

A large orange circle with a thin blue outline, centered on a white background. Inside the circle, the text "Springfield, Ohio" is written in a bold, black, monospace-style font. Below it, the words "Environmental" and "Injustice" are written in a regular, black, sans-serif font, stacked on two separate lines.

**Springfield,
Ohio**

Environmental
Injustice

Environmental Injustice and Redlining

Environmental Injustice has been a topic spanning generations as environmental conditions have gradually declined due to global industrialization. Here in the United States, individuals were treated unfairly, this treatment based mainly on their ethnicity and color of their skin. Of specific concern to environmental justice is redlining, which is the racial discrimination of mortgage lending that occurred in the 1930s^[1]. Redlining from then has shaped the demographic and wealth patterns of present-day America. In fact, in a recent study, it showed that three out of four neighborhoods that were redlined on government maps 80 years ago are still struggling economically today^[1]. In the 1930s, government officials surveyed and graded neighborhoods in around 239 cities, color coding them based on their rating^[1]. Green (Type A) areas were referred to as the best neighborhoods as they were the newest areas and were considered desirable due to them, typically, being affluent suburbs on the outskirts of cities^[3]. Blue (Type B) areas were considered to still be desirable^[3]. Yellow (Type C) areas were neighborhoods that were considered to be declining^[3]. Red (Type D) areas meant the neighborhood was hazardous and were considered to be the most risky for mortgage support^[3]. The redlined areas were the ones that local credit lenders considered to be credit risks, determined primarily based on racial and ethnic backgrounds. 50 years ago a law was passed, called the Fair Housing Act, banning this racial discrimination in housing^[1]. However, this racial residential separation is still present in many cities in the United States. In fact, nearly two-thirds of all neighborhoods deemed hazardous are still inhabited by mostly minorities, specifically black and Latinos^[1]. Springfield, like so many other U.S. cities in the 1930s was subject to redlining, and the effects in our community are still prevalent to this day. We can see patterns that have manifested in the distribution of environmental disamenities as a

result of redlining such as: polluting industries, urban heat islands, vulnerability to flooding, waste disposal along with the distribution of environmental amenities like parks and trees^[4].

Combined Sewer Overflow

A combined sewer overflow system is, by definition a collection system of pipes and tunnels designed to collect surface runoff and sewage water in a shared system. These types of systems often cause water quality problems because heavy storms can cause these systems to break and release a flood of raw sewage and toxic surface runoff into our waters. However, dismantling them is also dangerous as separated, the storm runoff that contains fertilizers, pesticides, lead, etc. will be diverted directly into rivers and lakes. It can be noted from Figure 1 that the combined sewer overflow system in Springfield, OH is entirely along the river. Sewage overflow on Buck Creek is mostly along the boundaries of the red and yellow areas. In fact, this is especially notable in the redlined areas (Area D) as can be seen in Figure 2, where the combined sewer overflow number per square mile of that zone area far exceeds any other of the three zones. This is a direct result of Springfield's redlining from the 1930s and the installation of these sewer systems in our city. Combined sewer overflow is considered an environmental disamentitie, and, as stated previously, those areas zoned as red and yellow (though especially red) received the majority of these poorly distributed and managed disamentities^[4].

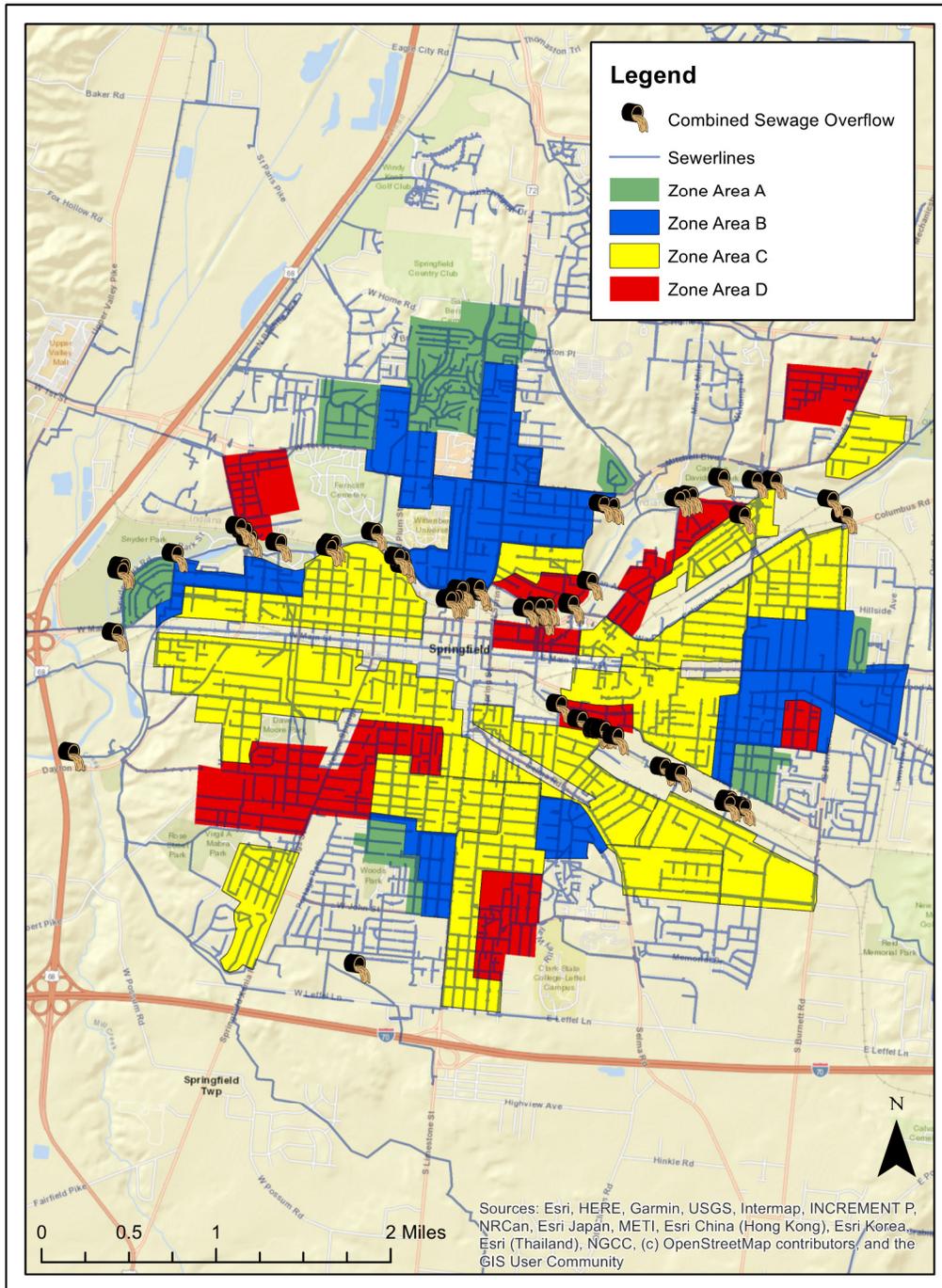


Figure 1: This map represents all of the combined sewage overflows throughout Springfield, OH in relation to the zoned area represented by A, B, C, and the redlined zone D.

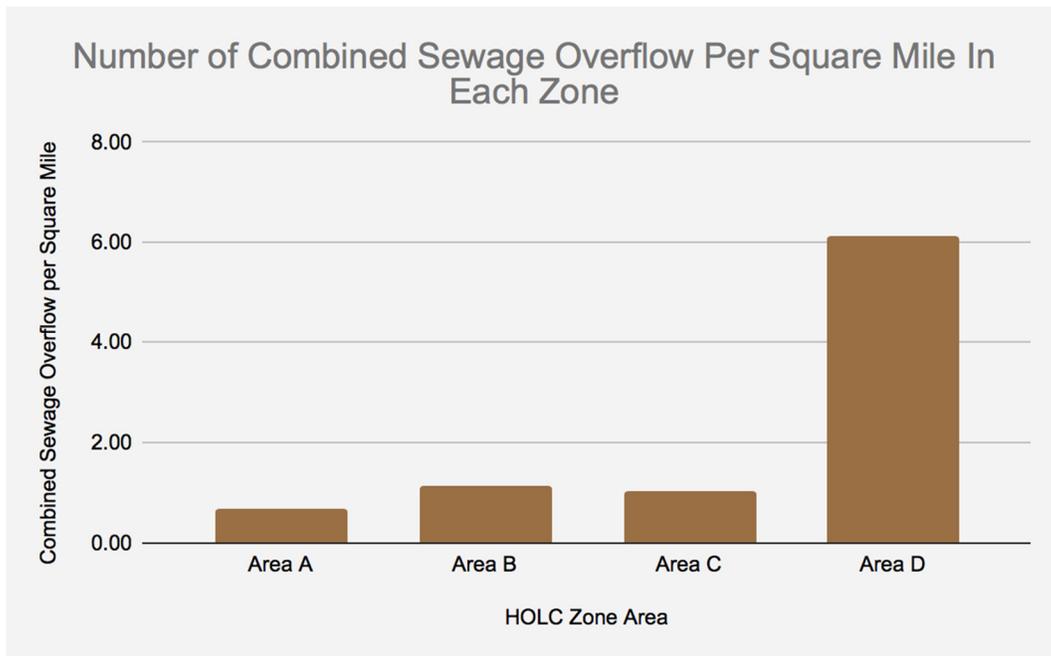
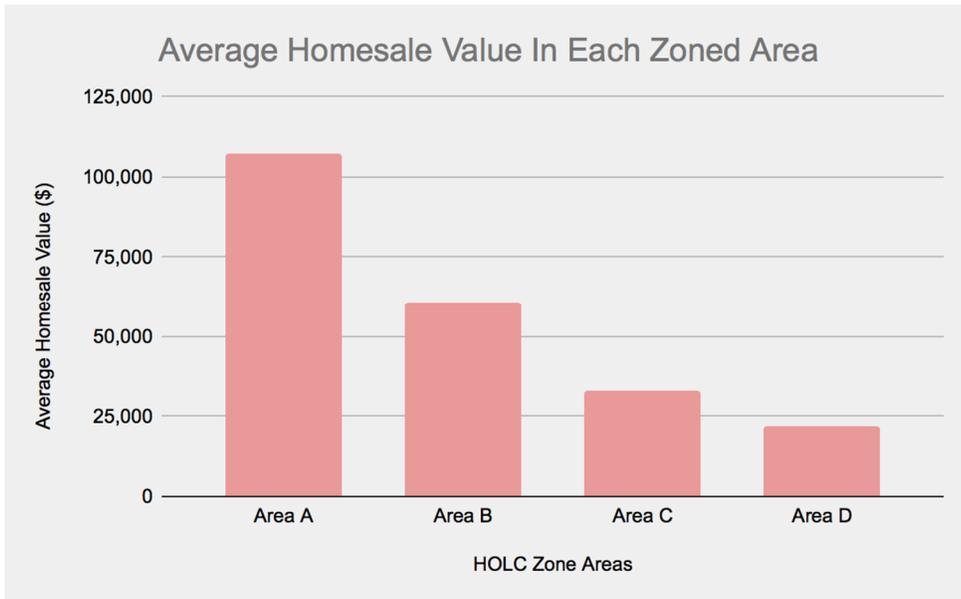


Figure 2: This bar graph represents the relationship between the number of combined sewage overflow outputs per square mile in each area represented by A, B, C or D. Overall there is not much variation in zones A, B or C. However, zone D has a significantly larger amount of combined sewage overflow outputs per square foot than any other zone.

Home Vacancy, Average Home Sale Values, and Lead

The effects of redlining on home value is still seen today all over the United States^[3], including Springfield, OH. The practice of redlining has denied millions of American families access to fair housing, is one of the main drivers of wealth disparities in America, and is a serious civil rights issue^[6]. Redlining harms families by restricting their access to financial products and services and continues the history of systematic economic oppression of marginalized groups by causing a decrease in home values^[6]. A recent study found that the median home value in redlined neighborhoods was 41.7% that of areas rated the best, and this value gap has only worsened^[6]. The median household value in the “best” (A and B)

neighborhoods has risen 230.8% over the past 22 years, whereas the median value in the areas rates as “hazardous” (yellow and red) has climbed only 203.1%^[6]. This drastic difference in home sale value in Springfield, OH can be seen in figure 5, where the areas zoned A and B have an average value around \$110,000-\$115,000 whereas areas zoned C and D have an average value of about \$25,000. In the national study, there was a 22% difference in the home sale value,



whereas in Springfield, OH, the homes in area A are 400x more valuable than those in the redline zone solely because of the area they are located.

Figure 3: This graph shows the average home sale value of properties in each of the four previously zoned areas in Springfield, OH.

As a direct result of home values in zones areas, we also see an increase in vacant properties in the areas zoned “hazardous” versus the areas zoned “best”. In fact, there is even evidence that discrimination in mortgage markets still exists today. Recent reports have found evidence that “reverse-redlining” is present nationally in which subprime lenders target areas with more minorities^[9]. Though this is a persistent nationwide issue, the city of Springfield should explore whether or not this is also occurring within our community. When areas are zoned as C or D, have homes with lesser value, and have discriminatory mortgage lenders

prowling, we see higher levels of vacant properties. These vacant properties sit and deteriorate, posing health risks to the surrounding homes while also lowering the value of surrounding homes and their

neighborhoods. As

you can see, it is a

spiral effect in

these redlined

areas because they

already suffer from

lower valued

homes, and we can

see a higher number of vacant

properties which

further decrease the values and desirability of these neighborhoods. These properties are also the

ones that pose the greatest health risks to their communities. In regards to our community of

Springfield, we see a greater risk of lead exposure on these properties. Today, both nationally

and in our own community here in Springfield, approximately 60% of black and ethnic minority

Americans live in places that were redlined back in the 1930s. Not only have their

neighborhoods declined in value since then, but elevated blood lead levels in these children have

also been observed as a result of the redlined, segregated cities^[7]. A study conducted by

Cambridge found that black children ages one to five have consistently higher blood lead levels

compared to that of their white counterparts^[8]. Another study reported that 28% of African

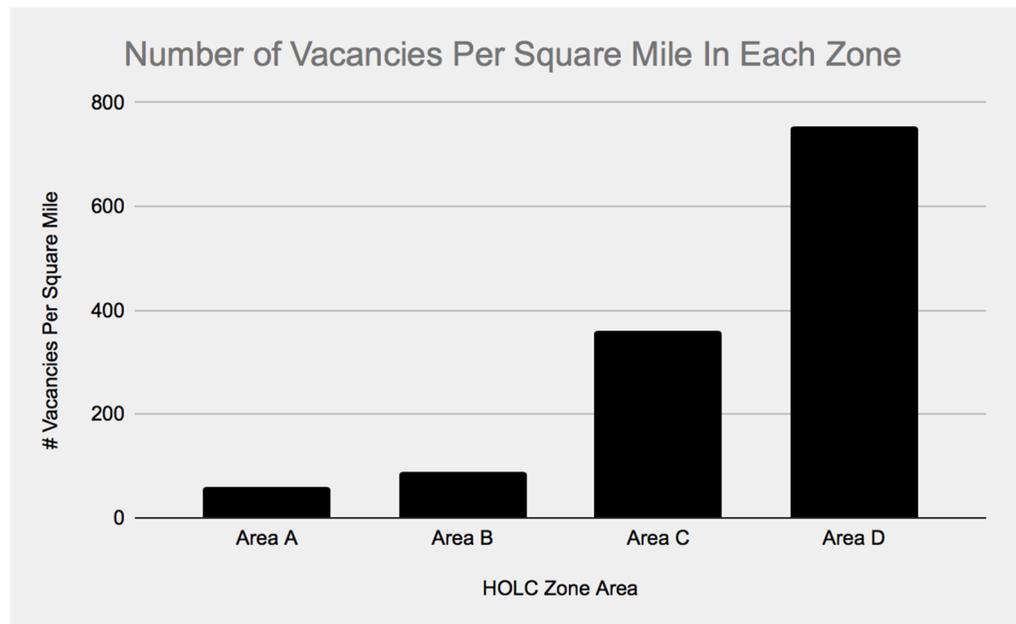


Figure 4: This graph shows the average number of vacant homes and properties per square mile in each of the previously zoned areas in Springfield, OH.

American households faced housing related lead exposure risk as compared to only 20% of white families^[7].

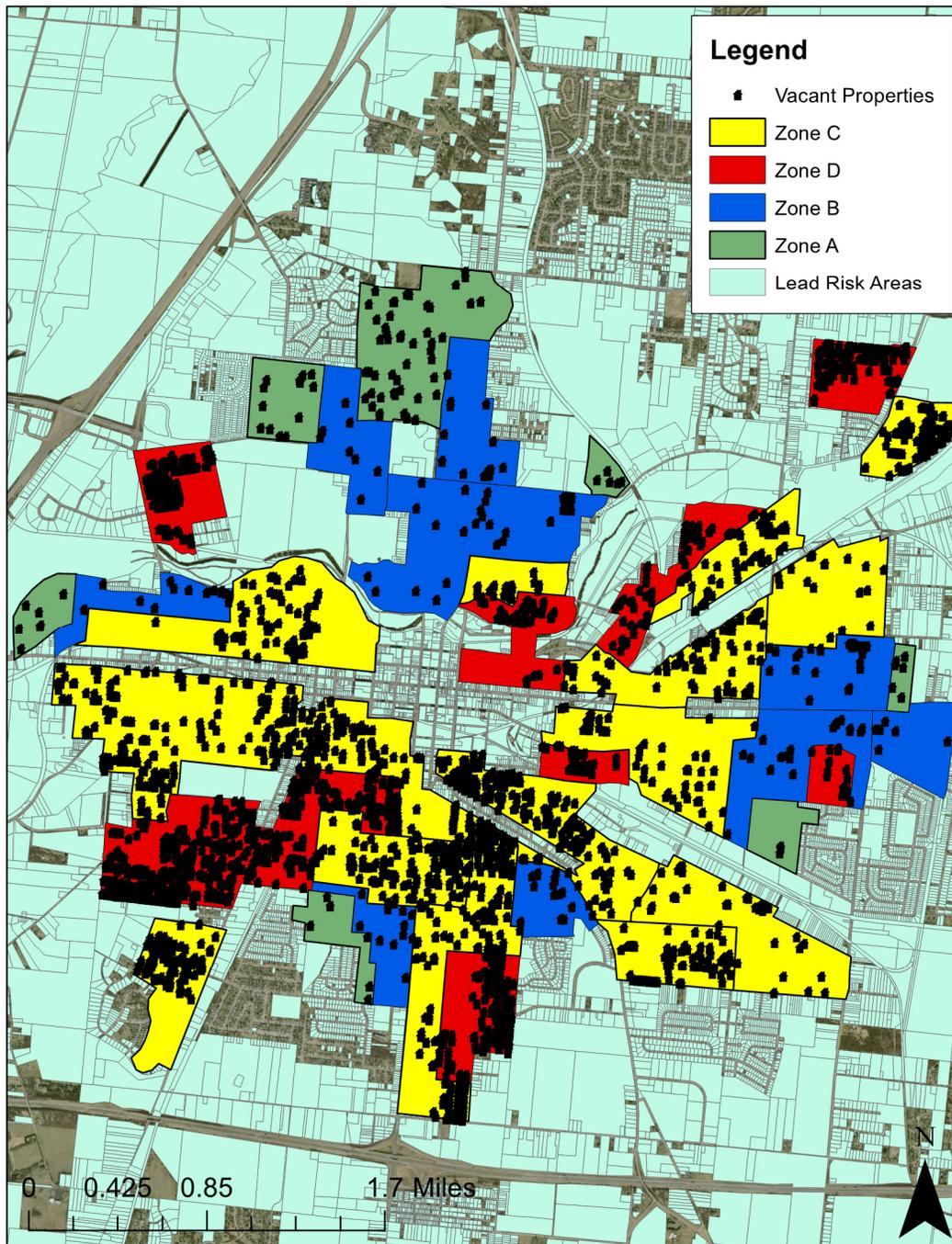


Figure 5: This map represents the zoned areas labeled A, S, C, or D, vacant homes and properties in those zones, and the potential lead risk based upon home age, which is representative of overall lead risk

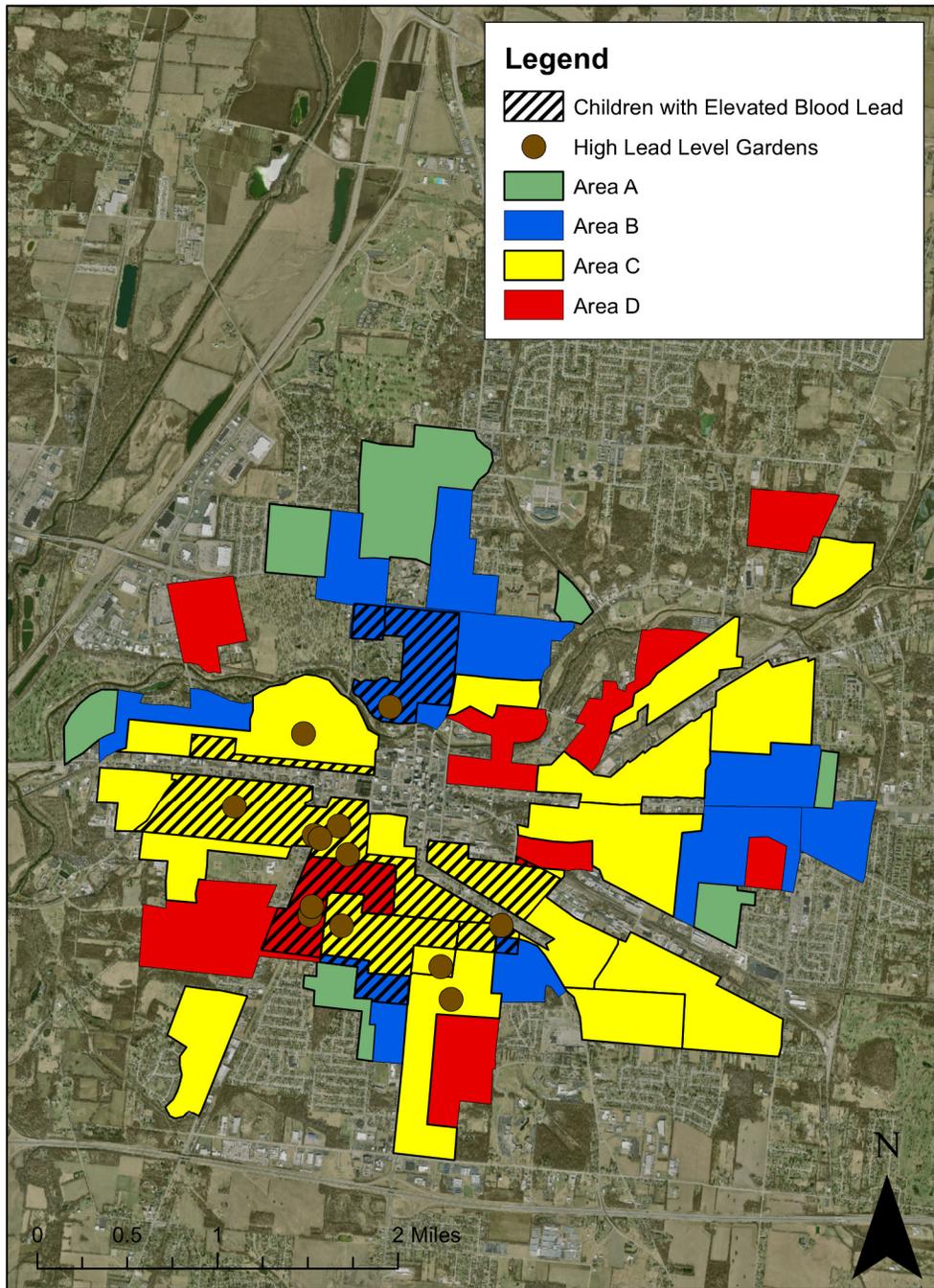


Figure 6: This map represents the zoned areas labeled A, B, C, and the redlined zone D, and where children with elevated blood levels live along with gardens found to have high lead levels (>200 ppm).

Recommendations

Based on the environmental justice concerns in Springfield, OH as discussed above, we conclude with some recommendations that we advise the City of Springfield to highly consider implementing as they move forward with their city's improvement plans.

- Brooklyn, NY experienced a problem with their waste management being confined in the areas zoned as red and undesirable, further decreasing those areas value and desirability. As a city, they have made steps towards expanding their waste management system into other, non-red zoned areas as to lessen the impact of these neighborhoods while at the same time working on de-stigmatizing these primarily low-income, low-valued, black neighborhoods^[5]. We recommend that Springfield follow a similar approach for their future wastewater treatment and to implement programs in the city to help the community destigmatize these less-valued areas and the people that live in them.
- Child trends recently contributed to a comprehensive analysis of the ways in which children are exposed to lead and their report included recommendations for housing sectors to address lead exposure, many of which we also recommend for the city of Springfield to include as they address the issue of increased blood lead levels in the lesser zoned areas. We suggest to reduce lead in drinking water in the homes that were built before 1986 and in other places children frequent like schools, child care centers, public restrooms, playgrounds, doctors offices, dentists, etc^[7]. We also recommend that Springfield increase funding to replace windows coated with lead paint, fix peeling paint, and treat toxic soil outside the homes of low-income, low-zoned families before the 1960s^[6]. Finally, we recommend that Springfield increase their enforcement of the EPA's renovation, repair, and painting rules^[7].

- In regards to the large number of vacant properties in Springfield, we can offer two recommendations in regards to dealing with these. If Springfield wants to raise home and neighborhood value along with the appeal of the entire city, the vacant properties must be dealt with. The easier, and potentially cheaper option would be for the city to go in a tear down the irreparable vacant homes, leaving empty lots for potential builders, or for surrounding homeowners to purchase to expand their property lot. The other option, and the more efficacious one at that, is to repair the vacant properties^[10]. Studies over the years have shown that the proximity to vacant and abandoned properties had the greatest impact on the possibility of a property being abandoned^[10]. In order to avoid this, Springfield should apply for and use funding to fix the appearance of homes and their lots, while also eliminating unsafe structures and properties of the home that pose lead risk to future owners.
- We recommend Springfield conduct an internal investigation into the concern of “reverse-redlining” and whether or not this a problem effecting the community. If it is found to be a problem, we recommend creating new and punishable by law guidelines for landlords to follow to prevent this from continuing.
- Finally, we recommend Springfield look into where it can create wetlands along the Buck Creek River as wetlands will benefit the cleanliness of the city’s water supply. Combined sewers and municipal wastewater add nitrogen and phosphorous to our rivers

and streams. Wetlands have the ability to clean this water due to the fact that water moves

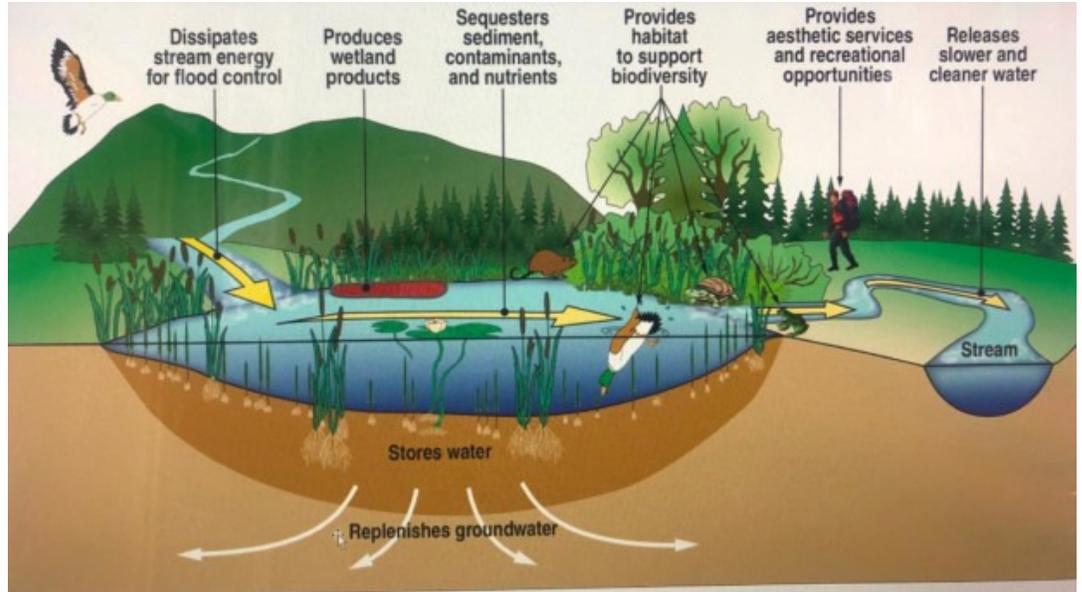


Figure 7: The process of how wetlands clean waters. This picture was taken from <http://www.tibetnature.net/en/water-purification-as-defined-by-nature/>

slowly through them along with their dense, rich, and diverse vegetation and can clean the water through physical, chemical, and biological processes^[11]. These processes can remove nutrient contamination sediments, and other pollutants that are in our waters^[11].

References

- [1] Jan, T. (2018, March 28). Redlining was banned 50 years ago. It's still hurting minorities today. Retrieved from <https://www.washingtonpost.com/news/wonk/wp/2018/03/28/redlining-was-banned-50-years-ago-its-still-hurting-minorities-today/>.
- [2] Smith, B. R. (2009). Re-thinking wastewater landscapes: combining innovative strategies to address tomorrow's urban wastewater treatment challenges. *Water Science and Technology*, 60(6), 1465–1473.
- [3] Research Guides: Maps & Geospatial Data: Redlining Maps. (n.d.). Retrieved from <http://guides.osu.edu/maps-geospatial-data/maps/redlining/>.
- [4] Grove, M., Ogden, L., Pickett, S., Boone, C., Buckley, G., Locke, D. H., and Hall, B. (2017). The Legacy Effect: Understanding How Segregation and Environmental Injustice Unfold over Time in Baltimore. *Annals of the American Association of Geographers*, 108(2), 524–537
- [5] Organizational Theory Part 2: The Post-WWII Era. (2016). *Scholarship At Claremont*. doi: 10.4135/9781473965157
- [6] Gudell, S. (2018, April 27). Home Values Remain Low in Vast Majority of Formerly Redlined Neighborhoods. *Forbes*.
- [7] Redlining has left many communities of color exposed to lead. (2018, July 25). Retrieved from <https://www.childtrends.org/redlining-left-many-communities-color-exposed-lead>.
- [8] Sampson, R. J., & Winter, A. S. (2016). The Racial Ecology Of Lead Poisoning. *Du Bois Review: Social Science Research on Race*, 13(2), 261–283. doi: 10.1017/s1742058x16000151
- [9] Appel, I., & Nickerson, J. (2016). Pockets of Poverty: The Long-Term Effects of Redlining. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2852856
- [10] Yin, L., & Silverman, R. (2015). Housing Abandonment and Demolition: Exploring the Use of Micro-Level and Multi-Year Models. *ISPRS International Journal of Geo-Information*, 4(3), 1184–1200. doi: 10.3390/ijgi4031184
- [11] Cleaner Water. (n.d.). Retrieved from <http://www.wetlands-initiative.org/cleaner-water>.