Income	$25,270	$29,159	$30,013
% Low Income	34	26	48
% Unemployment	2	5	0
% Less than High School Education	3	7	12
% Ages 1-18	20	23	37
% Ages 18-65	79	68	53
% Ages 65 and up	1	9	10

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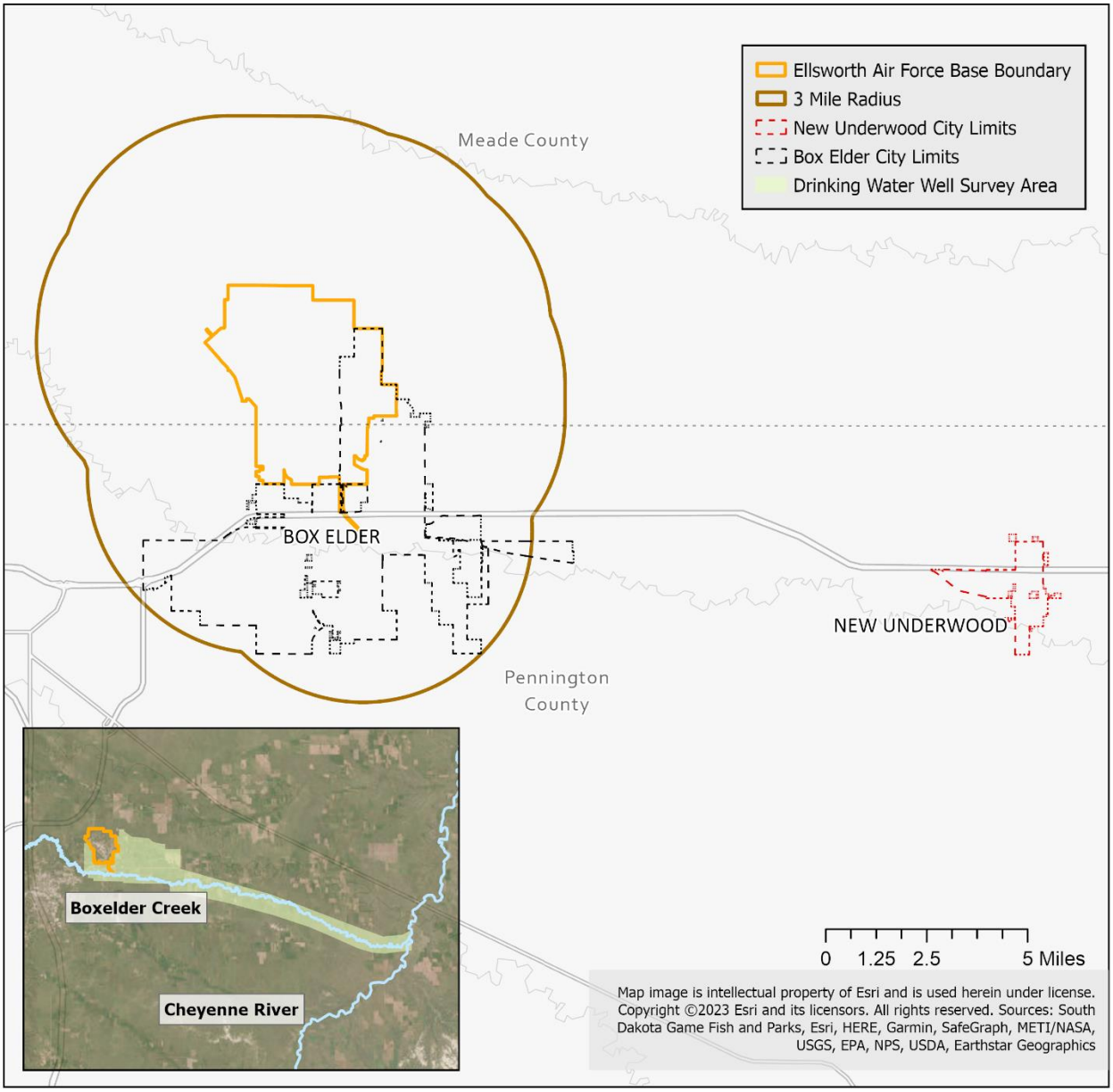

Figure 4: Map showing the location of Ellsworth Air Force Base in relation to communities of Box Elder and New Underwood. The Base, the 3-mile radius from Ellsworth Air Force Base and New Underwood were analyzed in the three, community environmental and socioeconomic report sections below.

Ellsworth Air Force Base

Ellsworth Air Force Base (EAFB, or the Base) is an active U.S. Air Force Global Strike Command Base located in Meade and Pennington Counties, South Dakota. Rapid City is located about 10 miles west of the Base and the town of Box Elder is located adjacent to the Base to the south and east. The 4,858-acre EAFB includes runways, airfields, munitions storage, industrial facilities, recreational fields and residential housing. The original Rapid City Army Air Base began operation in July 1942 to support U.S. efforts in World War II., EAFB remains an active air defense base supporting munitions deliveries and tactical training.

About 3,700 people reside in just over 1,000 households on the EAFB. The Base has a demographic index averaging a higher percentage of low-income and people of color than 74% of the state. Given the transient nature of military stations, over 90% of these households are rental properties; this figure includes property within the Base boundary that has been annexed into the city of Box Elder. All on-Base houses are rental properties. Nearly 75% of base residents identify as white. Twelve percent identify as Hispanic and 9% identify American Indian. Seven percent are Black. By comparison with the state averages, the Base has a higher-than-average percentage of people of color (32% as opposed to 18%) and percentage of limited English-speaking households, with 11% of households meeting these criteria.[1] About 5% of limited English-speaking households speak Spanish in the home. Another 6% speak German, French, Vietnamese, Tagalog or other Asian and Pacific Island language in the home. About 79% of

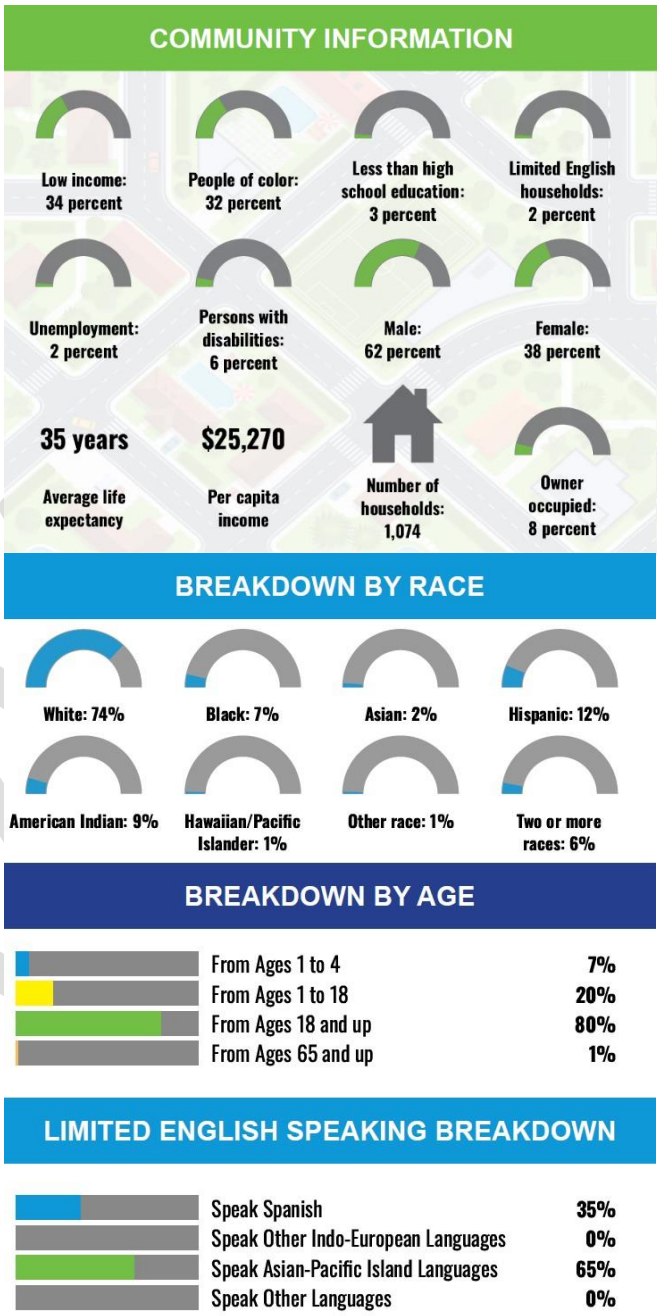

Figure 5: An overview of the population residing on EAFB produced from EPA's EJScreen tool.

[1] "Limited English speaking" = "Percent of people in a block group living in limited English-speaking households. A household in which all members aged 14 years and over speak a non-English language and also speak English less than "very well" (have difficulty with English) is limited English speaking." From: https://www.epa.gov/ejscreen/overview-socioeconomic-indicators-ejscreen.

base residents are 18-65 years old, and about 20% are minors.

The 2022 Economic Impact Statement from EAFB indicated that fewer than 1,000 civilians and more than 3,000 active-duty military are employed on base. Civilians working on base earned about $50 million while the military members earned $193.3M. The EAFB is therefore a major employer in the area.

Box Elder

The city of Box Elder was founded in 1907 as part of the expansion of the Chicago and Northwestern Railroad's "Cowboy Line" connecting Wasta to Rapid City, South Dakota. Prior to becoming a rail stop, the area consisted of fertile grasslands that could be used for agricultural purposes. Box Elder remained a small community until 1937, when construction of a modern airport facility and development of Highway 14 to Mount Rushmore opened the area to visitors.

Throughout the conversion of the municipal airport into the Rapid City Army Air Base and later the establishment of a permanent base, the USAF worked to establish good public relations with the community of Box Elder. Area residents were invited on base for open houses and flight demonstrations, as well as provided with employment opportunities at the Base.

Figure 6: Front entrance of Douglas High School in Box Elder.

Box Elder extends from exit 61 to exit 67 of Interstate 90, which also cuts across the town. Like the Base, the main city center is located north of Interstate 90, including city hall, new residential and commercial/industrial development areas, and all six schools in the Douglas School District: Carrousel Pre-School, Vandenberg Elementary School, Badger Clark Elementary School, Francis Case Elementary School, Douglas Middle School and Douglas High School. Box Elder does not currently have a traditional downtown with a structured commercial center. Box Elder Mayor Larry Larson indicated that the community is interested in developing a new commercial district and the city is working with an urban architect to develop a central Main Street to this area to be used for community gatherings, festivals and events. There have also been significant investments in residential and commercial development in Box Elder. The community is easy commuting distance from Rapid City and boasts significant acreage available for development. In 2009, the city of Box Elder annexed the newly privatized Antelope Ridge housing area previously located within the Base. These base-owned lands are now included within the city limits.

South of Interstate 90, properties in the city of Box Elder have a much more rural character, with small farm properties grazing cattle and horses, many mechanic and repair shops, and more sparse housing, mostly trailers but also some single-family homes. The far southwest corner of Box Elder extends to the

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intersection of Interstate 90 and Bypass 16 and includes the WaTiki Indoor Water Park, which has been a major economic driver for this area, attracting hotels and restaurants to locate nearby. The South Dakota Air and Space Museum, located on base, is also considered one of the best museums in the state and attracts tourists to the area.

Box Elder Community Demographics

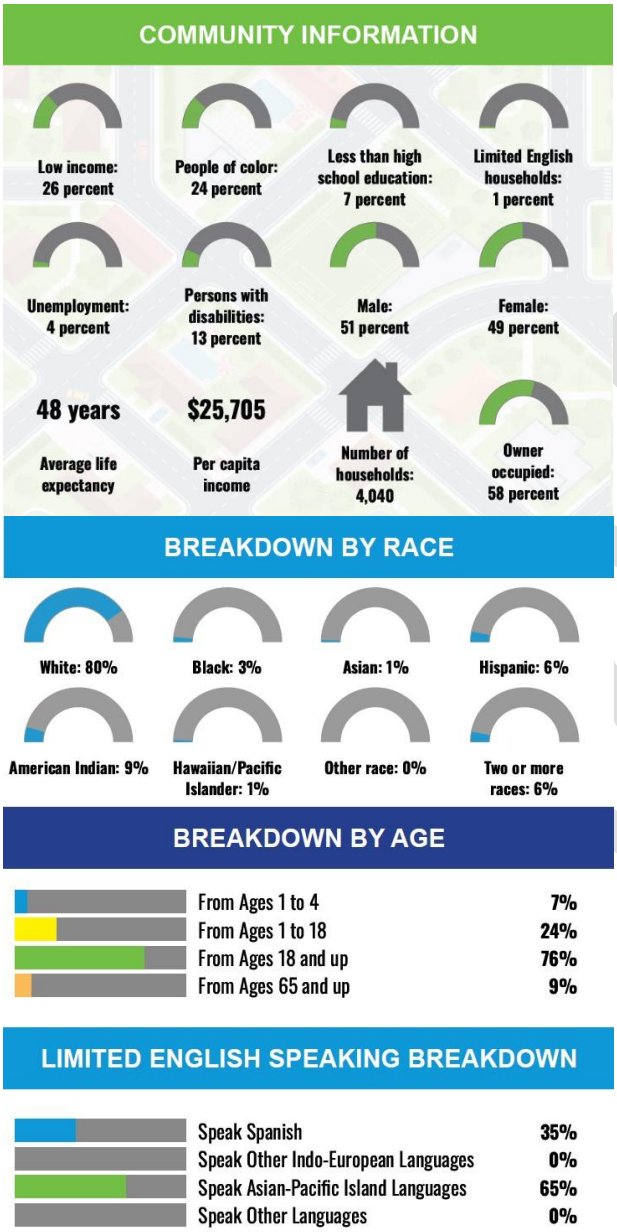

Figure 7: An overview of the population residing within three miles of EAFB, including the community of Box Elder, produced from EPA's EJScreen tool.

The population in this area, including the EAFB and Box Elder, is about 13,700 people residing in around 4,600 households. Owners occupy 61% of these households and about 80% of residents are white only, with 24% identifying themselves as people of color or of mixed race. By comparison with the state averages, the combined base and Box Elder area has a higher-than-average percentage of people of color (24% as opposed to 18%) and percentage of limited English-speaking households with 6% speaking Spanish, German or an Asian and Pacific Island language in the home. There are no tribal lands within the study area. About 77% of residents are 18-65 years old, and about 23% are minors. The average life expectancy in the community is 57 years. About 7% of adults 25 and older have an education level of less than a high school diploma and the unemployment rate is 5%. Per capita income is around $29,000, and an estimated 26% of the community is considered low income.

This area is more likely to lack health insurance than 71% of the rest of the state of South Dakota. The area is also experiencing several critical service gaps. The cost of area housing is considered to be a burden, meaning that a greater than average share of households is both earning less than 80% of Housing and Urban Development's Area Median Family Income and are spending more than 30% of their income on housing costs. Access to transportation is also below average, with a disproportionately high transportation cost burden, percentage of households with no vehicle available, and mean commute time to work, as well as a low national walkability index

score. These challenges contributed to the area's designation as a food desert with disproportionately high percentages of low-income households with limited transportation access.

The 100-year floodplain of Boxelder Creek poses an elevated risk of flooding to the Box Elder community, particularly those residing south of the EAFB and south of Interstate 90 where there is a greater likelihood of flooding than 90-95% of the state. Additionally, the entire area has a high risk for wildfires, with a greater likelihood of fires than in 90-95% of the nation.

Box Elder Water Supply

The city of Box Elder relies on water from four deep wells located 2 miles south of the Base, drilled at depths of greater than 4,500 feet deep into the Madison Aquifer, a confined aquifer. The USAF established municipal water supply connections to off-base properties impacted by TCE contamination in groundwater in the 1990s; the East and Southwest Waterlines. The Southwest Waterline, constructed from 1995 to 1996, provided drinking water to properties southwest of EAFB that had residential drinking water wells impacted by the TCE plume. The USAF added two more properties to the Southwest Waterline in 2017 in response to detection of PFAS in one private well shared by the two properties. The Southwest Waterline is operated by EAFB to distribute water obtained from the Rapid City Municipal Distribution System, which also provides all drinking water used at EAFB.

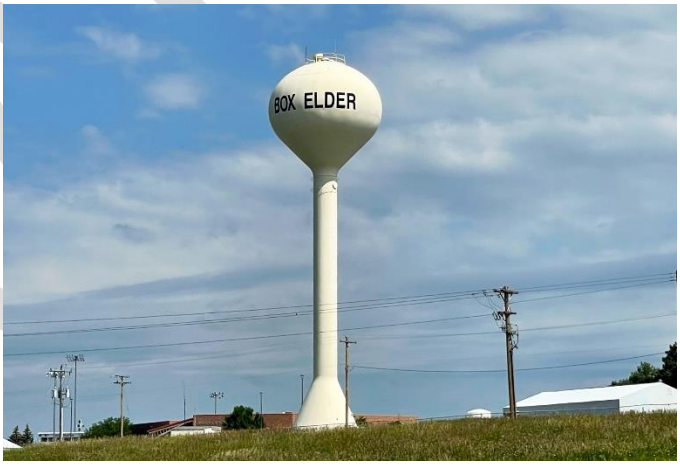

Figure 8: The Box Elder water tower next to Douglas High School in Box Elder, South Dakota.

In addition, the USAF constructed the East Waterline, completed in 1999, to provide a water supply line providing treated water from the Rapid City municipal water system to off-base residents to the east of EAFB. The Base provided water to these properties at no cost until 2007, when the city of Box Elder assumed operation and maintenance for the water supply line. At this point, the source of water switched from the Rapid City Municipal System to city of Box Elder municipal water. Each homeowner connected to the East Waterline entered into a Memorandum of Agreement (MOA) with the USAF, restricting the access to or use of groundwater (including private wells) for potable purposes until chemical concentrations reach the maximum contaminant levels (MCLs) determined in the 1997 OU-11 Record of Decision (amended in 2012). The USAF continued to pay water bills for 57 properties in accordance with the MOAs until 2021. The East Off-Base Plume cleanup was completed in 2021, at which point the USAF terminated the MOAs and stopped paying water bills.

The USAF first detected PFAS groundwater contamination from the Base in a local private drinking water well in 2016 and connected two additional properties sharing the one well to the Southwest Waterline in 2017. A remedial investigation for PFAS contamination is currently underway with sampling efforts extending east from Box Elder along Boxelder Creek to the Cheyenne River. At the March 2023 Town Hall

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Meeting, the USAF reported that PFAS sampling had been completed at 117 drinking water wells. Of these, 23 wells had PFOS/PFOA concentrations above the 2016 Lifetime Health Advisories of 70 ppt. The USAF connected four of these properties to municipal water, installed treatment systems at 16 properties and are providing bottled water to the remaining 3 properties.

As of 2023, negotiations are underway between Rapid City, Box Elder, Pennington County, South Dakota Ellsworth Development Authority (SDEDA), and EAFB regarding how to provide a clean water supply to properties impacted by the PFAS plume. Currently, the largest concern for residents impacted by the PFAS plume is how soon they can be connected to a clean water source, and for property owners in the rural areas east of Box Elder, when they can discontinue hauling water from Rapid City and safely resume agricultural practices. The current plan is to connect Area A and Area B (Figure 9) to a new water main line by the end of 2024. Two impacted properties adjacent to Sunset Ranch (Area C), located about midway between Box Elder and New Underwood, will be connected to the existing Sunset Ranch community water system in 2023. The shallow well at Area D will also be replaced in 2023. Area B North has already been connected to the Box Elder municipal water supply. Area E will be discussed under the New Underwood section below.

Table 2: Current Focal Areas for Mitigating PFAS Exposure

Area	Location	Action	Status
A	Southwest of EAFB	Connection to new watermain	Anticipated for late 2024
B	South of East Waterline along Interstate 90 and Boxelder Creek	Connection to new watermain	Anticipated for late 2024
B North	East of EAFB and immediately south of East Waterline	Connection to Box Elder municipal water supply	Complete
C	Segment of Boxelder Creek almost mid-way between Box Elder and New Underwood	Connection to Sunset Ranch community water system	Anticipated for 2023
D	Segment of Boxelder Creek about mid-way between New Underwood and Owanka	Installation of replacement shallow well	Anticipated for 2023
E	Segment of Boxelder Creek just east of New Underwood	Purchase for wetlands banking for the new B-21 bomber mission	Complete

Beginning in 2020, the USAF began transitioning their focus to the PFAS plume impacted area and communicated with residents connected along the East Waterline that chlorinated solvent concentrations in the East Off-Base Plume had achieved goals set forth in the OU-11 ROD and that PFAS had been detected in groundwater. This included termination of MOAs and discontinuing the provision of no-cost drinking water to 57 homes. Most residents impacted by this change were not pleased with this change. Although the residents were not annexed into the city, they would have to pay “out-of-town” rates for their own water supply, whereas before they had “free” access to well water and then water bills paid by the USAF following connection to the municipal water supply. Some expressed concern that they would not be able to afford the water bills, particularly with much higher rates than “in-town” residents pay for water. Additionally, although not annexed into the city of Box Elder at this time, many more rural properties have expressed concerns about how city ordinances could impact their

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livelihoods and their ability to maintain animals and livestock on their properties should their properties be annexed in the future.

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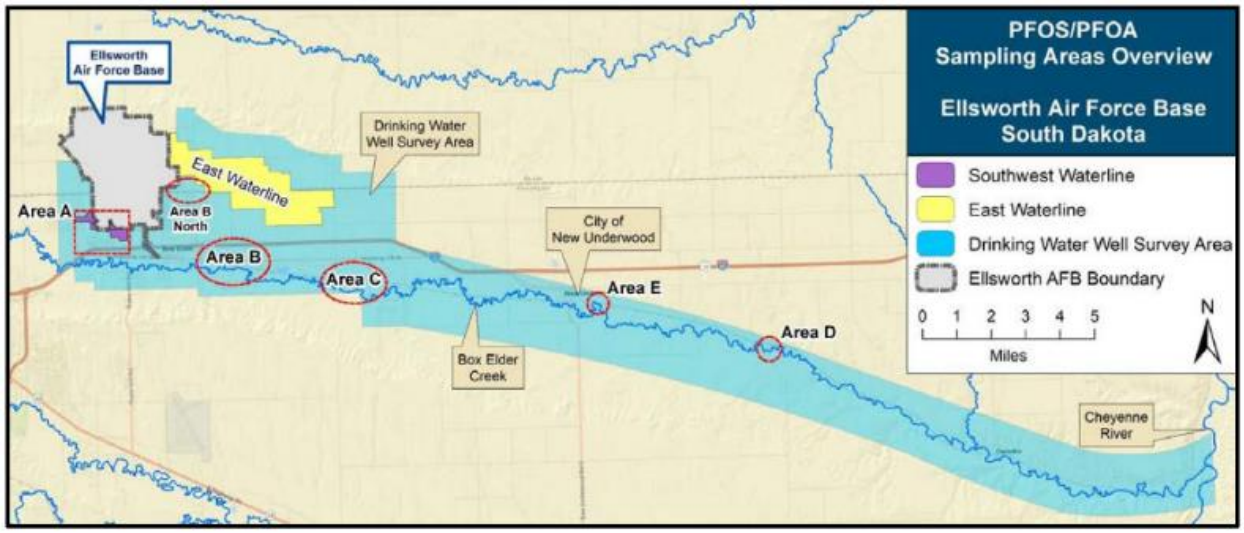

Figure 9: USAF map showing the drinking water well survey area from the PFAS plume investigation and six action areas. (Source: Ellsworth AFB Environmental Restoration Program PowerPoint Presentation for the March 28, 2023, Town Hall, presented by Rita Krebs, AFCEC/CZOM).

Figure 10: Top Left and Right: Centennial Mobile Estates and Plainsview Mobile Manor are two mobile home communities located south and southwest of the Base; Bottom Left: Hobby gardens at the Valley Village Mobile Home Park; Bottom Right: New construction close to the East Waterline.

New Underwood

About 13 miles east of Box Elder and south of Interstate 90 is the city of New Underwood. The city was founded in 1906 and named for area cattleman John Underwood.

New Underwood Community Demographics

Today, the city has a population of about 860 people residing in around 200 households. Owners occupy 80% of these households, and about 86% of residents are white only, with 33% identifying themselves as people of color or of mixed race. About 37% of the community are minors and 10% are seniors with the remaining 53% at 18-65 years old. The average life expectancy is 81 years. About 12% have less than a high school diploma level of education and 48% are considered low-income. The per capita income is $30,000.

New Underwood has a demographic index averaging a higher percentage of low-income and people of color than 86% of the state. The city's supplemental demographic index, which looks at the average of low-income, unemployment, limited English, less than high school education and low life expectancy factors, also averages higher than 77% of the state. These socioeconomic variables suggest the community has a greater vulnerability to hazardous waste impacts.

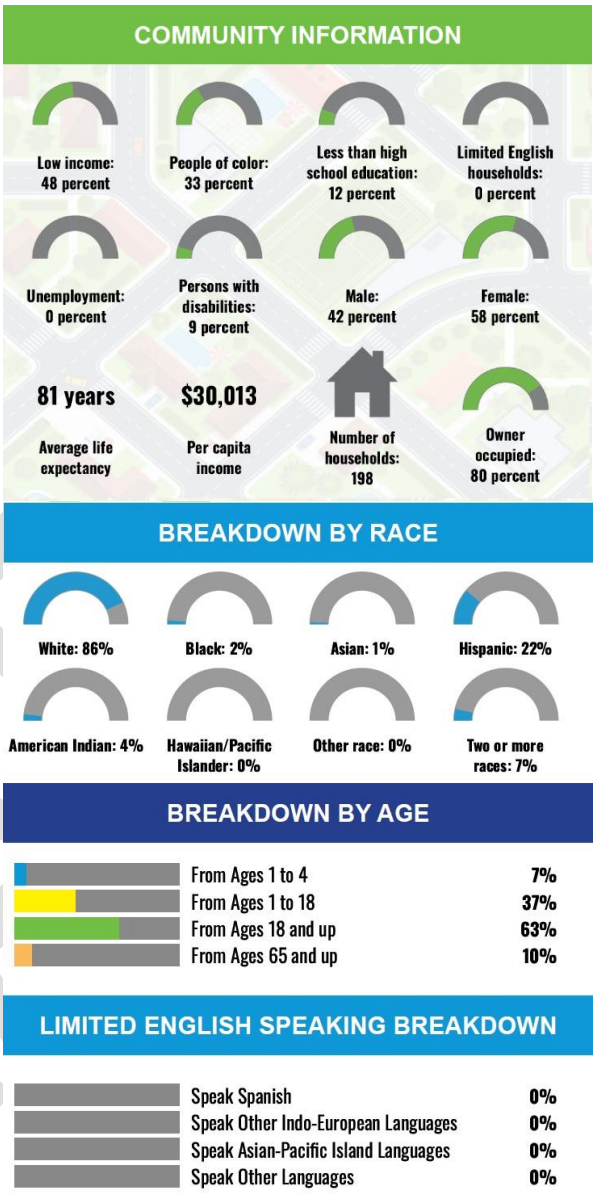

Figure 11: An overview of the population residing within New Underwood, produced from EPA's EJScreen tool.

Nearly a quarter of New Underwood residents do not have access to broadband internet and 16% do not have health insurance. As in Box Elder, access to transportation is also below average, with residents having greater difficulty securing transportation than 86% of the state. Although New Underwood is located almost entirely within the 100-year floodplain of Boxelder Creek, flood risks are not disproportionately high. Additionally, the community is located within an area of elevated risk for wildfires, with a greater likelihood of fires than in 90-95% of the state.

Figure 12: Left: An outdoor assembly space at the New Underwood Elementary School; Right: The New Underwood City Hall and a restaurant business along S A Ave.

New Underwood Water Supply

The New Underwood public water supply is sourced from two deep groundwater wells (Wells #1 and #2) with total depths of 2,762 feet and 2,960 feet, respectively, and provided to city residents along municipal supply lines. The wells are screened in the confined Inyan Kara Aquifer. New Underwood and many other communities in western South Dakota dependent on private drinking water wells depend on shallow groundwater sources due to limitations in the underlying geology of the area. These same limitations make these wells vulnerable to contamination and also can restrict recharge. Between concerns regarding the PFAS plume and the potential for a decline in shallow aquifer supply due to development and higher demand, the city has been in communication with the Western Dakota Regional Water System to explore options for diversifying their water supply sources. The city is currently seeking state and federal grant funding to support Western Dakota Regional Water System development of a water supply line sourced at the Missouri River. Municipal wells are currently drilled deep enough that they are not impacted by PFAS.

SDEDA has purchased one property in Area E (see Figure 9) outside of New Underwood for wetlands banking in anticipation of the environmental impacts of the new B-21 bomber mission at EAFB.

Figure 13: Left: Rural Development/Rural Housing Service apartments financed through the United States Department of Agriculture in New Underwood; Right: Dilapidated housing outside New Underwood, near Owanka.

Area Resource Usage

Recreation

Many community members hunt in Box Elder and along the PFAS plume area. Some game hunting is for trophies, but most had typically been for consumption. This has shifted in recent years as both the TCE plume and now the PFAS plume have cast into doubt whether there is the potential for negative long-term health impacts from consuming wild game. This is of particular concern for hunters who depend on hunting for subsistence.

Figure 14: An oxbow of Boxelder Creek south of Owanka.

Area residents, including children, like to fish along Boxelder Creek, which is within the area of PFAS concern, as well as in the Wicksville Reservoir and in ponds in Roosevelt and Memorial Parks, which are outside the area of PFAS concern. The South Dakota Game, Fish and Parks Department typically stocks ponds with fish, but most fish are not big enough to keep. Most fishing in the area of the PFAS plume is catch and release.

Children also like to play in ponds, on creek beds and in Boxelder Creek. Activities include digging in soil and playing in the water.

Gardening

Many members of the community rely upon foods they grow on their land and preserve for consumption over winter months. However, due to uncertainties about the safety of the water, many gardeners have stopped planting annual vegetable gardens. Those that have the option to use clean municipal water for irrigation have largely continued their vegetable gardens. However, community members who do not currently have a waterline connection choose not to garden out of concerns about PFAS contamination being taken up by the plants they would later eat.

Properties that are being provided with an alternate water supply until a permanent solution can be implemented typically do not have sufficient clean water to both meet household needs and irrigate a garden. Several people use non-potable water supply wells to irrigate landscaping but not any edible vegetation. The USAF is focusing on potable water wells when sampling for contamination, so residents with non-potable wells indicated they do not know whether they have PFAS contamination or not, and therefore opt not to use them for gardening out of caution. Some have water filtration systems and could potentially use the water for garden irrigation. However, previous issues with delays for repairs to filtration systems have resulted in a degree of distrust of the USAF's maintenance of these systems.

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Commercial Farming

Area farming is mainly focused on pasture lands and hay production. Hay is used locally to feed livestock, some of which are cattle raised for personal consumption. Other lesser crops include alfalfa, winter wheat, corn and sunflowers. Most farmers use non-potable water to irrigate and there is concern that the plants are taking up PFAS from groundwater and irrigation water.

Figure 15: A barn in Owanka, South Dakota.

Figure 16: A plot of agricultural land being used for hay production.

Commercial and Subsistence Livestock Farming and Ranching

Cattle ranching is common in the area around Box Elder and to the east. Prior to discovery of PFAS contamination, poultry and livestock production included ducks (for eggs and meat), chickens (for eggs and meat), turkeys, goats (milk), llamas, alpacas, pigs and horses. After discovery of the PFAS contamination off-Base, many farmers stopped raising poultry and livestock because of the water quality in the PFAS plume and the uncertainties of PFAS uptake and transferability up the food chain. Some farmers have tried to truck or haul in clean water for the animals, but this becomes untenable in winter and the poultry and livestock receive well water. Others have leased property outside the PFAS plume area to graze their cattle, reducing the farmers' profits from meat sales. Likewise, farmers who leased their pasture lands out for grazing no longer get that income as their land sits vacant. Animals such as cows, pigs, horses and ducks would frequently go to Boxelder Creek to wallow in mud and drink the water in hot weather. Chickens are easier to confine and keep out of the creek, so some families that have stopped larger livestock production still have laying hens.

Some families still raise cattle for personal consumption, as the smaller number makes bringing in external resources more feasible. Most farmers who have discontinued running cattle now have to seek out meat from other sources, incurring additional costs on top of losing the income from cattle sales.

Figure 17: Cattle grazing in a pasture outside New Underwood.

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Appendices

Methods

This community profile used three principal sources of information:

1. Publicly available EPA and USAF materials about the Site, as well as online articles (see page 17 for document sources).
2. Information gleaned from conversations held with area residents to inform the development of a technical assistance needs assessment (TANA) for the communities impacted by the Site.
3. EPA's EJScreen environmental justice mapping and screening tool.

The EJScreen tool is an approach EPA frequently uses to assess environmental and socioeconomic information for a particular geographic area.

The analysis looks at 13 environmental indicators that include pollution exposure sources, such as air particulate matter, traffic proximity, and proximity to wastewater discharge, to determine whether these background conditions in the community could potentially have a greater or cumulative impact when combined with site-specific risks.

The analysis also looks at 10 socioeconomic indicators, such as education levels, income levels, and employment, so EPA can work to ensure that the community is not being made to bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies.

The specific environmental and socioeconomic indicators addressed in the community discussions were selected based on scoring in the 70th percentile or higher, indicating the greater likelihood of that indicator to impact the community than in 70% of the state or even 70% of the nation.

As a national screening tool, EJScreen is only able to examine some of the relevant issues related to environmental justice. There may be key site-specific factors influencing the community or communities near the site that are missing from the analysis because EJScreen only includes 10 socioeconomic indicators. The full reports generated for the Base, the Base and the surrounding 3-mile area, and the city of New Underwood are included as appendices to this document.

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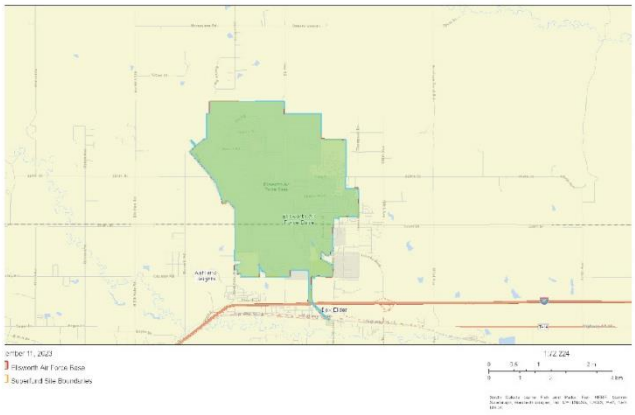
EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

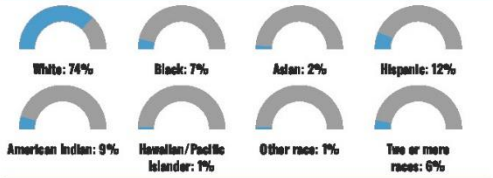
Meade County, SD

the User Specified Area
Population: 3,697
Area in square miles: 8.22



COMMUNITY INFORMATION

BREAKDOWN BY RACE



BREAKDOWN BY AGE

LIMITED ENGLISH SPEAKING BREAKDOWN

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	89%
Spanish	5%
French, Haitian, or Cajun	1%
German or other West Germanic	2%
Vietnamese	1%
Tagalog (including Filipino)	1%
Other Asian and Pacific Island	1%
Total Non-English	11%

www.epa.gov/ejscreen

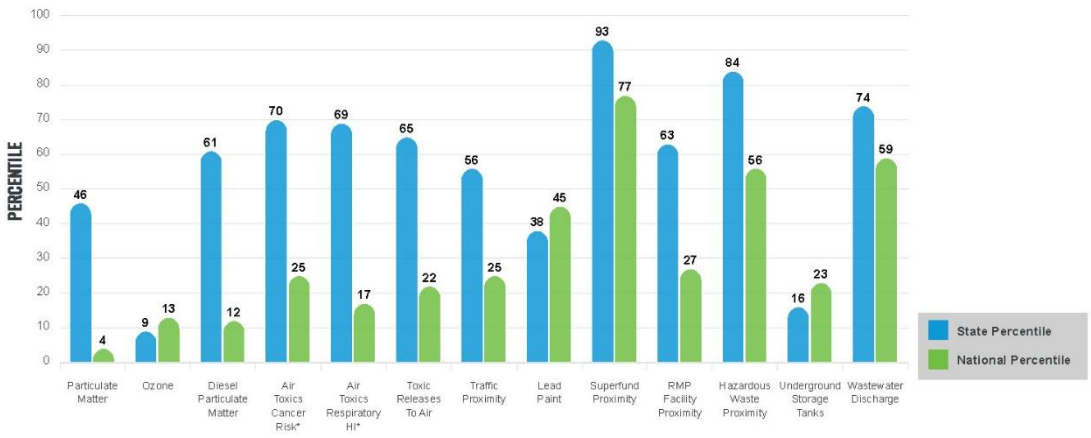
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

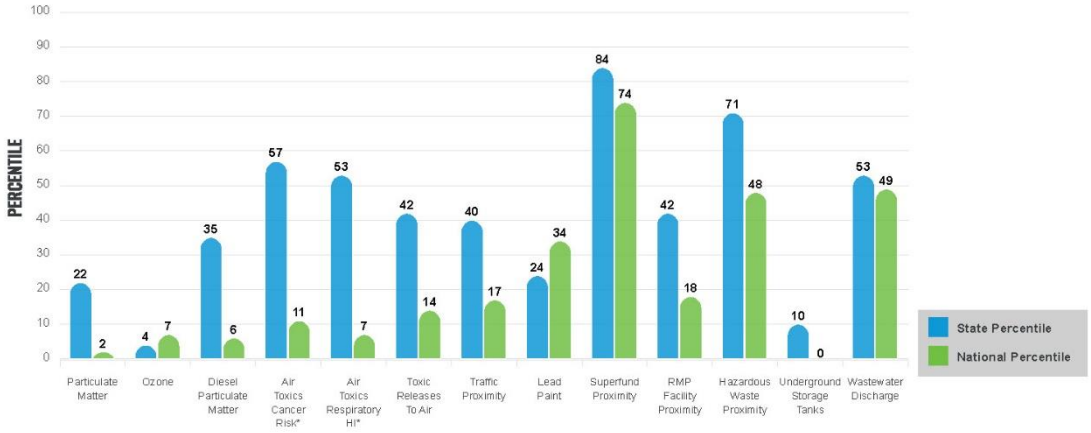
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for the User Specified Area

www.epa.gov/ejscreen

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter ($\mu g/m^3$)	4.48	4.89	22	8.08	1
Ozone (ppb)	54.4	58.6	3	61.6	7
Diesel Particulate Matter ($\mu g/m^3$)	0.0563	0.0911	36	0.261	5
Air Toxics Cancer Risk* (lifetime risk per million)	16	15	0	25	1
Air Toxics Respiratory HI*	0.16	0.15	0	0.31	1
Toxic Releases to Air	30	240	35	4,600	14
Traffic Proximity (daily traffic count/distance to road)	9.2	86	35	210	16
Lead Paint (% Pre-1960 Housing)	0.088	0.34	22	0.3	33
Superfund Proximity (site count/km distance)	0.55	0.022	99	0.13	95
RMP Facility Proximity (facility count/km distance)	0.066	0.28	33	0.43	16
Hazardous Waste Proximity (facility count/km distance)	0.48	0.36	74	1.9	49
Underground Storage Tanks (count/km^2)	0.052	2.1	33	3.9	25
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0016	28	49	22	52
SOCIOECONOMIC INDICATORS					
Demographic Index	31%	24%	74	35%	53
Supplemental Demographic Index	10%	12%	44	14%	36
People of Color	32%	18%	83	39%	52
Low Income	34%	31%	63	31%	61
Unemployment Rate	4%	4%	72	6%	49
Limited English Speaking Households	2%	1%	84	5%	64
Less Than High School Education	3%	8%	23	12%	23
Under Age 5	7%	6%	60	6%	69
Over Age 64	1%	18%	0	17%	3
Low Life Expectancy	7%	18%	0	20%	0

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

Sites reporting to EPA within defined area:

Superfund	1
Hazardous Waste, Treatment, Storage, and Disposal Facilities	1
Water Dischargers	15
Air Pollution	0
Brownfields	0
Toxic Release Inventory	1

Other community features within defined area:

Schools	0
Hospitals	0
Places of Worship	0

Other environmental data:

Air Non-attainment	No
Impaired Waters	No

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

Report for the User Specified Area

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	7%	18%	0	20%	0
Heart Disease	2.9	6.7	1	6.1	3
Asthma	8.9	9.2	50	10	22
Cancer	2.8	6.9	0	6.1	2
Persons with Disabilities	6.4%	12%	6	13.4%	10

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	7%	9%	47	12%	53
Wildfire Risk	91%	42%	75	14%	91

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	9%	16%	29	14%	44
Lack of Health Insurance	9%	10%	63	9%	64
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

Footnotes

Report for the User Specified Area

Ellsworth Air Force Base
EJScreen Report and Map Summary

This report provides EJScreen results and maps for the Ellsworth Air Force Base Superfund site. An EJScreen analysis was conducted for a 3-mile radius of the site in September 2023 (see pages 2 through 5 for the standard EJScreen report).

- No tribal areas.
- The two highest Environmental Justice (EJ) Indexes for the site are Wastewater Discharge (at the 51st percentile compared to the rest of the United States) and Hazardous Waste Proximity (at the 47th percentile compared to the rest of the United States).
    - Maps showing national percentiles for Census block groups at the site and the surrounding area for Wastewater Discharge and Hazardous Waste Proximity are on page 6.
- Maps on page 7 highlight demographic factors in the area.
    - The Demographic Index is an average of the Low-Income and People of Color indicators.
    - The Supplemental Index is an average of the Low-Income, Unemployment, Limited English, Less Than High School Education and Low Life Expectancy indicators.
- Page 8 shares the Low-Income and Less Than High School Education socioeconomic indexes.
    - The Low-Income index shows the percentage of a block group's population in households where the household income is less than or equal to twice the federal poverty level.
    - The Less Than High School Education index shows the percentage of people ages 25 or older in a block group whose education is less than a high school diploma.
- Pages 9 and 10 highlight languages commonly spoken near the site, in addition to English.
    - In total, 3% of the population speaks Spanish (page 9).
    - In total, 1% of the population speaks German or other West Germanic languages (page 9).
    - In total, 1% of the population speaks other Asian and Pacific Island languages (page 10).
    - In total, 6% of the population speaks a non-English language.
- Maps on pages 10 to 11 highlight climate change data provided by EJScreen.
    - Wildfire Risk shows current wildfire exposure and with future climate change (page 10).
    - The Floodplain map shows the location of the 100-year floodplain (page 11).
    - Flood risk shows the level of risk from rainfall, riverine flooding and coastal surge flooding (page 11).
- Maps on pages 12 and 13 highlight critical service gaps provided by EJScreen.
    - The critical service gaps showing Broadband Gaps highlights areas with the lowest rate of households with a broadband internet subscription (page 12).
    - Food deserts show low income and low access areas measured at 1 mile for urban areas and 10 miles for rural areas (page 12).
    - The critical service gaps showing lack of health insurance shows the percent of all persons without Health Insurance Coverage (page 13).
    - The critical service gaps showing housing burden shows the share of households that are both earning less than 80% of AMI and are spending more than 30% of their income on housing costs (page 13).

EPA

EJScreen Community Report

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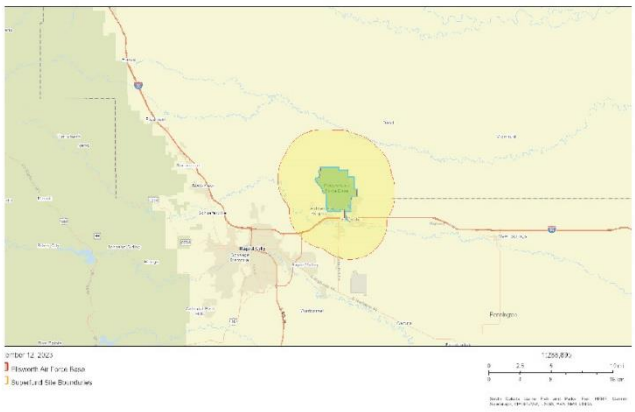
Meade County, SD

3 miles Ring around the Area
Population: 13,689
Area in square miles: 75.98

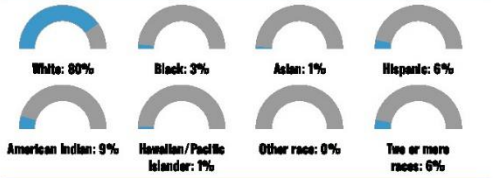


LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	94%
Spanish	3%
German or other West Germanic	1%
Other Asian and Pacific Island	1%
Total Non-English	6%

COMMUNITY INFORMATION

BREAKDOWN BY RACE



BREAKDOWN BY AGE

LIMITED ENGLISH SPEAKING BREAKDOWN

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

www.epa.gov/ejscreen

Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

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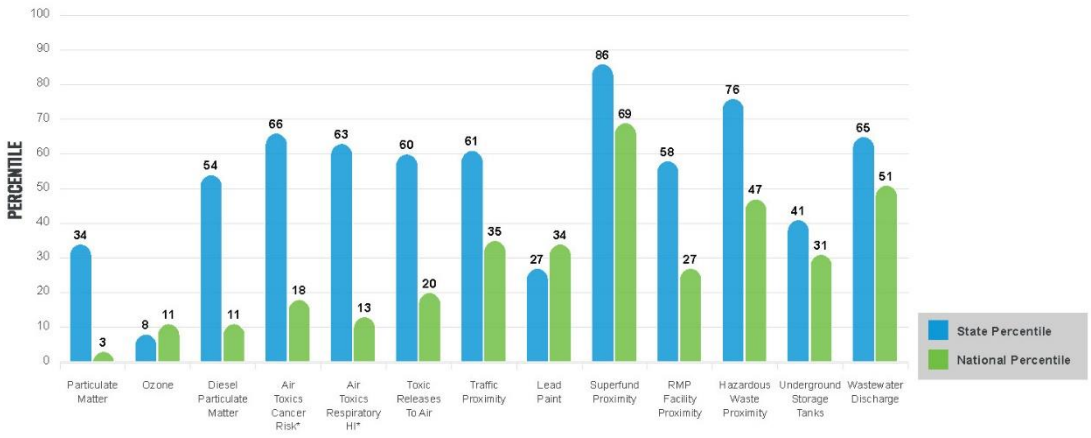
EJ INDEXES FOR THE SELECTED LOCATION



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The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

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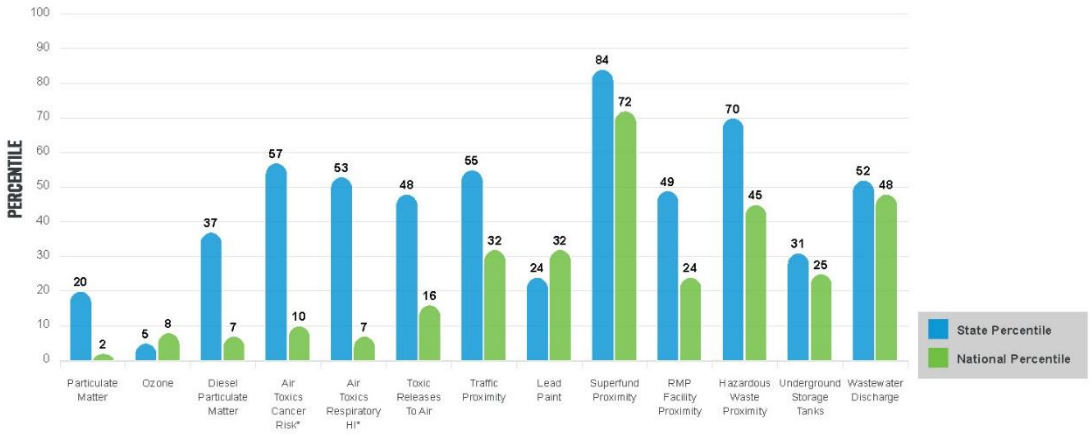


These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for 3 miles Ring around the Area

www.epa.gov/ejscreen

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter ($\mu g/m^3$)	4.42	4.89	20	8.08	1
Ozone (ppb)	54.4	58.6	3	61.6	7
Diesel Particulate Matter ($\mu g/m^3$)	0.0611	0.0911	40	0.261	6
Air Toxics Cancer Risk* (lifetime risk per million)	15	15	0	25	1
Air Toxics Respiratory HI*	0.16	0.15	0	0.31	1
Toxic Releases to Air	44	240	40	4,600	16
Traffic Proximity (daily traffic count/distance to road)	52	86	57	210	41
Lead Paint (% Pre-1960 Housing)	0.086	0.34	22	0.3	33
Superfund Proximity (site count/km distance)	0.31	0.022	99	0.13	91
RMP Facility Proximity (facility count/km distance)	0.083	0.28	39	0.43	23
Hazardous Waste Proximity (facility count/km distance)	0.4	0.36	72	1.9	46
Underground Storage Tanks (count/km^2)	0.31	2.1	46	3.9	35
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.014	28	65	22	70
SOCIOECONOMIC INDICATORS					
Demographic Index	24%	24%	61	35%	41
Supplemental Demographic Index	10%	12%	44	14%	37
People of Color	24%	18%	75	39%	42
Low Income	26%	31%	46	31%	48
Unemployment Rate	6%	4%	81	6%	64
Limited English Speaking Households	0%	1%	76	5%	57
Less Than High School Education	7%	8%	56	12%	45
Under Age 5	7%	6%	55	6%	65
Over Age 64	9%	18%	16	17%	23
Low Life Expectancy	11%	18%	2	20%	1

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

Sites reporting to EPA within defined area:

Superfund	1
Hazardous Waste, Treatment, Storage, and Disposal Facilities	1
Water Dischargers	57
Air Pollution	3
Brownfields	0
Toxic Release Inventory	2

Other community features within defined area:

Schools	5
Hospitals	0
Places of Worship	1

Other environmental data:

Air Non-attainment	No
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

Report for 3 miles Ring around the Area

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	11%	18%	2	20%	1
Heart Disease	4.4	6.7	8	6.1	17
Asthma	9.5	9.2	73	10	40
Cancer	4.4	6.9	5	6.1	15
Persons with Disabilities	12.3%	12%	56	13.4%	49

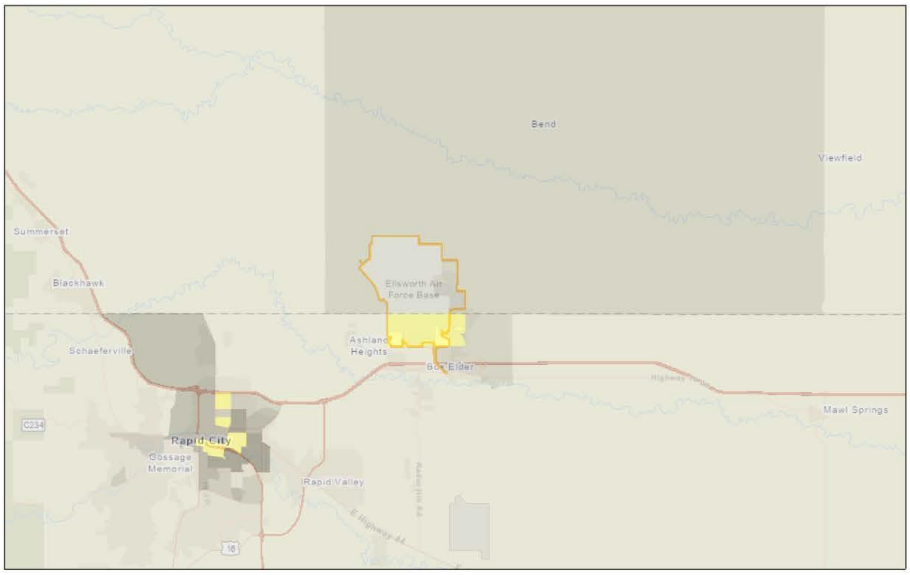
CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	14%	9%	82	12%	77
Wildfire Risk	93%	42%	77	14%	91

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	13%	16%	41	14%	55
Lack of Health Insurance	11%	10%	71	9%	72
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

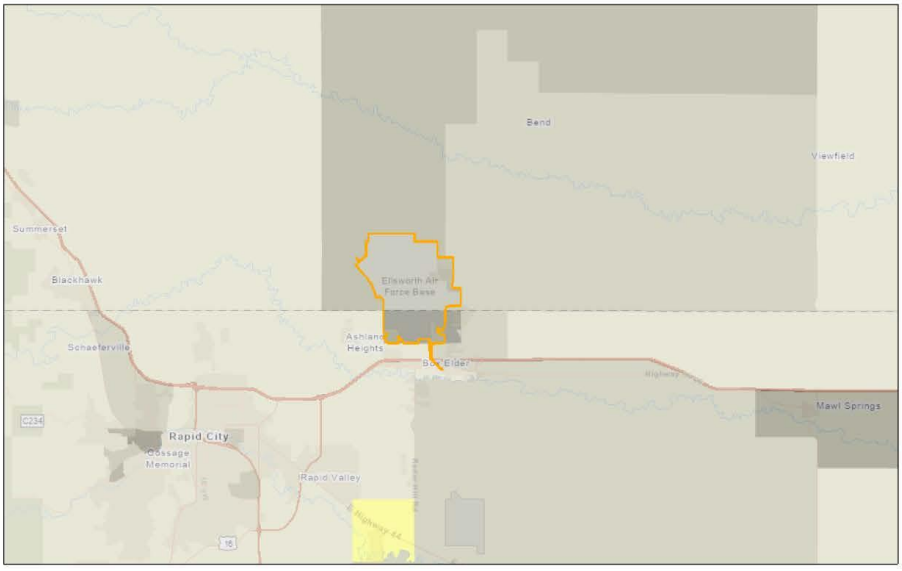
Footnotes

Report for 3 miles Ring around the Area

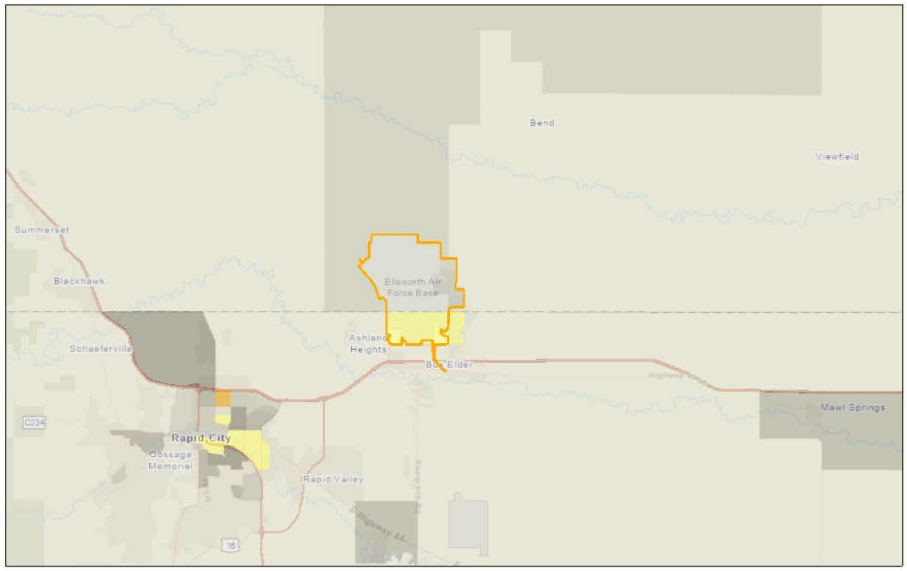
EJ Index: Hazardous Waste Proximity



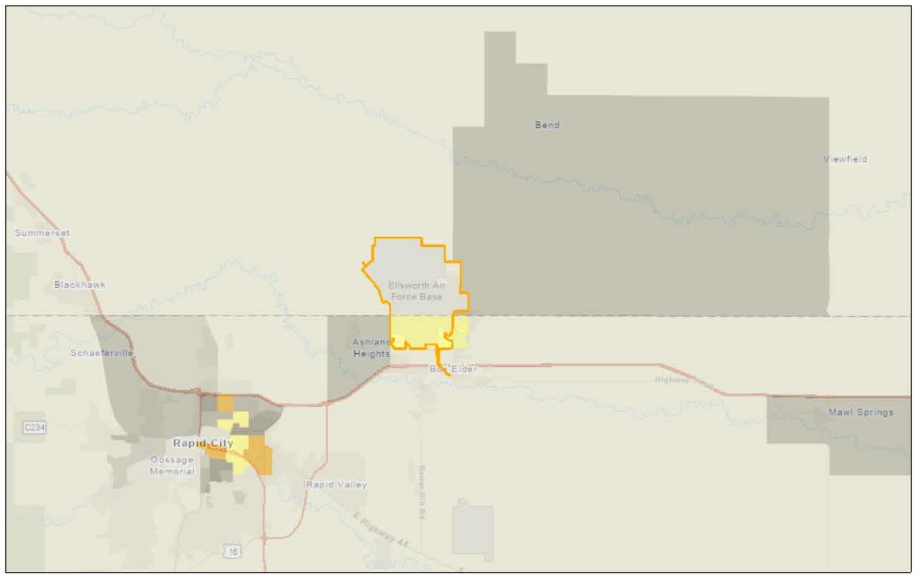
EJ Index: Wastewater Discharge



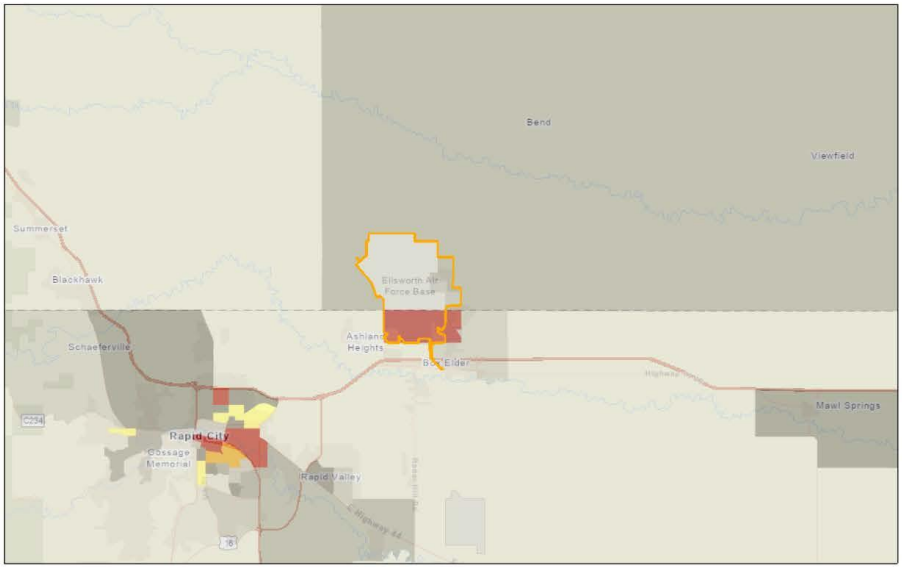
Demographic Index



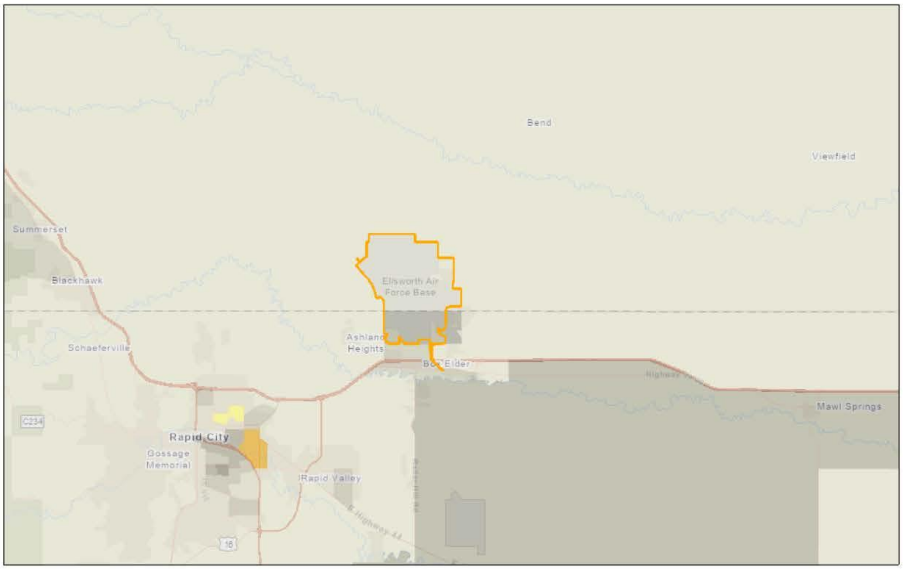
Supplemental Index



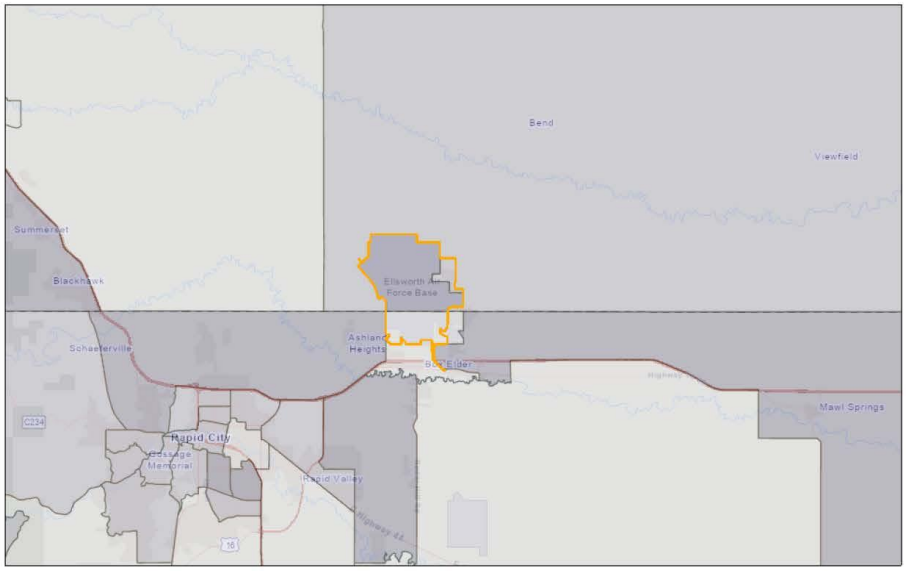
Low Income



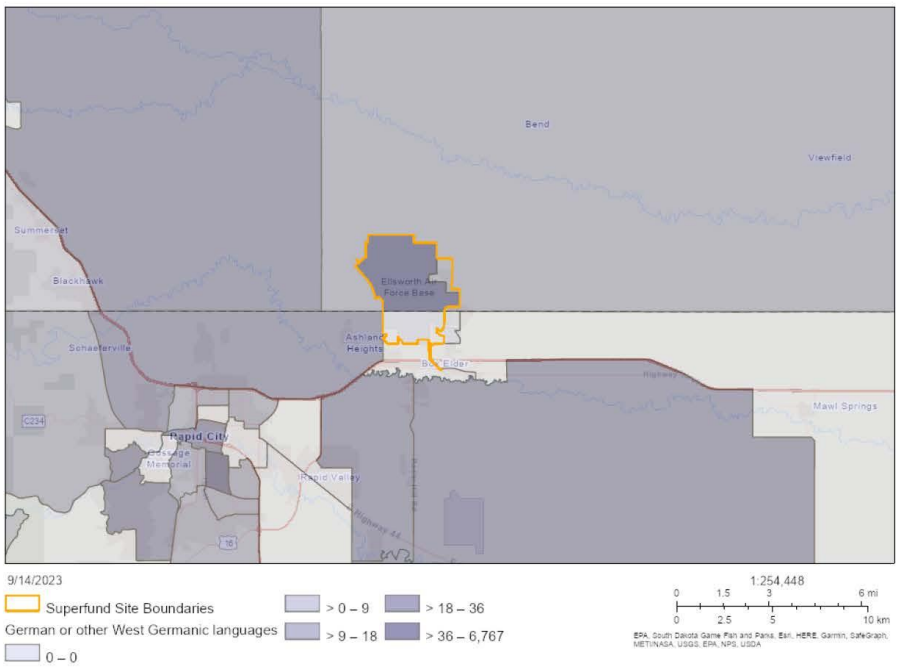
Less Than High School Education



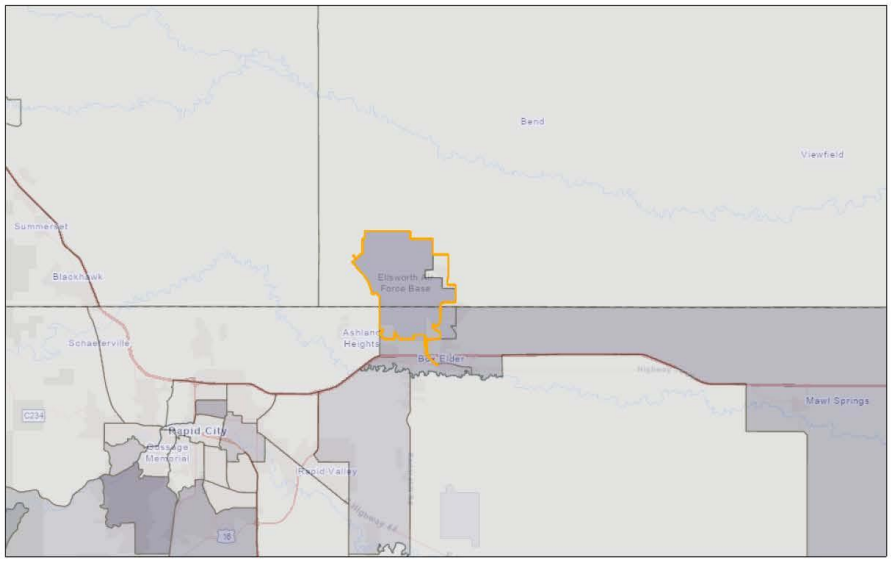
Spanish Speakers



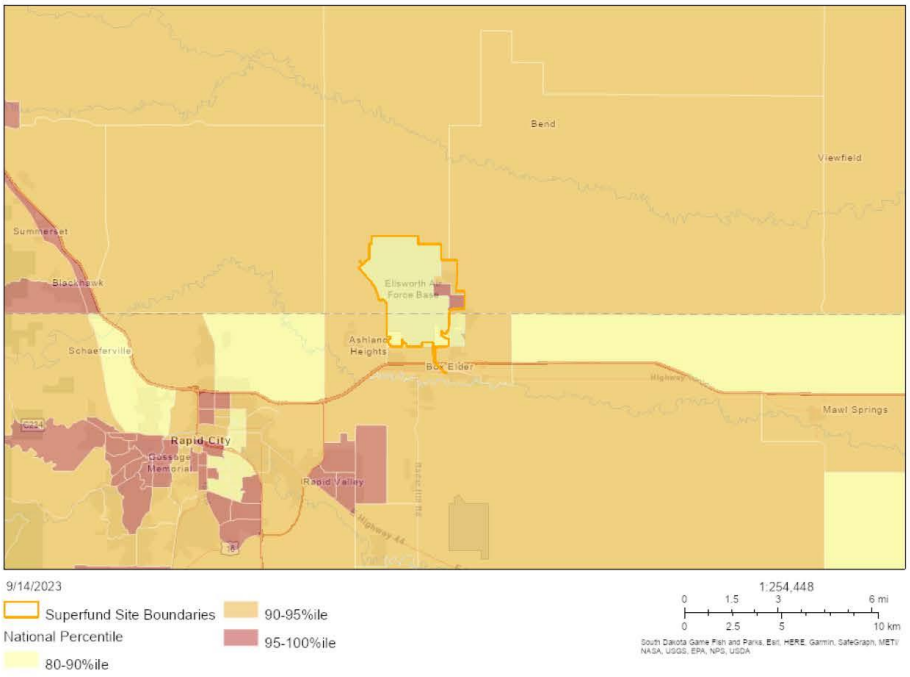
German or Other West Germanic Speakers



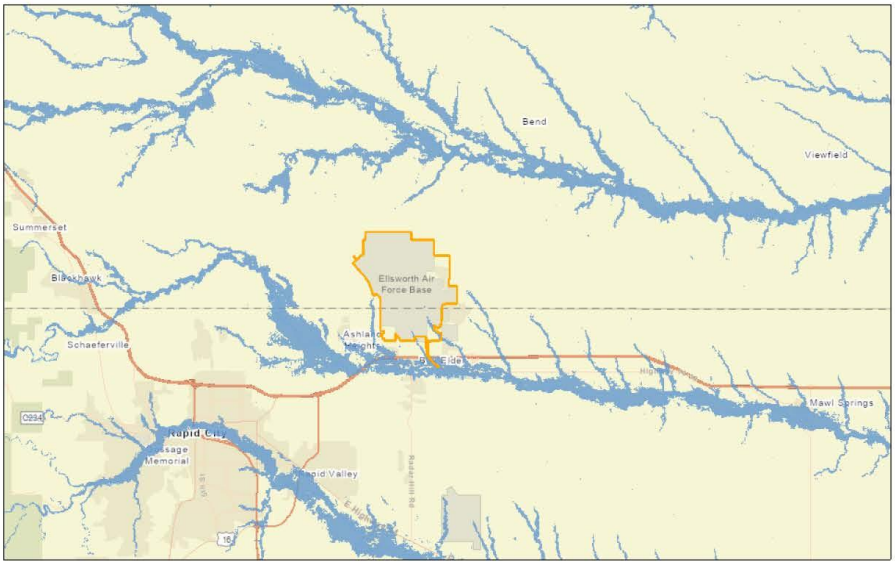
Other Asian and Pacific Island Speakers



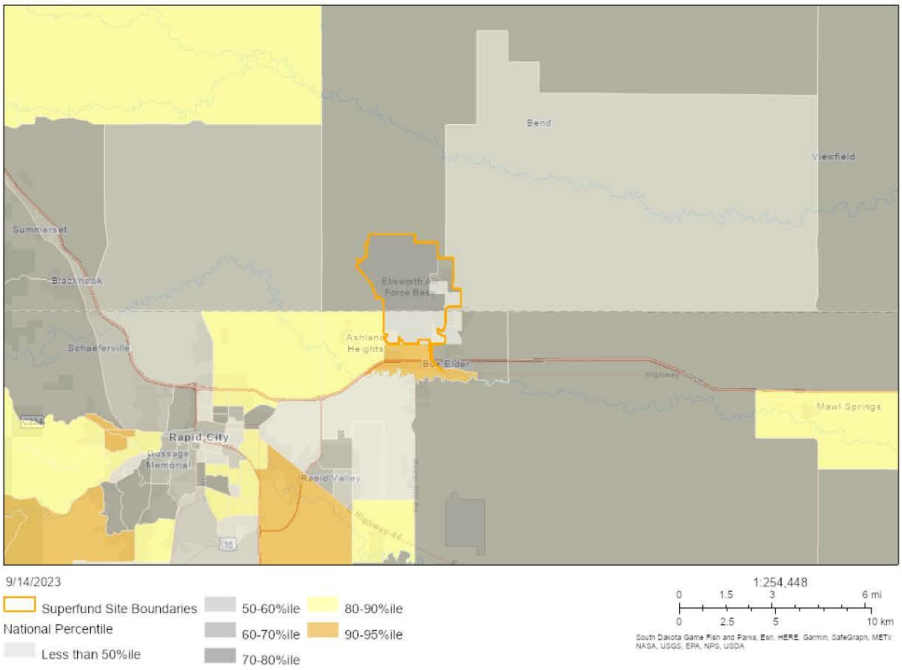
Wildfire Risk



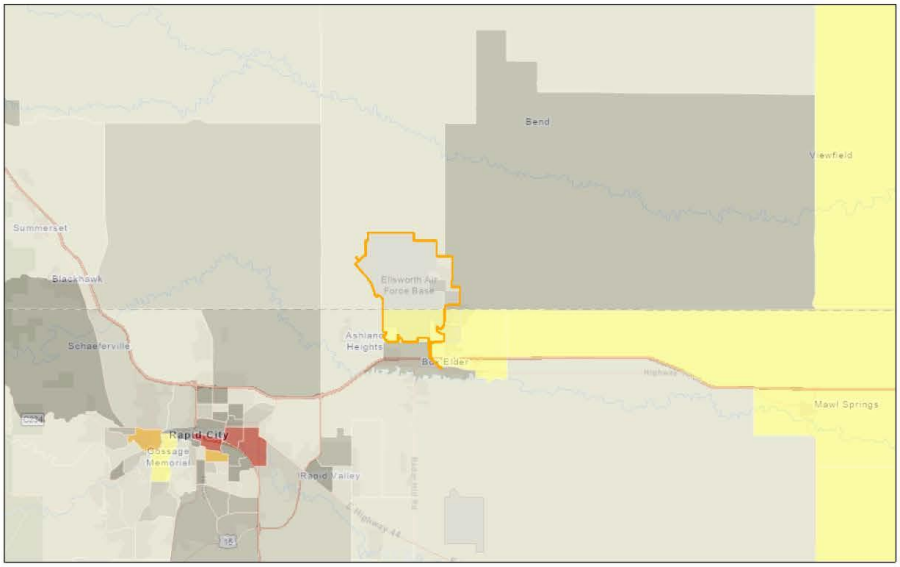
100 Year Floodplain



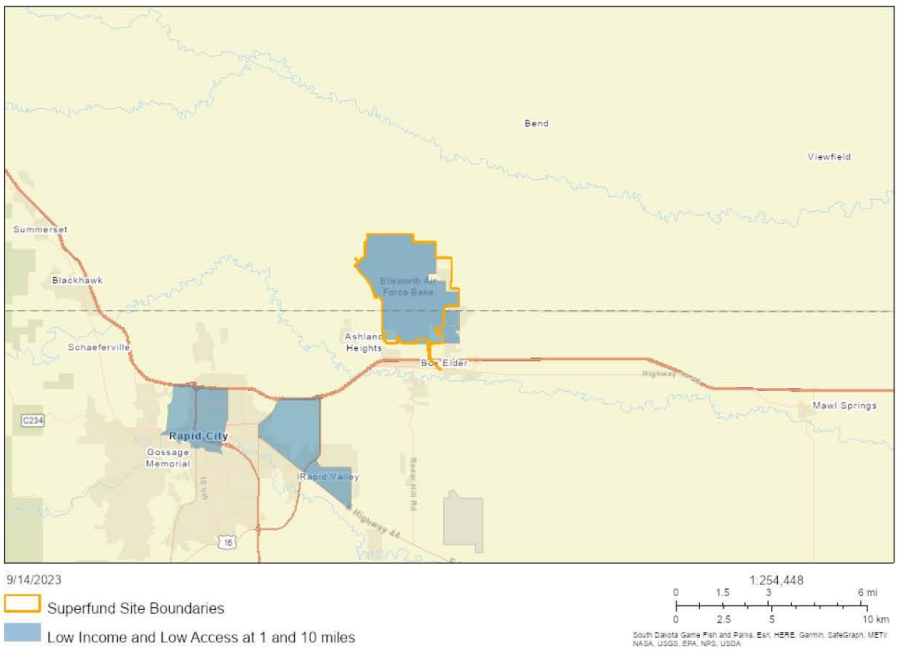
Flood Risk



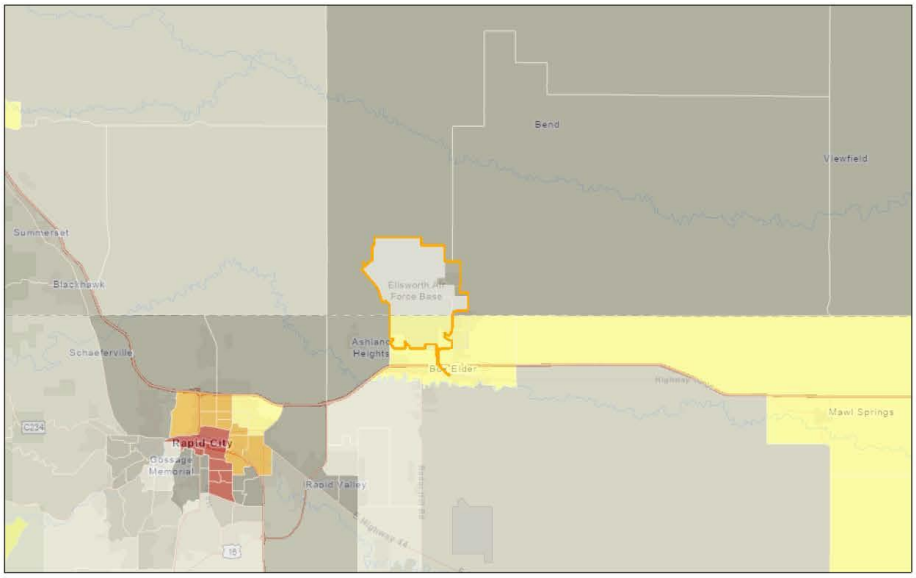
Broadband Gaps



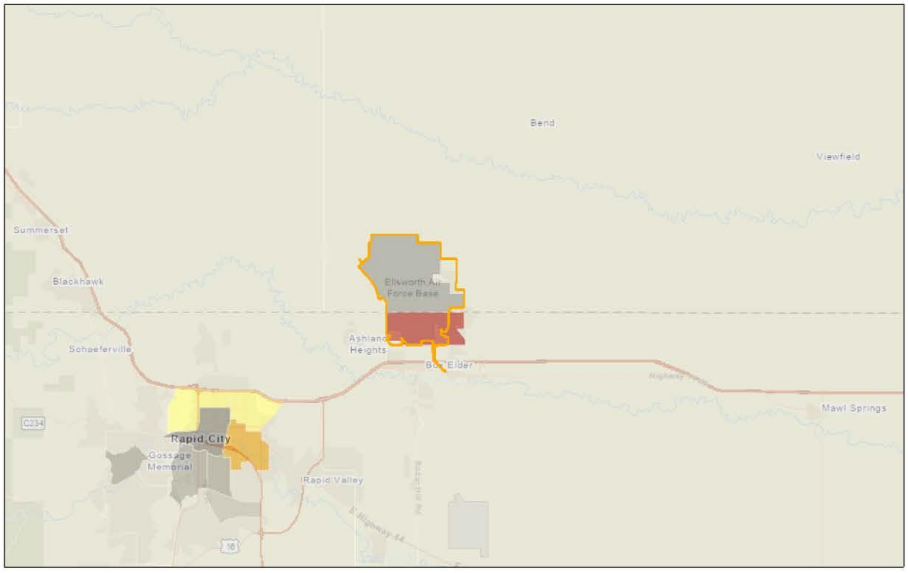
Food Desert



Lack of Health Insurance



Housing Burden



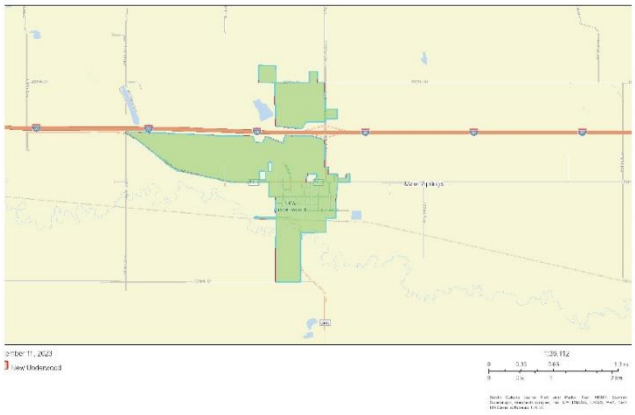
EPA

EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Pennington County, SD

City: New Underwood
Population: 859
Area in square miles: 1.45

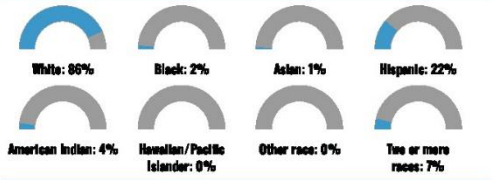


COMMUNITY INFORMATION

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
No language data available.	

BREAKDOWN BY RACE



BREAKDOWN BY AGE

LIMITED ENGLISH SPEAKING BREAKDOWN

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

www.epa.gov/ejscreen

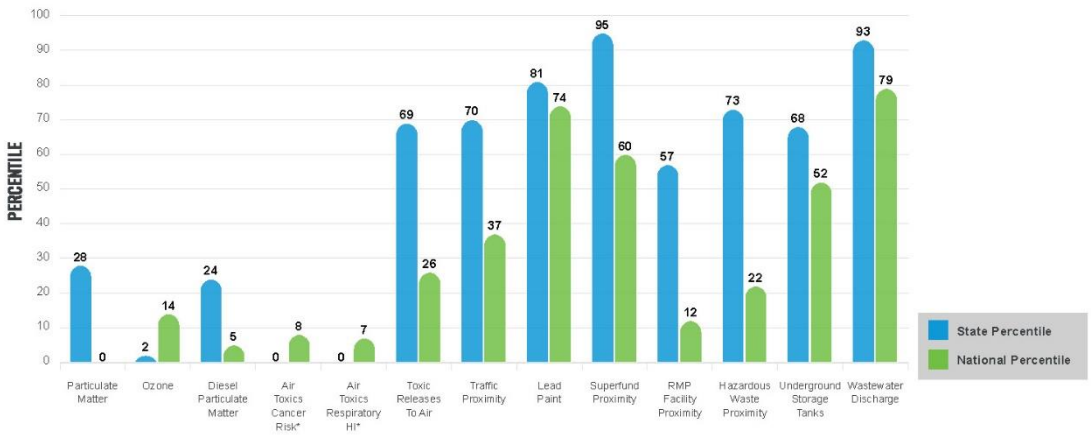
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

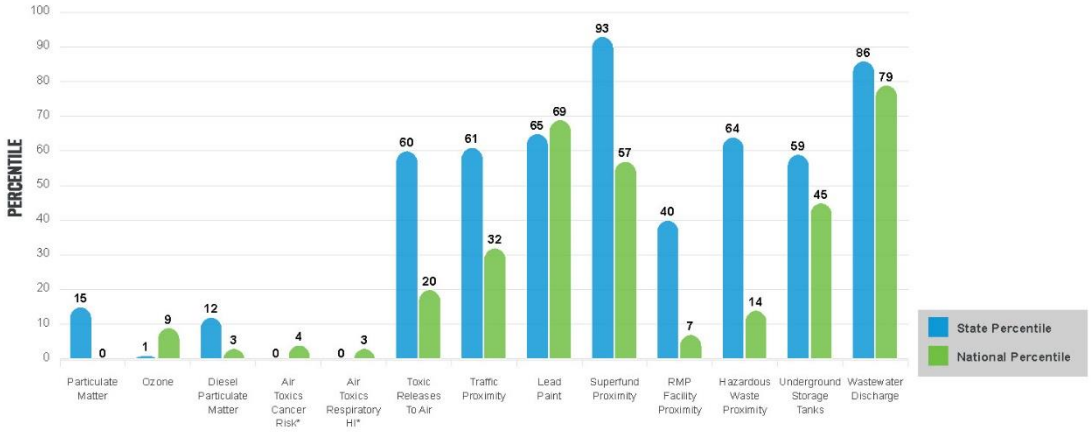
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for City: New Underwood

www.epa.gov/ejscreen

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter ($\mu g/m^3$)	4.04	4.89	11	8.08	0
Ozone (ppb)	53.9	58.6	1	61.6	6
Diesel Particulate Matter ($\mu g/m^3$)	0.0317	0.0911	9	0.261	2
Air Toxics Cancer Risk* (lifetime risk per million)	10	15	0	25	1
Air Toxics Respiratory HI*	0.1	0.15	0	0.31	1
Toxic Releases to Air	24	240	34	4,600	13
Traffic Proximity (daily traffic count/distance to road)	14	86	40	210	20
Lead Paint (% Pre-1960 Housing)	0.33	0.34	49	0.3	61
Superfund Proximity (site count/km distance)	0.046	0.022	87	0.13	40
RMP Facility Proximity (facility count/km distance)	0.035	0.28	22	0.43	5
Hazardous Waste Proximity (facility count/km distance)	0.05	0.36	39	1.9	9
Underground Storage Tanks (count/km^2)	0.15	2.1	39	3.9	30
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.023	28	72	22	74
SOCIOECONOMIC INDICATORS					
Demographic Index	41%	24%	86	35%	65
Supplemental Demographic Index	15%	12%	77	14%	63
People of Color	33%	18%	83	39%	52
Low Income	48%	31%	83	31%	79
Unemployment Rate	0%	4%	0	6%	0
Limited English Speaking Households	0%	1%	0	5%	0
Less Than High School Education	12%	8%	78	12%	63
Under Age 5	7%	6%	63	6%	71
Over Age 64	10%	18%	18	17%	27
Low Life Expectancy	17%	18%	33	20%	25

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

Sites reporting to EPA within defined area:

Superfund	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities	0
Water Dischargers	0
Air Pollution	0
Brownfields	0
Toxic Release Inventory	0

Other community features within defined area:

Schools	3
Hospitals	0
Places of Worship	0

Other environmental data:

Air Non-attainment	No
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	No
Selected location contains an EPA IRA disadvantaged community	Yes

Report for City: New Underwood

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	17%	18%	33	20%	25
Heart Disease	5.8	6.7	32	6.1	46
Asthma	8.9	9.2	50	10	22
Cancer	6.3	6.9	32	6.1	52
Persons with Disabilities	13.1%	12%	66	13.4%	53

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	23%	9%	95	12%	88
Wildfire Risk	95%	42%	80	14%	92

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	24%	16%	80	14%	82
Lack of Health Insurance	16%	10%	86	9%	86
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for City: New Underwood