RESILIENT GEOGRAPHIES:
AN ATLAS OF CULTURAL ECOSYSTEM SERVICES
IN THE LAND OF SPIRIT WATERS

A THESIS
PRESENTED TO THE DEPARTMENT OF URBAN
AND ENVIRONMENTAL PLANNING
UNIVERSITY OF VIRGINIA

By Brian Van
B.A., 2022, University of Florida

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF URBAN AND ENVIRONMENTAL PLANNING

Committee Members:
Bev Wilson, Ph.D. (Chair)
Jennifer Lawrence, Ph.D.

May 2024

Acknowledgements

I would like to express gratitude to my mentors, Dr. Bev Wilson and Dr. Jennifer Lawrence, for their patience, guidance, and helping me see the unseen. I sincerely thank you for your support in helping me make this thesis a reality.

I would also like to thank my cohort - MUEP 2024 - for bringing levity to any situation and supporting me throughout this past year of research and writing.

I would also like to acknowledge the support from the landscape architecture department for teaching and guiding me on my own design journey.

Dedication

To my loved ones that have been my northern star when I was adrift in my own confusion.

I dedicate this thesis to all people who are trying to find where they belong.

To the first and second generation immigrants trying to better their circumstances and find home.

To those seeking security and safety in rapidly changing world.

To those that know of the isolation of change, exclusion, and social marginalization.

To those that have embraced Mother Nature on their journey to find community.

Abstract

This thesis explores the relationship between and the impact of cultural ecosystem services on resilience planning by examining public spaces in San Antonio, Texas. Existing studies have recognized that evaluating cultural ecosystem services is challenging, but continued research as well as the development and testing of new methods are necessary to enhance our understanding. To support this aim, this thesis utilized participant observation and an inductive research approach to examine how cultural ecosystem services – the intangible benefits that communities gain from their natural environments – influence levels of social interaction and social cohesion. Three public urban green spaces in San Antonio were selected for observation because they function as spaces for cultural engagement and social resilience in the city. The findings of this study indicate that cultural ecosystem services are invaluable to fostering social cohesion and greater levels of social interaction in public spaces. Further, mapping observations of use and behavior from each of the three selected public green spaces coupled with historical research reveal the extent to which planning, and design interventions can influence cultural ecosystem services, the number of people engaging with them, and the who those people are in a general sense. Although it was not possible for this thesis, future studies should employ post-observation interviews with individuals making use of public green spaces to enrich and contextualize the observational data.

Keywords: cultural ecosystem services, San Antonio, public urban green spaces, community

Table of Contents

List of Figures

Chapter 1: Introduction

Some of the earliest memories I have of nature are of my father taking me out to the piers on early mornings to catch the first bite of the day. Although I never had much success in catching anything, my father loved it; he and his family were fishermen before he immigrated to the United States. This was my father's way of connecting with his culture and family from thousands of miles away. While my father would never go into detail when I asked him about his childhood, on those piers, listening to the sound of the ocean, I knew home didn't feel so far for him in that moment.

The connection between the environment and culture is ever-present - that experience with my father was one of the many ways that culture is informed, in part by, the environment. By extension, it also illuminated how the environment is shaped and stewarded by cultural perspectives and beliefs. Conversely, however, the environment is just as unforgiving as it is generous. For every memory I have of listening to the ocean breeze, I also have a memory of repairing broken fences and windows after hurricanes. Growing up in Florida, the need for climate and environmental resilience projects to counteract severe weather phenomena like hurricanes was a constant concern. While some methods were more effective than others, a consistent thought concerned me. Where does culture fit into this? Flood walls and drainage strategies frequently neglected the human dimensions of resilience and other strategies omitted community values and customs (Pratt 2023; Roberts 2018). It was more than just wanting to survive these potential realities; it was ensuring that the connections between humans and their environment would still exist and not be destroyed by normative modes of resilience that impose these dominant logics (Chéry & Morales 2023; Pratt 2023; Vall 2018). To pursue equitable resilient outcomes, planners and city leaders need to alter their approaches to resilience planning and include these humanistic dimensions. Cultural ecosystem services (CES) are loosely defined as the intangible benefits that people receive from the environment and, in the case of resilience, can become effective tools for social resilience if proper evaluations are completed.

These concerns are not limited to my hometown, cities across the world are facing ongoing battles with the climate crisis. This thesis defines resiliency as the ability to withstand severe environmental climatic conditions, increase environmental health, and foster socio-economic equity. By interpreting resilience in this manner, there is an increased need for social resilience to be considered an integral role in climate resilience as marginalized communities bear the brunt of environmental injustice (Brunn et. Al 2020; Klein & Zellmer 2014). The city of San Antonio, Texas is no different due it's complex history with river development and flood management. As of writing this thesis, San Antonio has made significant strides to construct flood and heat resilience infrastructure projects (San Antonio City Council 2019; SA Office of Sustainability 2023; Texas Water Newsroom 2023). However, common resilience projects such as public urban green spaces are struggling to fully integrate the human and social dimensions of resilience. As a result, it is critical to evaluate social behaviors and cultural ecosystem services in existing public urban green spaces to better inform future resilience projects.

It is important to acknowledge my position as an Asian-American man who is not from San Antonio. Having grown up in another US city with a predominately Latino population, I was drawn to San Antonio's similarities with my hometown of Miami. As a child of two Vietnamese immigrants, my upbringing immersed me in a mosaic of Caribbean, Asian, Central American, and South American cultures – whose impacts continue to shape my perspective and personal identity that I am still seeking to understand. I acknowledge though that I will never grasp the full breadth of cultural complexities of San Antonians, its communities, and their connections to the environment. As a result, I learned about the region and it's Tejano, Mexican American, and Coahuiltecan histories through a mix of primary and secondary sources. Of which, I am grateful to my partner and their family for entrusting me with their personal histories about their experiences as Tejano Mexicans in the San Antonio/South Texas region – valuable insights that have been invaluable in guiding my perspective on this thesis and

the interpretation of the collected data. Consequently, I hope this thesis provides communities with discretionary information about San Antonio's cultural ecosystem services and their role in resilience planning for communities. More so, my goal for this thesis is to showcase the intrinsic value of culture the urban planning field and alter how resilience practice operates.

For those living in San Antonio, the San Antonio River along with its tributary creeks have played an instrumental role in the development and culture of those living there. The San Antonio Riverwalk is famous for fusing flood engineering with placemaking initiatives to create an urban public space that has created an indelible impact on the region's economy, ecology, and society. However, prior to Spanish colonization, indigenous tribes of the South Texas plains lived along and made use of the very same river. The river was originally known as 'Yanaguana', a traditional Pakawa/Tejano term from the Tāp Pīlam Coahuiltecan Nations, which translates to 'Spirit Waters' - a nation of American Indians that still reside in what is now San Antonio. It is this intense and complex connection to the river across communities that spurred personal interest into this thesis topic. As most public parks in the region are situated along the banks of the river and its connected creeks, examining the efficacy of resilience projects through their public green spaces allows for a semi-ethnographic analysis of how local communities interact with the river/creeks and surrounding areas.

Section 1.2: Research Objectives

After completing initial historical research, it was evident that the urban and natural landscapes of San Antonio have changed over time and, thusly, changed cultural traditions. To explore what forms of behavior exist and how they changed, several research questions were created to guide this thesis.

1. *What are the levels and forms of social interactions observed in public urban green spaces in the city of San Antonio?*

2. *What cultural ecosystem services can be inferred from observed behaviors in San Antonio's cultural heritage sites, within the context of San Antonio's public spaces?*
3. *What cultural ecosystem services can be inferred from observed behaviors along San Antonio's River system, within the context of San Antonio's public spaces?*
4. *How does historical and socio-economic context influence the interpretation of observed behaviors in San Antonio?*

It is important to acknowledge that the focus on public spaces in San Antonio in this thesis is because public urban green spaces act as invaluable green infrastructure tools to improve local conditions for climate and social resilience. Unlike grey and blue infrastructure like concrete channels or retention ponds, public spaces and parks can function as hosts to several forms of climate infrastructure. All the while, public spaces provide invaluable sites for social interaction and cultural activity, which is the focus of this thesis.

Section 1.3: Strategy and Research Methods

The original premise of this thesis took inspiration from the work of William Whyte and his observation of public spaces in cities; However, this thesis needs to do more than extract observational data if it wants to meaningfully contribute to both local communities and the design field. So, this thesis will utilize the Systemically Observing Social Interaction in Parks (SOSIP) approach to quantify the level of social interactions in the chosen sites, an inductive approach to interpret and enrich the data set, documental research to interpret cultural ecosystem services obscured without historical contexts, and a behavioral mapping approach to graphically visualize how communities use public spaces (Cehn etl. Al 2023; Vidal et. Al 2022). Through this approach, this thesis analyzes and interprets urban development patterns in San Antonio, it's impact on social behavior, and how cultural ecosystem services can positively inform resilience initiatives to improve community social resilience.

To determine where behaviors should be observed, a geospatial analysis of the San Antonio River Basin was conducted to identify 3 sites that would be relevant to this study - Brackenridge Park that lies on the headwaters of the San Antonio River, Elmendorf Lake Park that occupies the epicenter of the historic west side, and Confluence Park which meets at the joining of the San Antonio River and the San Pedro Creek. Factors such as existing infrastructure, historic development, and recent trends in demographic change were considered. Existing infrastructure includes proximity to a water system and the presence of a cultural heritage site. Cultural heritage sites are a component of cultural ecosystem services and are comprised of three different types of sites: a) Cultural heritage sites derived from natural landscapes and environments (e.g., fjords in Scandinavia, terraced rice fields in Southeast Asia, the greater San Antonio River in San Antonio), b)Tangible and visible human-made remnants of the past (e.g., archaeological ruins in Greece, Revolutionary-War era buildings in the United States, the San Antonio Missions and Alamo), c) Objects, representations, and commemorations of the interactions between the tangible present and the intangible past (e.g., murals displaying historical events, sculptures monumentalizing historical figures, the San Antonio Riverwalk). These three types of cultural heritage sites provide different social values to public spaces and need to be considered in this analysis.

Following the initial site visit, the SOSIP approach was employed to calculate the level of social interactions in each public space. The SOSIP approach requires the researcher to record the social interaction level for each group using the Social Interaction Scale, group size, demographic information, behavior, physical activity level and mobility, date, time, weather and temperature. This process was repeated in the morning and afternoon for a weekday, Saturday, and Sunday for each of the three sites. To create a comprehensive dataset, this analysis was done twice in different seasons that saw varying temperatures. The results of the data collection process were used to create the social interaction score for each public space observed. In addition, the summarized data was geolocated

through GIS to visually display the general location where each behavior was recorded; This quantification of data provides the basis of statistically analyzing and identifying patterns of human-environmental interactions and potential cultural ecosystem services.

By analyzing both observed data, public records, and second-hand accounts this thesis investigates how public space in San Antonio cultural ecosystem services can positively change resilience planning practice. It is only through the publicly available and astounding work of urban historians, cultural geographers, and local communities that allowed for this thesis to make the connections between social behaviors and cultural ecosystem services. By doing so, this thesis provides an exploration of the cultural landscape of San Antonio and how acknowledging humanistic perspectives into resilience practices can support marginalized communities create meaningful change.

Chapter 2: Literature Review

As this thesis is centered on cultural ecosystem services and its implication on resilience practices, it is critical to explore existing research on CES, its importance, and what other researchers have discovered. Cultural ecosystem services are defined as the intangible output's ecosystems have on people's physical, mental, and spiritual well-being (Hølleland et. al 2017). This contrasts with general ecosystem services that aid in regulating and/or support environmental health (Hølleland et. al 2017). These intangible benefits can range from recreational and eco-tourism benefits to artistic or religious enrichment. While there is positive consensus on the existence and importance of cultural ecosystem services, academic discourse on the subject is profound and is centered on what is considered a cultural ecosystem service. Researchers have also focused on the best means to quantify and incorporate cultural ecosystem services into urban planning, resilience, and environmental conservation. To explore the impact human-environmental relationships has on resilience planning, this literature review will examine how cultural ecosystem services are defined, quantified, and utilized in academic research and professional practice. Additionally, it surveys how cultural ecosystem services are tied to social cohesion and how that intersection influences resilience planning.

As the previous section explores, there is disagreement concerning the jurisdiction of cultural ecosystem services. Anthropologically speaking, 'culture' often refers to the learned behaviors and practices of a society; CES defines 'culture' as any intangible benefit or value an environment provides. As a result, some scholars argue that the term is a simplistic interpretation of the term that reduces the potency of the term 'cultural' (Fish et al., 2016; Dickinson & Hobbs, 2017). For instance, if an individual were to practice subsistence fishing as their culture dictates, it would not be considered a cultural ecosystem service as fishing provides a tangible benefit – food. This discourse has led to disagreements as to what values or benefits are considered cultural ecosystem services and what they

should be classified under. A consensus of the term's jurisdiction is needed and, until a consensus has been reached, future research on the subject will most likely struggle to progress.

Critics of cultural ecosystem services also disapprove of the term 'ecosystem service' as it further reduces complex cultural systems to an enumerable financial output (Cheng et al., 2019). By doing so, it opens discussion for comparing cultural systems between one another. Inadvertently, this approach would promote the prioritization of certain cultural behaviors over others, which could negatively impact minority culture groups that are overshadowed by larger cultural norms. These concerns have pushed some researchers to discard the term in favor of immaterial ecosystem services, however, the term 'CES' is still widely used to refer to this subject (Dickinson & Hobbs, 2017). Despite this discourse, it is generally agreed upon that if a benefit does not fall under general ecosystem services, it should be considered a cultural ecosystem service (Fish et al., 2016; Dickinson & Hobbs, 2017). This creates a binary between the social and environmental aspects of resilience planning, of which, practitioners need to view holistically to meaningfully create resilient spaces.

Cultural ecosystem services have been researched at an increasing rate and its positive benefits and impact are generally agreed upon (Dickinson & Hobbs, 2017). Despite being 'intangible', these benefits are often the foremost benefits the general public experiences from a public space or resilience project. Acknowledging this, planners and policy makers have been attempting to incorporate CES research into their initiatives (Plieninger et al., 2013; Longato et al., 2021). Notable examples of CES integrated projects include identifying areas of conservation, assess the efficacy of an urban planning policy, or enrich existing datasets (Longato et al., 2021). All these efforts have worked towards higher degrees of public participation in resilience planning and the inclusion of relevant narratives historically ignored. By doing so, planners and designers can move away from paternalistic practices that omit community input and encourage inclusive urban planning and social cohesion. Social cohesion is loosely defined as the combined incentives to remain in and identify with a particular

community (Clarke et al., 2023). As cultural ecosystem services can provide social and cultural enrichment that can be further amplified when integrated into urban planning initiatives, CES can serve as a mechanism to evaluate and improve social cohesion.

Utilizing and measuring CES in public spaces is not novel and researchers have been investigating methods to quantify and evaluate these intangible benefits. However, like the definition of the term, researchers have disagreements as to what is the best method to accomplish these tasks. A significant barrier to integrating CES into planning initiatives is the method of evaluating and quantifying CES (Cheng et al., 2019). These benefits are inherently subjective, place-dependent, and lack a consistent classification system for researchers to utilize. Notably, the Millennium Ecosystem Assessment classification system includes concepts like 'Social Relations' and 'Sense of Place' that other systems do not (Plieninger et al., 2013). Conversely, some systems utilize broad classification systems like the UK National Ecosystem Assessment that center their benefits on 'identity', 'experience', and 'capability' (Fish et al., 2016). This inconsistency of classification systems has spurred other researchers and this thesis to utilize an inductive approach to identify values that pre-defined indices cannot convey (Dickinson & Hobbs, 2017). While those pre-defined indices and classifications are valuable, they struggle to function as a universal system as CES are place-dependent and should not limit CES evaluations.

The process of evaluation itself has been the subject of discourse as there are several methods researchers have utilized. Methods such as participant observation, interviews, geographic information systems, participatory mapping, and questionaries have all emerged as research methodologies for CES evaluation (Cheng et al., 2019). However, these approaches require high degrees of training, public co-operation, time, and an understanding of data science that researchers may not possess. Urban planning programs may provide these skills, but current practitioners may not have the luxury to return to school. As a result, mixed-method approaches have been suggested to account for

limitations the researchers are facing (Cheng et al., 2019). By incorporating quantitative methods like surveys with qualitative methods like interviews can reveal insights into the complex relationship between ecosystems and humans.

Research on evaluating cultural ecosystems in other cities and regions has also revealed the pressing need to identify CES categories outside recreation and eco-tourism. Investigations on CES evaluation methods revealed that recreational and eco-tourism benefits would likely be the most prevalent behavior observed because of its recognizable characteristics (Cheng et al., 2019). This is a contrast to place dependent CES that requires further research and context, making it more challenging for outside observers to evaluate. However, studies conducted in Sweden and Vietnam reveal that place dependent CES evaluation is possible and provides enriching information on community values and socio-environmental concerns (McElwee et al., 2022; Van Well et al., 2023). These findings provided stakeholders with invaluable information to develop and evaluate relevant beach restoration projects or tackle agricultural concerns. As a result, it is critical to incorporate mixed method approaches to evaluate and consider all CES categories to better inform resilience projects – that is what this thesis will set out to do.

Traditionally, resilience-based approaches in urban planning are centered on providing technical solutions and infrastructural interventions to withstand environmental stressors. However, research on resilience strategies reveal that there are continued concerns to improve social inequalities and/or preserving socio-cultural systems (Cheng et al., 2019). As a result, community values and concerns can be disregarded and can leave marginalized communities facing the brunt of environmental stressors – While a region may be climate resilient, it is highly possible that it is not socially resilient. By integrating cultural ecosystem services into resilience practices, the human dimension of resilience is not lost and can improve local social cohesion.

There has been an increased focus on cultural ecosystem services and social resilience in research and urban planning practices because of the ongoing climate crisis. While research shows that methods to evaluate CES are challenging, it is possible and invaluable to promote social resilience (Cheng et al., 2019). While concerns over classifications and methodologies persist, contemporary research has called for further explorations of cultural ecosystem services classes to better inform CES research and improve evaluation methods.

Chapter 3: Histories

To understand the impact San Antonio's public spaces and its cultural ecosystem services have on local communities, it is critical to have a human geographical and environmental understanding of the development of the region. Ultimately, this thesis offers an understanding of the importance of CES for cultivating resilience that is historically and culturally sensitive, as well as relevant for resilience planning around impending climate pressures. This following chapter will, thusly, provide a foundational understanding of the history of San Antonio necessary for this thesis.

Section 3.1. The Human Geography of San Antonio

Despite historical erasure, indigenous communities lived in what is now considered Texas and the Yanaguana – the original name for the San Antonio River and the indigenous village associated with it. Recognizing the importance of these indigenous nations is critical to grasping the history of San Antonio and an important facet of this thesis. The cultural legacy and ongoing presence of indigenous peoples in the city underscore the diverse influences shaping San Antonio's development that need to be surveyed.

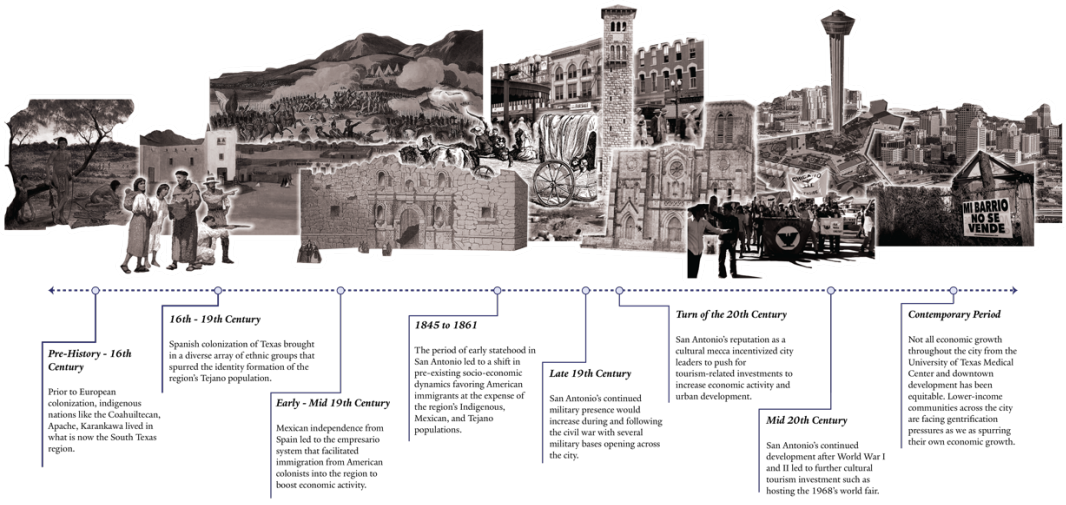

Figure 1: Condensed Timeline of San Antonio's History

This region saw regular movement and inhabitation of a semi-nomadic hunter-gatherer tribe known as the Coahuiltecan. Despite historical homogenization, the Coahuiltecan nation was composed of hundreds of autonomous bands that each had unique cultural beliefs, languages, and practices (Chavana, 2023; Miller, 2018). Of note, the Payaya, Pajalat, and Pamaya bands of the Coahuiltecan nation traditionally resided in the region that would become San Antonio (Chavana, 2023). Despite being semi-nomadic, the Coahuiltecan nation followed traditional routes hunting-gathering grounds that stretched from the Yanaguana all the way to what would be known as the Rio Grande Valley (Chavana, 2023; Miller, 2018). North of the traditional Coahuiltecan nation were the traditional lands of the Jumano, Apache (Chavana, 2023), and Karankawa in regions that are now known as the 'Big Bend', 'Hill Country', and 'Texas Gulf Coast' respectively. While the Coahuiltecan nation regularly moved throughout their region, the boundaries of each nation's hunting and gathering spaces were respected and, at the very least, acknowledged.

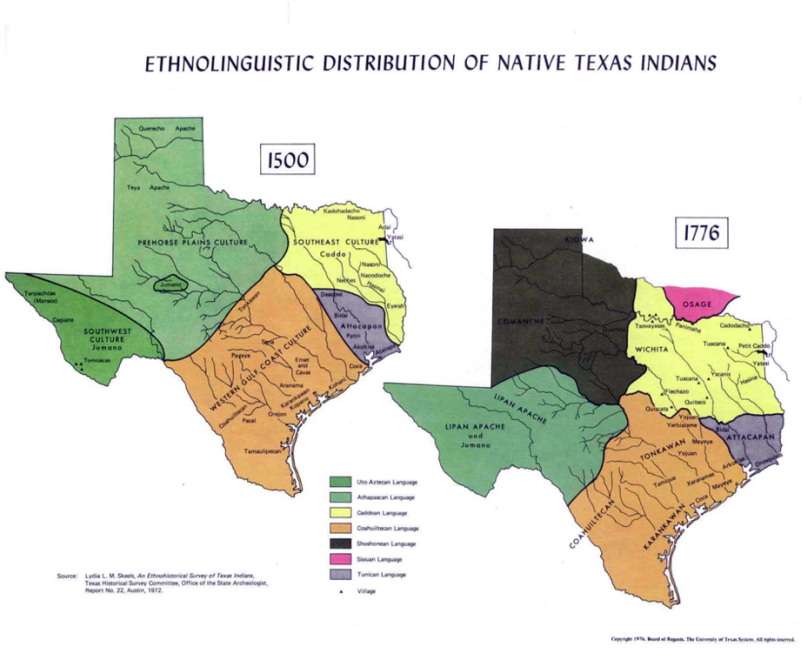

Figure 2: From Atlas of Texas.

Published by The University of Texas at Austin, Bureau of Business Research, 1976

Despite flying in contrast with modern expectations of a 'nation', the lifestyles and culture of the Coahuiltecan and their neighboring tribes represent the antithesis of what a nation of people 'should' be - the nomadic nature of their practices and the acknowledgement of communal land rights arose from generation's long adaption to the unique characteristics of southern Texas. It is also these traditions that still exist and practiced today through the Tap Pilam Coahuiltecan Nation and the countless communities descended from indigenous South Texas and Northern Mexican nations.

Prior to the first non-indigenous settlements into Texas, the era of violence from Spanish colonization had been ongoing for centuries. Motivated by religious, economic, and socio-political factors – God, Gold, and Glory - the empire of Spain had begun a centuries long crusade for power that saw immense environmental and human exploitation and violence. What resulted was the depopulation and detribalization of countless indigenous nations across North and South America – detribalization refers to deliberate efforts by colonizers to remove the connections between communities and their ethnic identity. To administer and govern their colonial empire, the Spanish Empire instituted the *Law of the Indies* which were a body of laws that dictated social, political, economic, and religious life in colonial settlements; of note were its impacts on town planning that dictated the creation of a public squares, rectangular grid of streets, religious sectors, and governmental structures (Miller, 2018). Relatedly, the Spanish colonial system operated under a caste system that influenced social and residential patterns within colonial settlements (Chavana, 2023; Guerra, 2019; Miller, 2018). However, these structures were fluid and varied in different parts of the empire due to its size. The region of Texas, for instance, was defined mostly as a borderland with greater focus and governmental power emerging in Mexico City.

With the increased presence and influence from the French and British empires in the east, the Spanish empire recognized the need for a series of defensive outposts in their borderlands of Texas. Early European explorers into the Texas interior noted the diverse attitudes of indigenous nations

along the Texas Coastal Plains and South Texas – bands from the Karakawa and Coahuiltecan tribes – as well as the potential for urban development along the banks of the Yanaguana (Chavana, 2023). Renamed Rio San Antonio by Spanish explorers, they reported on the physical beauty of the land between the Rio San Antonio and the San Pedro Creek, the low-lying water of the river, and the ability to utilize the river for transportation (Miller, 2018). Considering the increased need for a settlement in the borderlands, the governor of Coahuila and Texas Martín de Alarcón founded *San Antonio de Valero, San Antonio de Béxar, and Villa de Béxar* in 1718 along the banks and headwaters of the Rio San Antonio (Johnson, 2020; Miller, 2018). These three structures were the local mission, the town, and the military fort needed to house Spanish soldiers, their families, priests, priests, and local bands of the Coahuiltecan nation. While small in population, this would serve as the precursor to what is now San Antonio.

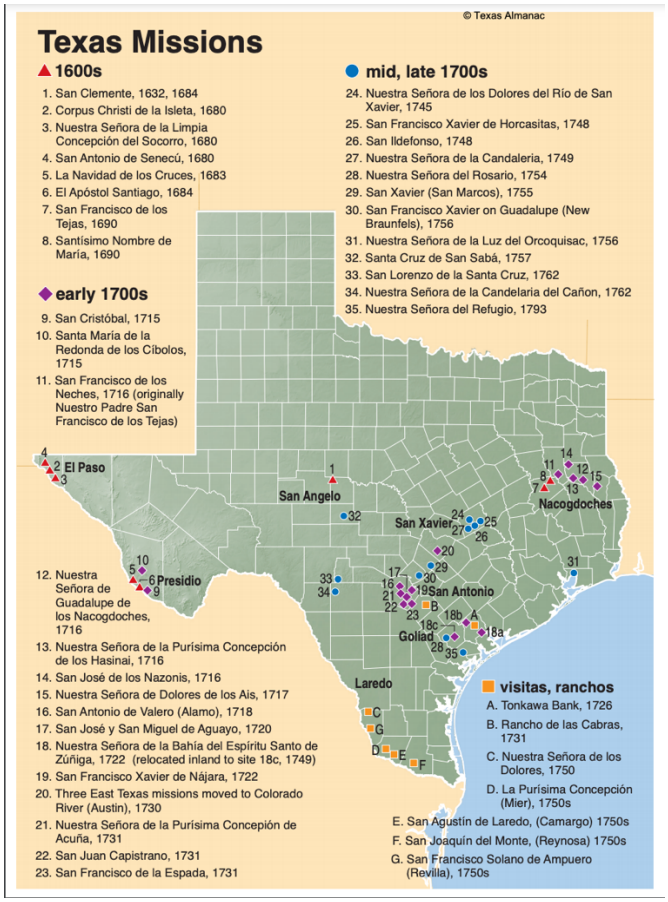

Figure 3: From Texas Almanac.

Published by Texas State Historical Association (TSHA, 2022)

Overtime, recognizing the need for more people to live in the area, governmental leaders encouraged immigration into this region from various communities from other parts of Texas, Mexico, and Europe. Within a few years after the founding of San Antonio de Valero, also known as the Alamo, Franciscan priests from other parts of the Texan borderlands consolidated into Villa de Béxar after conflicts with the neighboring Lipan Apache band (Johnson 2020; Miller 2018). These priests would establish the four other missions south of San Antonio de Valero; these missions would be known as Mission Concepcion, San Jose, San Juan, and Espada. Subsequently, the presence of indigenous peoples residing in the missions and agricultural operations in the region did increase (Chavana, 2023). Despite this, the region's small population necessitated an increase in colonial settlers to strengthen their influence in the region. Through the implementation of social policies, the viceroy of New Spain recruited volunteers from the Canary Islands to move to the region and establish the first chartered settlement *San Fernando de Béxar* west of the Rio San Antonio (Johnson, 2020). While tensions did arise between Canary Islanders and the Missions, colonial era San Antonio was becoming a region of increased cultural diversity and distinctiveness through the blending of different cultures by Mission Indians, Mestizo residents, and the arrival of Peninsulares from the Canary Islands of European and African heritage (Chavana, 2023; Guerra, 2019, Jonathon 2020).

Economically speaking, colonial era San Antonio saw little commercial growth – a factor that continued into Mexican-era San Antonio. The region's colonial settlement relied on the economic stipends and supplies that soldiers would receive from the viceroy – stipends that would experience periods of delay and disruptions from outside powers (Johnson, 2020). Restrictions on trade instituted by the centralized government and colonial operations in other parts of New Spain also stunted the growth of San Antonio (Johnson, 2020; Miller 2018). With little economic opportunities in San Antonio, it was forced to rely on the economic power and support of the viceroy. Thus, leading to San Antonio's perseverance as a population center through its socio-political importance as a provincial

capital, military center, and through the actions of those engaged in the region's informal economy – smuggling (Johnson 2020; Miller 2018). The culmination of these frustrations led San Antonio to become a vocal supporter of independence from Spain. However, the cycle of failed centralized planning efforts and understanding of local needs were perpetuated through the newly independent Mexican government.

While the newly-independent Mexican government initiated plans to boost economic activity in Texas, it fell short of addressing the primary concerns of San Antonio residents—specifically, the need to bolster the local economy. To increase the population in the region, the Mexican government implemented the empresario system in the 1820s. This policy allowed American immigrants to settle in Texas, contingent on their conversion to Catholicism, residency in pre-determined areas, and the renouncing of slavery (Johnson 2020, Miller 2018). However, a significant number of American immigrants, hailing primarily from the Southern United States, refused to honor these policies and continue the practice of slavery. Subsequently, eastern Texas flourished as a hub for cotton production and trade, while San Antonio languished in economic hardships stemming from the lack of governmental support (Johnson, 2020). This persistent estrangement, coupled with the arrival of American immigrants in the east, contributed to solidifying a distinct Tejano identity in San Antonio (Chavana, 2023; Johnson, 2020). Concurrently, the cultural hybridization of Mission Indians from the San Antonio Missions, and historic cycles of economic self-determination, further shaped this unique identity that sought separation from Mexico.

It is important to note, however, that discontent with Mexican governance primarily arose from American settlers' cultural difference and their opposition to Mexico's abolition of slavery. This led to a series of revolts and battles, including the famous Battle of the Alamo in 1836 that is the basis for the Texas Creation Myth (Miller 2018). Within this same year, the independent Republic of Texas was formed and later joined the United States of America in 1845.

This abrupt transformation of political dynamics in San Antonio and Texas paralleled significant shifts in its socio-cultural systems. Scholars highlight tensions between newly arrived Anglo-Americans and the established Tejano community as indicative that a shift in societal power had occurred. Tejano communities held different views regarding ownership of land, communal property, and municipal control over city building that Anglo-Americans did not understand or easily accept (Guerra, 2019; Johnson, 2020). Some Anglo-Americans seeking to access these local connections and knowledge of the urban landscape, consequently, sought to marry Tejanos to bypass cultural and ethnic divisions (Johnson, 2020). However, violence against non-white communities across Texas increased following the rise in power of Anglo-Americans in Texas. For example, researchers argue that Mission Indians were forced to conceal their American Indian heritage by presenting themselves as Mexican to avoid violence and forced relocation by US military forces (Chavana, 2023). Additionally, enslaved African Americans continued to face exploitation and violence from the burgeoning plantation economy in East Texas. US census records from the 1840s and 1850s revealed that Tejano/Mexicans owned 85% of the town lots in San Antonio but fell to 9% within the span of a decade, suggesting wide-spread displacement of the cities Tejano population (Marquez et al., 2007). The resulting shift in socio-cultural systems and its impact on ethnic populations prompted impacted communities to relocate or consolidate into residential ethnic enclaves that persist to this day. Of note is the historic westside which was now predominately comprised of Tejanos and more recent Mexican immigrants into the city (Marquez et al., 2007; Johnson 2020; Miller 2018). The northside, which was the historic original settlement of Villa de Béxar, is now predominately composed of Anglo-Americans (Marquez et al., 2007). The southside and eastside were an amalgamation of Tejanos, Germans, Mission Indians presenting as Mexican, freed African Americans following emancipation, and other Anglo-Americans (Marquez et al., 2007). The resulting sociological and systemic shifts from Texas statehood and the

aftermath of the US Civil War, not only transformed ethnocultural relations between communities, but it also intensified them.

Concurrently, predominately Anglo-American businessmen and politicians were focused on improving the economic and social power of San Antonio even if it came at the cost of other communities. Their goal was to turn San Antonio into a "modern city" for tourist consumption as interest in the city grew following Texas's incorporation into a state – this process would come to be known as boosterism (Johnson, 2020). These partnerships and those who engaged in them were known as boosters. These efforts included reshaping street layouts, repurposing historic buildings, and redeveloping public spaces (Johnson, 2020). More so, tourists were interested in visiting San Antonio for the belief that it still represented 'an old Spanish city' and, as such, the historic westside's Tejano presence and cultures were used as tourist attractions (Johnson, 2020). In the same vein, taking advantage of interest in the Alamo, boosters and those invested in preserving the myth of the Alamo, began instituting public celebrations like the Battle of Flowers parade.

The idea that San Antonio's warm climate could serve as a benefit for tourists in need of a health resort also grew in popularity (Johnson 2020; Miller 2018). Either because of or coinciding with these endeavors, the population of San Antonio began to grow, and the influx of Anglo-Americans continued to shift the socio-cultural systems in their favor. Additionally, due to San Antonio's strategic positioning near the US-Mexico border, the U.S. military had become an economic stakeholder in San Antonio – attracting more people to move to the region. Regardless of if the Mexican American War was over, San Antonio's Road system and available land for military bases made it a substantive contributor to urban development. In some ways, Anglo-American businessmen succeeded in their goals to increase economic activity in the city through a diverse range of strategies, however in some ways, it perpetuated similar patterns of economic development.

With the turn of the twentieth-century, San Antonio saw a continued push by businessmen and politicians to increase its economic and political power in the region. However, the city's continued efforts to prioritize tourism, the military, and manufacturing continued to hinder a diversification of economic sectors that its rivals in Houston and Dallas had been doing (Johnson, 2020; Miller, 2018). As a result, population growth was slow until World Wars I and II spurred intense change in the city. This is not to say that migration into the city did not exist, an influx of Mexican, European, and American immigrants moved into the city to work in a wide range of jobs (Johnson, 2020; Miller, 2018). The manufacturing industry and distribution sectors of the city did bring in some workers, however, the city's continued push for tourism were its largest contributors (Johnson, 2020; Miller, 2018). As celebrations for the Alamo continued from the late 19th century, San Antonio utilized the opportunity to push the idea of its abilities as a modern city. Of note is the city's advertisement of the historic westside as a 'vice district' for tourists to engage in debauchery (Johnson, 2020). Concurrently, public plazas and parks were built and refurbished to create spaces for tourists and residents. City builders in San Antonio were essentially reconstructing San Antonio to accommodate the tourism sector. Seeing as how it's regional rivals in Houston and Dallas had greater access to capital investment, resources, and population growth, San Antonio had to focus on its unique characteristics.

With economic stagnation widespread during the 1930s, San Antonio's communities and industries were faced with the need for federal assistance and economic development. Although the federal government did not meet all of San Antonio's needs, the support from the Public Works Administration led to the construction of the infamous San Antonio River Walk and further conservation work (Miller, 2018). However, San Antonio's lack of economic diversification could not compete with other Texas cities in attracting workers and it was not until the 1940s where San Antonio would see a significant economic boost.

This period, coinciding with World War II and post-war economic growth, saw San Antonio's relationship with the US military grow with an increase of temporary and permanent populations from the military. Growing efforts by boosters and city builders focused on building the infrastructure needed to accommodate the military – housing developments and military bases have begun to shape the landscape of San Antonio. For instance, the construction and development of the Lackland Air Force Base and Fort Sam Houston became major employers for military personnel and civilian residents (Johnson, 2020). Communities across the city – ranging from the affluent north side to the historically disinvested west side – were engaged in the military centered economy and it soon became the dominant economic industry in the city (Johnson, 2020; Miller, 2018). Following the end of the war and the benefits allotted to veterans including education and housing, saw the increase in higher education opportunities in Texas and suburbanization of San Antonio. Whether or not the United States was engaged in war, this period showcased San Antonio's critical and crucial relationship to the military industrial complex.

As the population of San Antonio continued to grow, the latter half of the century in San Antonio saw a boom in car-centric development, suburbanization, and housing developments. In response to the push for modernization, preservationists worked to diversify the economy of San Antonio beyond the military and the infrastructure they required (Johnson, 2020). Like city builders of the past, there was a continued push to capitalize on San Antonio's tourist potentials. Downtown San Antonio went through a continued revitalization, and the ongoing enhancements to the San Antonio River Walk was not just to preserve historical sites—boosters aimed to catapult the city's tourism industry, reaching its pinnacle with the World's Fair convention in downtown San Antonio (Johnson, 2020). Figure 4 below, in particular, showcases Lady Bird Johnson, then first lady, speaking at the inaugural ceremony of the world's fair to a large crowd. While the region's dependence on the military

industry remained as a central component to the city's economy, a resurgence in the tourism sector occurred, transforming it into a potent economic force.

Figure 4: From and Published by University of Texas, San Antonio Special Collections, 1968

While the city did see positive economic growth and an increase in population, the distribution of these benefits was not equitable. The historic west side and east side were host to substandard housing, poor public health, education inequities, and a lack of water services (Marquez et al., 2007). Utilizing the process of urban renewal that the cities across the United States had been using, the city of San Antonio aimed to remove blight and slums across the city. These practices did see positive public health outcomes in both historic west and east sides. However, despite the expectation that urban renewal practices would create affordable housing for current residents, Texas laws explicitly blocked construction of public housing in areas receiving funds linked with urban renewal (McCarthy, n.d.). Effectively, urban renewal in San Antonio perpetuated cycles of housing insecurity and

displacement seen during the initial displacement of Tejanos during the mid-19th century after Texan statehood.

This period also saw major developments in the northside, marked by the construction of the University of Texas Health Science Center, University of Texas at San Antonio, and the USAA campuses. These developments brought about population growth and economic activity, refocusing the attention and investment to the northside and away from the city center (Johnson 2020; Miller, 2018). This momentum led to the migration of college-educated communities towards the north side and its surrounding neighborhoods – in particular the northwest side where most Asian-Americans reside (Johnson, 2020). While these investments succeeded in the diversifying the economy of San Antonio, the deliberate investment of the north side played a pivotal role in defining the city's demographic landscape and geographic expansion. More so, this geographic growth of San Antonio led to reliance on car-dependent infrastructure to accommodate the sprawling suburbanization. The developmental focus on the north side has been the latest large-scale factor that has defined San Antonio current urban landscape, with higher-income communities living in the North Side of San Antonio and lower-income communities continuing to live in the historically disinvested South, East, and West Side.

As of writing this thesis, San Antonio sits at the center of ongoing debates regarding migration politics and fears of community displacement. Due to its proximity with the U.S.-Mexico border, San Antonio is grappling with the complex conversation surrounding housing and supporting migrants arriving in the United States while trying to assist their historic communities. Within the last half-decade, 2021 to 2024, up to half a million migrants have moved into San Antonio to make a better life for themselves (City of San Antonio, 2024). At the same time, historic neighborhoods of the west, east, and south side are facing gentrification pressures from downtown urban development and predatory code enforcement-related demolition orders (Bajaras, 2021; Olivo, 2022; Ura, 2022). In

particular, the city of San Antonio's orders to vacate have resulted in the displacement of lower-income residents who are unable afford timely repairs of their homes. For additional context, San Antonio issued 406 orders to vacate between 2015 and 2020, significantly exceeding the combined total of 16 orders issued by the cities of Dallas, Austin, Houston, and Fort Worth during the same period (Bajaras, 2021). These impacted San Antonian communities and their allies have been actively engaged in improving their circumstances and improve social equity throughout the city. As a major metropolitan and urban center in the region, San Antonio must navigate its responsibilities for both longstanding communities and newcomers to set the stage for equitable futures.

Despite the geographic and environmental limitations of San Antonio, the city was able to weave a rich and complex tapestry of cultural identity and perseverance. From the Yanaguana's time as the homeland of Coahuiltecan bands to the settlement of Spanish and American colonists, the confluence of different cultures led to a unique blend of communities that have called the region home – One in which modern demographic maps and charts struggle to showcase. San Antonio's Mexican and Latino population are not monoliths; Tejanos, Mission Indians, and Mexican Americans are all labeled as Latino/Hispanic under the US Census, but they are collection of different communities that have their own perspectives and experiences. More so, contemporary discourse in San Antonio regarding increased gentrification pressures in the historic west side and the influx of migrants into the city are further adding to the complex and critical experiences these communities must navigate. Examining the intricacies of cultural perspectives along with economic development and historic inequities is critical to not only understand the history of San Antonio, but how urban planning efforts like public parks and cultural ecosystem services are interpreted.

Section 3.2 The Environmental History of San Antonio

Sitting at the confluence between cultures and geopolitics, it is no surprise that San Antonio also sits at the periphery of different environmental regions – creating a city that experiences a host of

ecological phenomena. Geographically, the Edwards Plateau or Texas Hill Country is located to the northwest and to the southeast is the Gulf Coastal Plains (Johnson, 2020; Miller, 2001). The city itself is in the southwestern edge of Texas's humid-subtropical climate region with Texas's semi-arid climate region found further southwest (Johnson, 2020; Miller, 2001). It also lies within the southernmost region of the North American Tornado Valley. Yet, this convergence of these regions and zones is the Yanaguana or, as it known now, the San Antonio River. Despite the diverse regions and climate zones, the San Antonio River has been the one constant across generations and communities – providing freshwater and nourishing its banks with diverse flora and fauna. In the same way that the human geographical history of San Antonio needs to be recognized to understand San Antonio's development and public spaces, this section surveys the region's water stress, flooding, nature based solutions, and historic preservation to understand San Antonio's environmental history, contemporary environmental pressures, and urban green spaces.

Resulting from the diverse geographic zones in its vicinity, San Antonio experiences a wide array of climatic events that are difficult to simplify. Despite having an average temperature of 50°F in the Winter and 80°F in the Summer, the city experiences extreme temperature shifts that the reported average temperature does not convey (Johnson, 2020; Miller, 2001). These extremes are a result of the warm air coming inland from the Gulf of Mexico in the summer maintain warmer temperatures during the evening unlike the winter which sees greater daytime warming and evening cooling (Miller, 2001). These seasonal differences in temperature also coincide with extreme variations of precipitation where heavy rainfall follows months-long droughts. Unlike temperate climates that see traditional shifts in temperature, the San Antonio region experiences extreme temperatures during the Winter and Summer months and torrential precipitation in the Spring and Fall months which will only be exacerbated as the climate crisis grows. This should not obscure the beauty to the region's biodiversity that the

geography provides, however, it's positioning in this transitional zone creates the nesting ground for severe weather phenomena and harsh climatic conditions.

Despite these environmental extremes, communities across time have called this region home. Native bands made use of a wide array of animals and vegetation such as bison, mesquite wood, walnut trees, mulberries, etc. – resources that are still relevant to Texan iconography (Chavana, 2023). Alongside the San Antonio region's fertile soil and calm waters, it is understandable that native bands have and still occupy the region and its ecological wealth. More so, as European colonists began to explore the region and make use of the region's biodiversity, they would introduce a variety of flora and fauna to the region in the hope that San Antonio would become an agricultural hub.

As an early Spanish settlement, the region's legacy for farming and ranching practices began as early colonists reported that Rio San Antonio fertile lands. Harnessing the power of the Rio San Antonio, colonists created irrigation ditches known as Acequias to provide operable water sources for farmers, gardeners, and residents. These efforts led to the horticultural and crop agriculture practices to thrive - crops like melons, squashes, and sugar cane were reported to 'sprout quickly' (Chavana, 2023; Johnson, 2020). These efforts created a self-sufficient farming system for residents of the missions and the surrounding region. Regionally, ranching practices began to dominate the open-field landscape of Texas. Herds of cattle, sheep, and horses were some of the animals that played an influential role in the development of San Antonio and South Texas and, as an economic sector, continued to grow until the present day (Johnson, 2020; Miller, 2021). Despite starting with Native bands, Spanish colonists, and Mexican settlers, these ranching traditions and grazing grounds underwent a significant change during the Republic-of-Texas-US-Statehood transition. In particular, quality grazing grounds and farms were commandeered by Anglo-American colonists and immigrants in the greater San Antonio and South Texas region (Johnson, 2020; Miler, 2021). This period, as described in the previous section, meant that the cultural and social power that Mexican populations

once had had been stripped and given to White residents. However, the legacy of these practices by these communities still exists and reveal themselves in unique ways – regional names, ranching tools, and ideas. While ranches and farms were scattered across the larger San Antonio and South Texas region, the city of San Antonio would remain as the central location for ranchers and farmers for economic activity associated with both economic practices. Despite the onset of urban spawl occurring in the modern-day and newer trading practices, this central idea of San Antonio for farmers and ranchers in the broader region to commute to still exists and is still practiced.

Traditionally, the western region of North America experiences significant problems relating to scarce water supply and the eastern region of North America is subject to problems relating to the excess of water - San Antonio experiences both. This can be attributed to the Edwards Aquifer, where San Antonio draws its water from. The aquifer, spanning across 14 counties in Texas, is temperamental in nature with Bexar County, the county in which San Antonio is located, housing them (Miller, 2021). Composed of three distinct areas - the contributing, recharge, and artesian zones - the aquifer recharges and rises rapidly during precipitation events and falls during droughts due to its limestone composition (Johnson 2021; Miller, 2021). Most of San Antonio's urban landscape resides in the aquifer's artesian zone where water pressure brings groundwater to the surface through springs and streams (i.e. the San Antonio River) (Miller, 2001). The recharge zone, found in the northwest region of Bexar County, is comprised of the region's exposed limestone which sees high rates of pollutant and surface-water infiltration and development and urban sprawl continues to grow (Miller, 2021; Miller, 2021). In the most northwestern region of Bexar County, where Texas Hill Country also resides, is the contributing zone where its streams provide water for the aquifer through groundwater flow (Miller, 2021). As development and population continues to grow, the Edwards aquifer is under considerable stress as its water struggles to provide for all its residents. Additionally, the aquifer's contributing zone can see high rates of runoff - through the torrential downpour the city experiences – that the aquifer struggles

to absorb and maintain. As the climate crisis continues to influence precipitation events, the complex and temperamental nature of the Edwards Aquifer could create adverse realities for communities across the region.

Unlike other cities in the American west, San Antonio has enjoyed immediate access to freshwater and did not require extensive engineering projects to develop public water supplies for their city until now. With the Edwards Aquifer, city leaders were able to comfortably rely on groundwater pumps for residential, commercial, and agricultural uses. However, as the city's urban population grew, the supply of water in the aquifer could not keep up with the increased demand of residents (Johnson, 2021; Miller, 2001). The drop in the aquifer's water levels is further attributed to the expansion of agricultural industries (Miller, 2001). It was clear that the Edwards Aquifer was struggling to provide water to everyone as the sole source for fresh water in the region. This would come to a head when a drought in the Comal Springs – a spring fed by the Edwards Aquifer north of San Antonio – went dry (Miller, 2021; Miller, 2001). This drought coinciding with the post-war economic boom and the subsequent housing and population growth of San Antonio is not surprising. Following this, a series of legislative battles between neighborhood associations, environmental groups, and business leaders over water supply occurred (Miller, 2001). Disagreements regarding urban growth over the sensitive recharge zone of the Edwards Aquifer as well as alternatives to the aquifer as the sole source of water were center to this debate. Notably, construction of a new surface-water reservoir called Applewhite was proposed in the 1970s with controversial reception from community organizations and ultimately rejected by voters twice in the '80s and '90s (Miller, 2001). Arguments posed by critics of the reservoir pointed to strategy's omission of the central issue regarding water stress in San Antonio, which is the continued development and urban sprawl on the recharge zone of the aquifer. Ultimately, tension and disagreements regarding the best practices concerning water management remain to this day. All environmental policies have been unsuccessful in getting unanimous support from all stakeholders and

developmental stressors along the Edwards Aquifer's recharge and contributing zone has continued. Despite this, two major priorities have been identified that instrumentalist planners have focused on: 1) identifying and pursuing additional water sources and 2) San Antonio needs to alter its water management strategy to be more cost efficient and efficient. These priorities showcase that despite conflict between the method San Antonio preserves its water supply, all community stakeholders understand the importance of change in the water management and the aquifer system. Water is a public resource that should be accessible to all and, in a city that has only recently struggled with water stress, it is no surprise that communities in the San Antonio region passionately fight for it. Cultural ecosystem services relating to water sources, thusly, represent powerful forms of engagement with an environmental feature that is under attack.

Despite colonial explorers describing the San Antonio River as having a calming nature, the river and its adjoining regions have experienced catastrophic flash flooding events throughout its existence. Records point to flooding of the river dating back to the early 19th century, but there is little doubt that flash flooding events occurred prior to that time or European settlement in the area (Miller, 2001; Miller & Castro, 2021). However, the flood that would shape the course of San Antonio's history would occur in the year of 1921. Following failed attempts to create flood defenses and a drought period, the city of San Antonio would see catastrophic flooding that impacted not only the San Antonio River, but it's many tributary creeks. The precise number of lives claimed by the flood remains a mystery, but scholars have confirmed that at least 224 people are estimated to have lost their lives in the event (Miller & Castro, 2021). The reason for this uncertainty, as environmental historians and activists suggest, is that most of the lives lost in the storm were Mexican Americans in the city's west side (Miller & Castro, 2021). As substandard housing and inadequate public services were not made available to this region, the loss of life and destruction of homes is frustratingly unsurprising. Following this flood event, communities across San Antonio experienced extremely disparate outcomes; the 1921

flood prompted the construction of the Olmos Dam in the north side and flood prevention measures along the main artery of the San Antonio River while the west side continued to experience mismanagement of flood relief and political indifference (Miller, 2001; Miller & Castro, 2021). This inequity contributed to the rise of environmental and civil rights activists from San Antonio's westside to secure political power, advocate for their communities, and alter local systems of governance to ensure their communities were safe (Johnson, 2021). Planners and policy makers were criticized for not engaging with the interests of all communities in San Antonio and operating in a paternalistic fashion. That is not to say that San Antonio's history of flooding did not continue, or the work of these environmental activists stopped. Following the 1921 flood, and to this day, floods along the San Antonio River and its tributaries would continue to illuminate issues flood infrastructure and inequitable outcomes in these flash flood events. Flood events in 1946, 1974, & 1998 revealed faults in the Olmos Dam, incited the introduction of more elaborate political and advocacy methods, and challenged the status quo of what flood infrastructure should be (Miller & Castro, 2021). Like many American cities in the mid-century, there were concerted efforts to channelize and utilize hardscape materials to increase the flood resilience of cities. After years of continued flood-related destruction and loss of life, San Antonio began experimenting with utilizing nature-based solutions to reconstruct the physical landscape of the rivers and creeks to better withstand flood events (Gonzalez, 2012; Miller, 2021; San Antonio River Authority, 2015). As a result, San Antonio has begun the process of restoring the natural landscape of their rivers and creeks into public green spaces to combat the flash flood events that are still ongoing. These efforts have manifested in some forms of community engagement by planners, but the quality of which is disparate. While city leaders and communities continue to grapple with political disagreements and inequitable outcomes from the region's water stress, the devastating historical impact of flash flooding in San Antonio has served as catalysts for environmental

justice and social change that advocates for improving the environmental conditions for all of San Antonio's communities.

Prior to the understanding that nature-based solutions like restored wetlands and riparian zones along flood-prone areas were effective, public spaces have always been invaluable for urban development and social equity. Spanish colonial policies – the law of the indies – did have guidelines on the creation of public squares, but there was a concerted effort to build public parks outside of the historic downtown in the early twentieth century (Johnson, 2021). However, the distribution of these parks has not been equitable. Segregationist attitudes and suppression of minority groups voting power led to periods of governmental neglect followed by sporadic park development in disenfranchised neighborhoods (Johnson, 2021; Miller, 2001). Historians argue that this struggle to institute an equitable city-wide park development strategy led to the mobilization of marginalized communities in local politics (Johnson, 2021). This mobilization of groups spurred city leaders to focus their efforts on public park development on these disenfranchised neighborhoods, however, the mid-twentieth century would see a shift in governmental systems that disproportionately favored affluent neighborhoods. While this shift in political power allowed for a centralization of planning power and park development, it perpetuated financial neglect and disinvestment of public spaces in marginalized communities. It was not until the late-twentieth century when further shifts in San Antonio's political system granted communities with greater influence in city politics and the funding of public services, including parks (Johnson, 2021). As a resurgence of the public realm improvements is ongoing, it is critical to incorporate and integrate the voices of all communities in regional decision making. However, this legacy of uneven development of the public realm in San Antonio persists and leaves lasting scars on public parks across San Antonio – the parks chosen for this thesis are no different. While the histories of each park will be explored in a later section, it is crucial to acknowledge the role public spaces can play in furthering social and environmental justice. For public spaces like parks to

foster urban development and socio-environmental equity, however, they need to ensure that these spaces do not perpetuate the historical imbalances of uneven development witnessed in San Antonio's historic park development.

It would be remiss to not mention the strong historic preservation legacy of San Antonio's built environment as it is a critical component of the broader cultural landscape of the city. While historic and cultural preservation through oral histories have been attributed to all communities throughout time, traditional narratives about historic preservation in San Antonio began with the efforts by the 'Daughters of the Republic of Texas' and their efforts to preserve Mission San Antonio de Valero, better known as the Alamo, after the transition to US statehood. These conservation efforts would coincide with the creation of the San Antonio Conservation Society as they aimed to preserve historic structures, traditions, and other objects tied to Texan history. While these two organizations are not the only conservationists and preservationists in San Antonio, these groups are credited with advocating for the preservation of San Antonio's multi-cultural history and shifting environmentalist movements to incorporate conservation of historic structures in urban development practices (Johnson, 2021; Miller, 2001). In particular, urban planning practices that have historically influenced urban development across the United States like the City Beautiful movement during the turn of the century and urban renewal practices in the mid-to-late twentieth century had to work alongside conservation efforts and balance urban development with the conservation of historic sites and landscapes (Miller, 2001). Not all historic structures could be saved, but this attitude of conservation of both built and natural environments strongly influenced how urban development in the city should progress – that urban development should serve to enhance the cultural wealth the region possesses. As the Civil Rights Revolution in the United States spurred disenfranchised groups to advocate for themselves, historically marginalized communities in San Antonio began practicing their own forms of cultural preservation. Notably, the Tap Pilam Coahuiltecan Nation increased visibility in the

preservation of the Alamo and the San Antonio Missions, its histories, and traditions after the Daughters of the Republic of Texas lost custodianship of the site in the 2010s (Chavana, 2023). More so, advocacy groups and community organizations from historically disenfranchised groups like the Lipan Apache Tribe, the historic west side, the historic east have also contributed to the preservation of San Antonio's multi-cultural history outside the realm of what mainstream preservationists determine as cultural important. This evolution of historic preservation of San Antonio's heritage also implicates the evolution of the preservation of San Antonio's built environment to be more inclusive. It's critical to understand that the environmental nourishment and benefits that communities receive are not limited to the 'natural world', as the global population continue to reside predominately in cities, the built environment is just as valuable in human-environmental interactions.

While society often considers the natural world separate from human life, the environmental history of San Antonio reveals the intricate narratives of the natural worlds influence on settlement patterns, economic interests, identity formation, and social justice. It was the region's climate and geography that not only spurred Indigenous and European settlement into the area but also created the conditions for a city susceptible to flash flooding and water scarcity. More so, the mosaic of different environmental conditions across the region played an instrumental role in the uneven development of economic industries, housing, and public amenities San Antonio experiences. In particular, urban investment being concentrated in parts of downtown San Antonio and its northern neighborhoods while neglecting the region's west, south, and east side. It was these circumstances that sparked a strong legacy of community organization and political activism in response to environmental injustices – further contributing to the growth of neighborhood and community centered identity formation in the region. As the city experiences the consequences of the climate crisis, the environmental and ecological pressures that the city experiences will only worsen and impact a greater number of people. It is of critical importance that a shift in environmental practices concerning public

spaces, land use, and resource management recognizes historic environmental injustices and actively incorporates community input to make meaningful change. By engaging in these communal perspectives regarding and drawing from the environment, city leaders and planners can better understand how communities can benefit from environmental resilience projects and their cultural ecosystem services.

Section 3.3 The History of Selected Public Spaces

As the previous section explained, the history of public spaces and parks in San Antonio is complex and tells the story of uneven investment across the city, this legacy is made more apparent by investigating the histories of each park, respectively. While not all parks were built along water systems, the many rivers and creeks of San Antonio house community parks that also serve as climate resilience projects. The following section will delve into the selected parks chosen for this thesis and their histories.

Brackenridge Park, situated on the headwaters of the San Antonio River, is one of the largest public parks in the city as well as one of the most historically and culturally significant. The modern boundaries and history of the park were established in 1869 after George W. Brackenridge, an important figure in San Antonio's development, purchased the land during the Civil War and, subsequently, donated a large portion of that land in 1899 to create a public park (Brackenridge Park Conservancy et al., 2020). Prior to Brackenridge's purchase of the land, the area saw competing interest between communities and stakeholders ranging from indigenous tribes, Spanish and American colonists, and governmental bodies like the Mexican and Confederate governments. During Brackenridge's ownership of the land, a pump house and water delivery system was created by the city to aid in fire rescue and public health concerns by making use of the San Antonio River (Brackenridge Park Conservancy et al., 2020). Even if the parts of the river were under the ownership of a private

party, the influence and importance of the river on San Antonio's development was constant. As such, it's no surprise that the park would leave a legacy on communities across San Antonio.

During the early twentieth century, coinciding with city leaders' push for economic growth and urban development, investment poured into Brackenridge Park in the hopes it would become a tourist and community mecca. These policies and urban planning efforts were defined by the interests of city leaders and city businessmen. At the time, city leaders were focused on shaping San Antonio to become a modern and attractive city to draw in new residents and businesses - pushing urban planning efforts to prioritize the economic interests of the city's urban elite. City leaders installed public golf courses, two ornamental gardens, a public zoo, a 'Mexican village', an outdoor theater, and a restaurant into Brackenridge Park in the first half of the twentieth century (Brackenridge Park Conservancy et al., 2020; Johnson, 2021). These installations, its location along San Antonio's hydrological artery, and proximity to downtown all contributed to the idea that Brackenridge Park was San Antonio's answer to New York City's Central Park. During the latter half of the twentieth century, minor changes were made to the park, but its continued use by tourists and resident populations remained constant. In the 2010s, Brackenridge Park was added to the National Registry of Historic Places and a master plan was set forth to do maintenance on the park. The master plan worked with community members to outline the central concerns for residents and to increase the number of visitors in the park; the goals outlined by the master plan and community members included restoring natural features of the park, improve environmental resilience, repairing cultural heritage sites in the park, and increase the parks connections with neighboring communities (City of San Antonio, 2017). However, not all community stakeholders were honored in this master plan. Within the past decade of writing this thesis, members of the Lipan-Apache "Hoosh Chetzel" Native American Church rightfully pointed out that this master plan would threaten the spiritual ecology of the park as the headwaters of the San Antonio River are a religiously significant site for the community and the proposed projects would destroy spiritually

significant sites (Harman, 2023; Walker, 2023). Ongoing litigation and construction have led parts of Brackenridge Park to become inaccessible for the Lipan-Apache tribe and community stakeholders of the park. Effectively, this plan for Brackenridge Park is failing to foster socio-economic equity and actively harming the social cohesion of the city. There is no doubt that Brackenridge Park's legacy as San Antonio's urban park has created a culturally significant public space for communities across San Antonio, however, now it must navigate the complexities of balancing the needs of all communities which include historically marginalized groups.

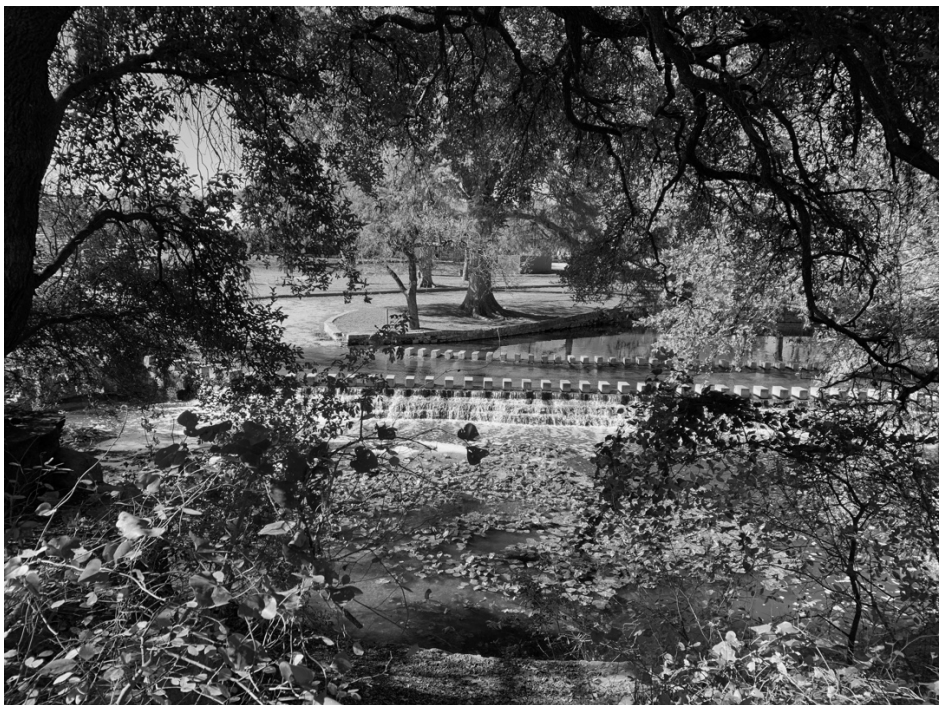

Figure 5: Brackenridge Park

Elmendorf Lake Park is located deep in the heart of San Antonio's West Side, along the Apache Creek, and it's the cities Mexican American community. The modern history of the park dates to 1917 when the Lake View Townsite Company was sold to the City of San Antonio under the condition that the city would make improvements on the public infrastructure surrounding the lake (Mathis, 2017). Prior to its time as a public space, the park was part of a larger plot of land planned for residential development in proximity to Our Lady of the Lake University. However, whether it was for

extenuating financial circumstances or the west sides reputation as a 'district of vice' from city planners, land companies struggled to develop the land into the residential neighborhood they were hoping for and led to the parcel's conveyance to the city as a park. Early records from the 1920s point to the park's role as a potential site of attraction for communities with plans for rebuilding the parks dam, planting flowers, improving lighting, constructing swimming pools, and improving the lighting in the park (Se Haran Mejoras En Dos Parques De Esta Ciudad, 1926). Additionally, older residents in the neighborhood discussed the importance of Elmendorf Lake and its park as the premier community space for the historic west side (Cortez, 2019; Gonzalez, 2012; Morales-Zamarripa, 1997). It is evident from community perspectives that public spaces like Elmendorf Lake Park are invaluable environments for social cohesion, public engagement, and environmental justice because of its ability to thrive despite historic disinvestment that impacted the region.

Like its contemporary on the San Antonio River, Elmendorf Lake Park saw recent renovations to improve the environmental resilience and public engagement of San Antonio's lesser known creeks. During the mid-twentieth century, the Apache Creek that Elmendorf Lake Park is associated with was channelized through federal flood control projects – namely, the San Antonio Channel Improvement Project. However, over time, the park would see an increase of water pollution, public drug use, and feelings of unsafe conditions from residents (Gonzalez, 2012). In the 2010s, federal policies descended from the San Antonio Channel Improvement Project aimed to restore natural ecosystems in San Antonio's west side. This led to the collaboration between governmental agencies and community organizations on enhancing Elmendorf Lake Park's amenities. In particular, the addition of trail networks, a playground, green infrastructure, and water quality enhancements were all considered (Mathis, 2017). Importantly, community input was sought to complete this project and residents highlighted concerns over safety and flood risks that needed to be addressed. Despite these positive additions and practices, not all aspects of community input were respected. Elmendorf Lake Park's

renovation would involve destruction of a rookery and displacement of the birds that lived in the park without alerting community members ahead of time (Harman, 2019). This deliberate omission of information coinciding with gentrification threats the historic west side is experiencing, has led to further distrust between the city government and west side neighborhoods. While improvements to Elmendorf Lake Park were well-received, it did not come without controversies and the perpetuation of distrust between disenfranchised neighborhoods and city leaders. The park's label 'the Jewel of San Antonio's Westside' best represents this; public investment and community engagement has allowed for a public space in a historically disinvested neighborhood to shine, but it has also led to fears of outside stakeholders 'stealing' from west side neighborhoods because of renewed attention. This scarcity mindset has created an immense sense of ownership regarding the park and the need to defend their neighborhood.

Figure 6: Elmendorf Lake Park

Confluence Park is the newest of the three parks selected for this thesis and is located at the confluence of the San Antonio River and the San Pedro Creek which is fed by the Alazan and Apache Creeks. Opened to the public in the late 2010s, construction began earlier in the decade on a former CPS laydown yard-turned vacant lot to create an education focused park (Enlow, 2013; Modern in San Antonio, 2019). In particular, it was geared towards educational outreach regarding San Antonio's water systems and made use of rainwater collection and filtration in its central design. Unlike the creation of Brackenridge and Elmendorf Lake Parks, the parcel of land chosen for Confluence Park was purchased using a $10 million budget from the San Antonio River Foundation (Enlow, 2013). It was clear that city leaders were ambitious and expected an immense return on investment through the creation of this park. Unsurprisingly, the substantial investment and support from the city resulted in Confluence Park gaining widespread acclaim in the architecture world, ultimately earning the park and it's architects the prestigious American Institute of Architects Honor Award in 2019. These factors considered, the overwhelming civic support for this park has thrusted Confluence Park into the spotlight, establishing its place as a premier public space for communities across San Antonio.

Figure 7: Confluence Park

There is no doubt that Confluence Park is a picturesque public space, however, its development is not without context and concerns. Confluence Park sits in between the greater downtown area and San Antonio's south side, along the portion of the San Antonio River known as Mission Reach. This area has been experiencing gentrification concerns as luxury developments have pushed out lower income communities in the past (Olivo, 2022). Seeing as how this neighborhood houses the historic San Antonio Missions, it is no doubt that it is a desirable area. Confluence Park's presence and development in the area could be an indicator for gentrification pressures in the southside neighborhood. However, Confluence Park has only recently opened and its impact on the south side could be positive or negative. As the park evolves as a public space, it prompts important discussions on the differences between gentrification and economic development in San Antonio.

Public spaces across time and geographies are imbued with unique histories – San Antonio is no different. While similarities and connections are present, these three parks are distinctive entities

that have the potential to embody the broader characteristics and cultural ecosystem services offered by the majority of public spaces in San Antonio. Brackenridge Park embodies the legacy and importance of cultural heritage sites drawn from the tangible remnants of the past. Elmendorf Lake Park and its lake centered identity exemplifies cultural heritage sites derived from landscape features. Confluence Park is a unique example of a cultural heritage site that serves as a commemoration of the past or community's culture. By delving into the histories of these parks, alongside the human geographical and environmental development of the region, cultural ecosystem services observed in these spaces can be better understood, interpreted, and applied to resilience planning.

Chapter 4: Research Questions, Methodology, and Data

While the previous chapters oriented the reader on foundational knowledge of San Antonio and relevant literature, this chapter will begin by revisiting the research goals and questions of this thesis. Drawing from those questions, the literature review, and history of San Antonio, the framework for research and methodological approaches will be discussed. This chapter will then conclude with the results of this thesis.

Section 4.1 Research Goals

This thesis aimed to understand what cultural ecosystem services can inform planners, designers, and communities about resilience projects and green infrastructure projects like public urban green spaces. To explore this topic, several research questions were investigated:

1. *What are the levels and forms of social interactions observed in public urban green spaces in the city of San Antonio?*
2. *What cultural ecosystem services can be inferred from observed behaviors in San Antonio's cultural heritage sites, within the context of San Antonio's public spaces?*
3. *What cultural ecosystem services can be inferred from observed behaviors along San Antonio's River system, within the context of San Antonio's public spaces?*
4. *How does historical and socio-economic context influence the interpretation of observed behaviors in San Antonio?*

These research questions guided the research process, leading to a series of behavioral maps throughout the thesis.

Section 4.2 Methodology

Utilizing a dynamic research approach, this thesis drew upon participant observation through the implementation of the Systematically Observing Social Interaction in Parks (SOSIP) approach, complemented by historical research derived from published historical accounts, newspaper articles,

and oral histories (Chen et al., 2023). The bulk of the historical research was conducted prior to participant observation, but not limited to that time frame. This non-linear approach allowed for historical research to constantly inform site selection, participant observation, and data interpretation. As a result, this thesis and its research methodology adopted an exploratory perspective – one that not only led to personal fulfillment through education, but a holistic perspective of these sites that does not observe them devoid from their contexts.

As Chapter 2 explained, a mixed-method approach was found to be the most effective methodology when conducting CES research. As a result, this thesis will utilize a combined approach drawing from the SOSIP approach, behavioral mapping, and archival research from newspaper articles.

The SOSIP approach makes use of the Social Interaction Scale developed by Mildred Parten, PhD that categorizes observed behaviors into six levels of social interaction. Ranging from a point value of 1 to 6 respectively, the six levels are solitary, solitary onlooker, onlookers, parallel, associative, and cooperative (Chen et al., 2023). Making use of this coding scheme, an ArcGIS Survey123-derived form was used to collect data that included ranking the level of social interaction for each observed group/individual in the public space, group size, demographic information, date, time, weather, temperature, what forms of behavior were observed, and whether or not observed parties interacted with their surroundings. As Survey123 records the location of where the form was submitted, each entry of observed behavior is automatically geo-located on a map onto where the observed behavior was conducted. Utilizing the SOSIP approach in this manner allowed for a streamlined data collection process throughout the thesis, minimizing data scrubbing, and the most optimal choice for this thesis.

During the site selection stage, several factors were considered in order to choose locations that would be the most beneficial for this analysis. Figure 8 below showcases a map of public spaces and projects along the San Antonio River watershed that define the landscape of the region. Deriving

from the historical research conducted explained in the previous chapter, two public spaces were chosen considering historical socio-economic dynamics between San Antonian neighborhoods and recent trends in socio-economic insecurity – Brackenridge Park being a historically invested park in a predominately affluent neighborhood and Confluence Park a newer park in an area subjected to recent gentrification pressures. Over time, Elmendorf Lake Park was chosen as the third site to reflect San Antonio's historic disinvestment and act as a contrast to Brackenridge Park for this thesis. Other parameters for site selection included public spaces that were situated along San Antonio's River system and spaces with cultural heritage sites. Considering the integral role water has played in San Antonio's development, it one of the focuses of this thesis to understand the Cultural Ecosystem Services communities in San Antonio receive from their water systems.

Figure 8: Map of Riverfront Public Spaces in the Upper San Antonio River Watershed

To better understand the diverse array of cultural ecosystem services in San Antonio, it's important to understand its legacy as a city of historic and cultural preservation. Public spaces in particular, house cultural heritage sites that provide invaluable cultural ecosystem services to its residents. These sites can exist as one of three different forms: a) Cultural heritage sites derived from the natural landscapes or environments, b) Tangible and visible human-made remnants of the past, c) Objects, representations, and commemorations of the interactions between the tangible present and the intangible past (Hølleland et al., 2017). All three public spaces chosen for these sites represent one of the three categories respectively. Brackenridge Park, classified as a historic site by the national register of historic places, is considered a tangible and visible remnant of the past. Elmendorf Lake Park's identity is strongly tied to its natural environment and ecology, thusly classifying it as a landscape-derived cultural heritage site. Confluence Park exists as a structural manifestation of convergence of rivers and ecosystems in San Antonio and is, thusly, classified as a commemoration of the tangible present and intangible past. Other factors such as normalized difference vegetation index (NDVI) and satellite-obtained tree canopy cover were also considered to select public spaces in areas with varying levels of vegetation. This combination of criteria, as well as considerations regarding feasibility and time, led to the selection of these three chosen sites for observation.

The participant observation completed for this thesis relied on the Systematically Observing Social Interaction in Parks (SOSIP) approach developed by Shuolei Chen et al. that sought to evaluate and quantify human behaviors in public spaces (Chen et al., 2023). While the original intention of this protocol was to measure the level of social interaction in parks from their the number of individuals engaged in social behavior, this thesis utilizes this approach to observe human-environmental interactions to evaluate potential cultural ecosystem services in public space. The assumption being that the level of social interaction a public space exhibits can indicate the frequency and amount of engagement visitors have with the physical space, reflecting the cultural ecosystem services provided

by the space that visitors are drawn to use. However, just enumerating the level of social interaction loses the inherent value of the qualitative nature of cultural ecosystem services. As a result, this thesis utilizes an inductive approach to enrich the quantitative data collected using behavioral mapping; This approach was heavily informed by documental research that provided community perspectives like newspaper articles. Stemming from participant observation, the usage of both methods ensures a holistic understanding of what forms of human-environmental interactions and cultural ecosystem services exist in these spaces.

The observer opted for an organic exploration of the public space and social observations and traversed each public space in a way that would allow documentation of each section of the space as a typical visitor. While prescribed methods of observation are methodical, it risks minimizing the humanistic role of research like this. While walking, I would utilize the Survey123 form to document and record the necessary information for each group or individual observed. If time permitted, photos were also taken of the park to get a better understanding of the space as well as any human-environmental interactions visible to the public like fishing or photography. Each of these explorations were conducted in morning and afternoon periods for three days of the week – a Weekday, Saturday, and Sunday. By exploring each of the selected public spaces in this manner and during these periods, it allowed for a more holistic view of the level of social interaction in each park, thusly leading to a holistic observation of the kinds of human-environmental interactions in these parks. These observations were completed once during the warmer summer months and, again, in the colder winter months of San Antonio – further creating a representative view of the park's value. Each visit would range from 15 to 45 minutes depending on the park's size and the number of social interactions observed. While recording data, multiple behaviors were reported if the observed party was exhibiting multiple at the same time (i.e. walking around a park whilst smelling foliage). If another behavior was exhibited from the same party after they had been documented, it was ignored in favor of the first scan

to avoid mischaracterizing the observed behaviors. Once completed, the social interaction score for each observed behavior was calculated by multiplying the point value of the SIS category and the population size of the observed party. The total of all the social interaction scores for each park represents the level of social interaction each public space exhibits (see Table 1).

To procure relevant literature and sources to interpret the observed behaviors in San Antonio's public spaces, this thesis made use of contemporary historiographies written by a wide range of scholars for the preceding chapter; These historiographies were often framed through various disciplines such as environmental, political, and economic studies or from Tejano, American Indian, and Chicano/a perspectives. Notably, the influential works of historians Dr. Char Miller, Dr. David Johnson, and Dr. Adrian Chavana, have greatly influenced this thesis and my understanding of San Antonio's complex history. Additionally, newspaper articles and meeting minutes from contemporary and historical sources such as the *San Antonio Express-News*, *La Prensa Texas*, *Deceleration News*, and the city of San Antonio were used to supplement and provide context on contemporary events in San Antonio. Publicly accessible oral histories collected by the University of Texas at San Antonio through their digital collections were also utilized to supplement the historiographies written by the aforementioned scholars and provide perspectives that may have been lost when synthesizing information in historiographies. The mixture of these sources was extremely beneficial to my research and to my understanding of how observed behaviors in the selected public spaces are influenced by and can influence broader historic and contemporary events in San Antonio. The resulting data, interpretation, and thesis are designed around the format of a written thesis for public consumption.

Section 4.3 Data

At the beginning of this thesis work, it was hypothesized that public spaces in historically disinvested neighborhoods would see higher levels of social interaction and, therefore, greater indications of quality cultural ecosystem services for those neighborhoods. However, the data presented below in Table 1, show that the historically invested Brackenridge Park had the highest social interaction score, mean level of social interaction and the largest range of social interaction scores. Whereas parks in the historically disinvested areas such as Confluence and Elmendorf Lake Park saw the lowest levels of social interaction. Elmendorf Lake Park is notable for its lower standard deviation when compared to the other parks. This suggests that other parks experience significant fluctuations in their levels of social interaction and engagement in cultural ecosystem services, while Elmendorf Lake Park experiences a more consistent pattern of social behavior.

Table 1 Descriptive Characteristics of Selected Parks in San Antonio

Name of Public Space	*Raw SIS*	*Mean*	*Standard Deviation*	*Range*	*Randomized SIS (80 entries)*
Brackenridge Park	3358	24	52	(0, 450)	1201
Confluence Park	1385	14	33	(0, 300)	820
Elmendorf Lake Park	698	8	9	(0, 40)	694
Across all Parks	5441	17	40	(0, 450)	664

Not displayed is the total number of observations recorded in each public space, ranging from 80 to 130 per park. To account for this range difference in collected observations, a randomization method was also added to calculate the social interaction score from 80 random entries collected in

each park. While this method maintains similar trends of social interactions that the raw score does, it also reduces the influence of large outliers that these parks experience.

Table 2 Seasonal Characteristics of Selected Parks in San Antonio

Name of Public Spaces	*Combined Season (71° F)*		*Warmer Months (83° F)*		*Colder Months (56° F)*	
	SIS	Mean	SIS	Mean	SIS	Mean
Brackenridge Park	3358	24	2373	28	1010	20
Confluence Park	1358	14	958	14	427	15
Elmendorf Lake Park	698	8	238	8	460	8
Across all Parks	5441	17	3569	20	1897	14

In terms of seasonal differences, seen in table 2, Elmendorf Lake Park saw a greater social interaction score during the colder months and a slightly larger social interaction score than Confluence Park during that period. Brackenridge Park still saw the largest social interaction score across both seasons with a typical drop in visitors during the colder months. Notably, Elmendorf Lake Park saw the exact same mean social interaction score across all seasons despite having the lowest level of social interactions; This suggests that there may be other factors outside temperature and weather that have an influence on social interactions in these spaces. Importantly, the combined scores across these parks have the potential of acting as a representative sample of the levels of social interaction across San Antonio. However, to get a better sense of the level of social interaction and quality of CES in San Antonio, a similar process needs to be completed on another city for a comparative analysis. By doing so, it can reveal what planning methods are effective in incorporating CES into research that has positive results and can foster social resilience.

While the quantification of the level of social interactions does provide a basis to compare public spaces in San Antonio with one another, it is critical to include qualitative aspects of what each

park provides visitors that the SOSIP approach collects. The most common behavior observed across parks were parties crossing, observing, and/or talking. Crossing can indicate parties passing through the parks to get to another destination (i.e. using the park as a shortcut) or taking a leisurely stroll through park to meander. Observing and talking behaviors are self-explanatory and encompassed several parties across all public spaces in San Antonio regardless of seasonality (i.e. parents supervising children while speaking to one another, a lone individual observing the natural landscape, or a pair of individuals speaking intimately with one another). The resulting considerations led to the creation of this atlas that illustrates the most prominent social behaviors in the selected public spaces across San Antonio. Atlases and maps can provide users with more than just geographic and navigational information, this atlas aims to showcase and visualize the cultural landscape of San Antonio.

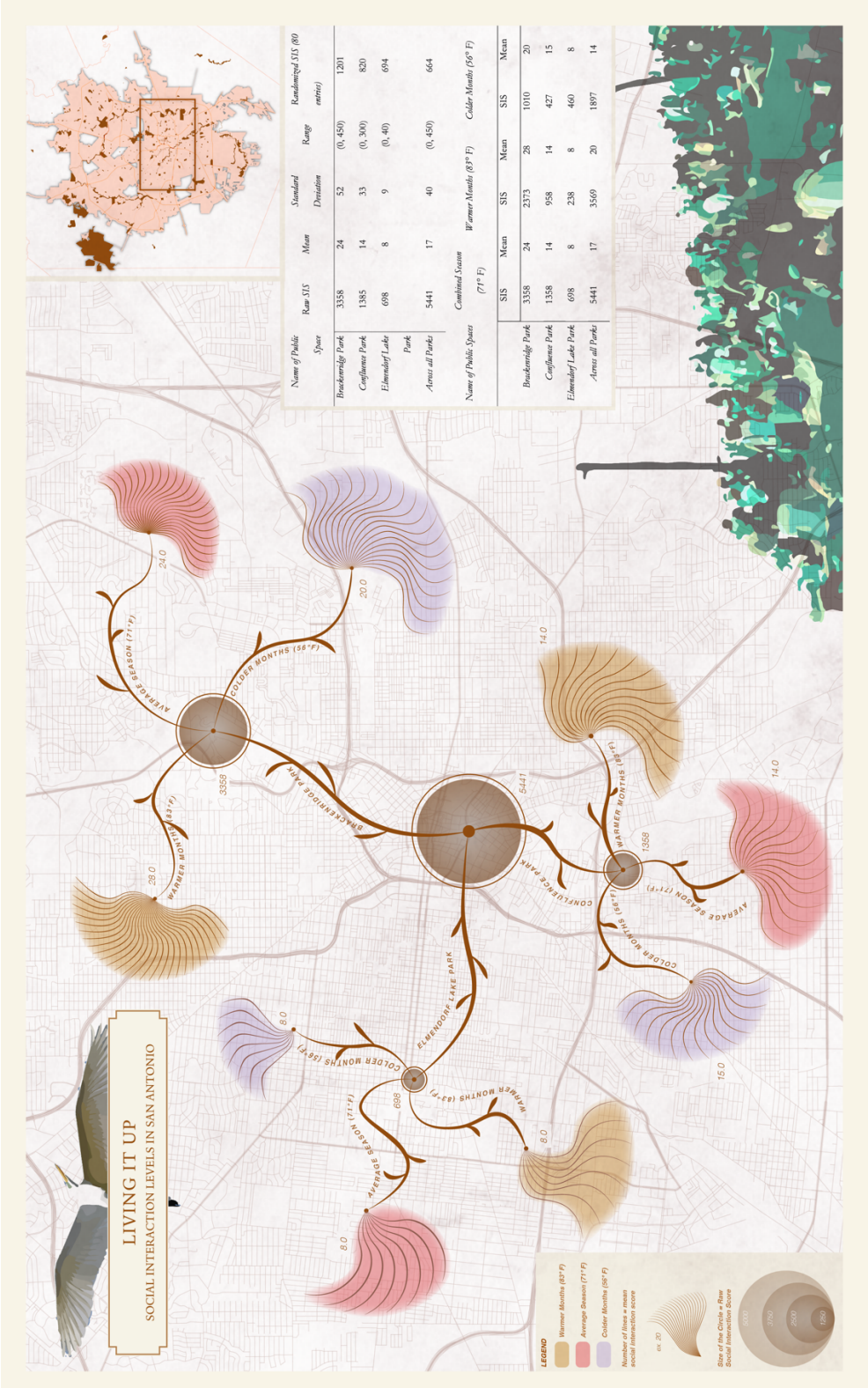

Figure 9: Map of Social Interaction Levels in the Selected Sites;

Brackenridge Park had the largest level of social interactions across all sites.

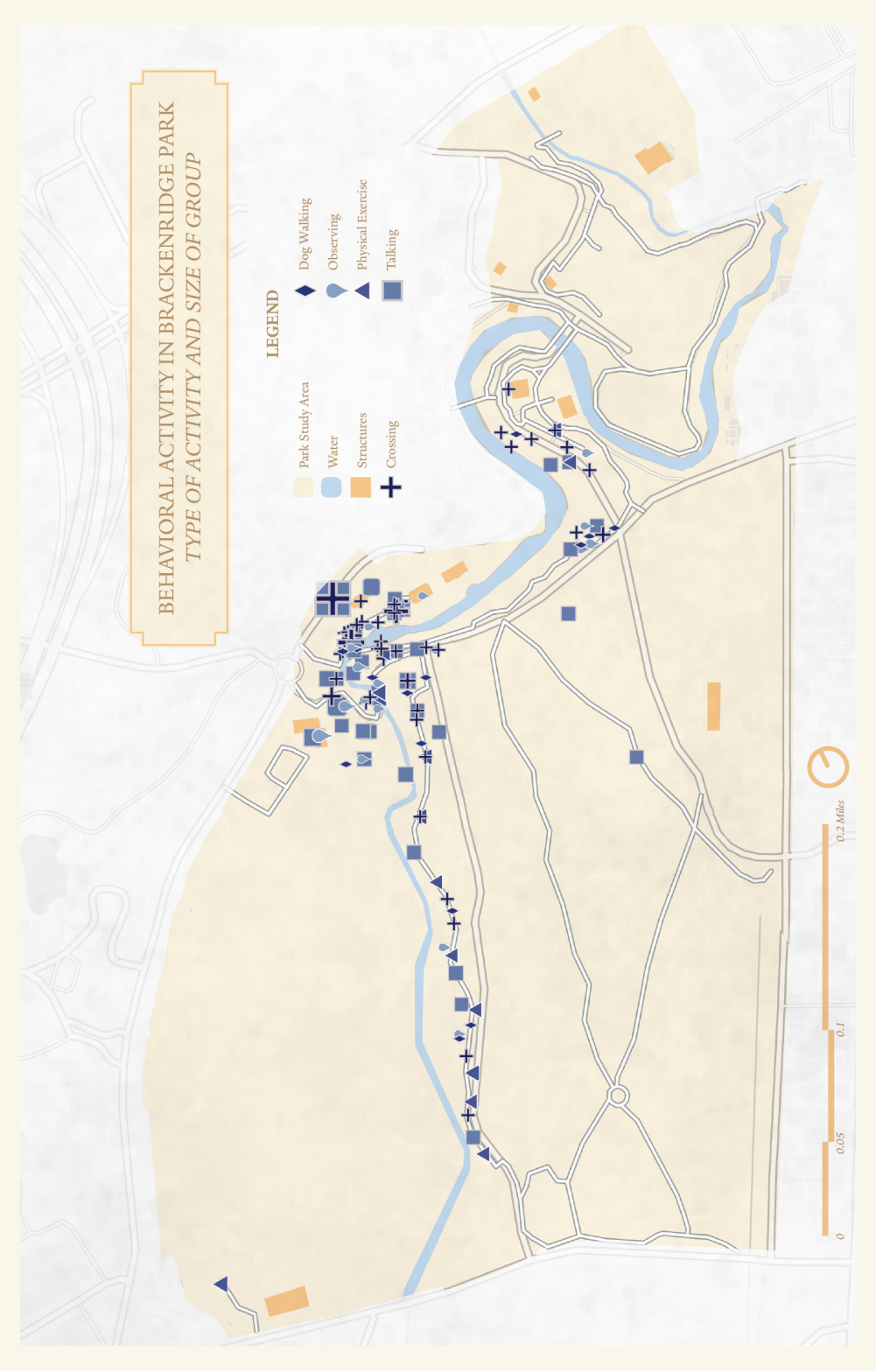

Figure 10: Behavioral Map of Brackenridge Park;

Brackenridge Park had a diverse array of behaviors and size of groups.

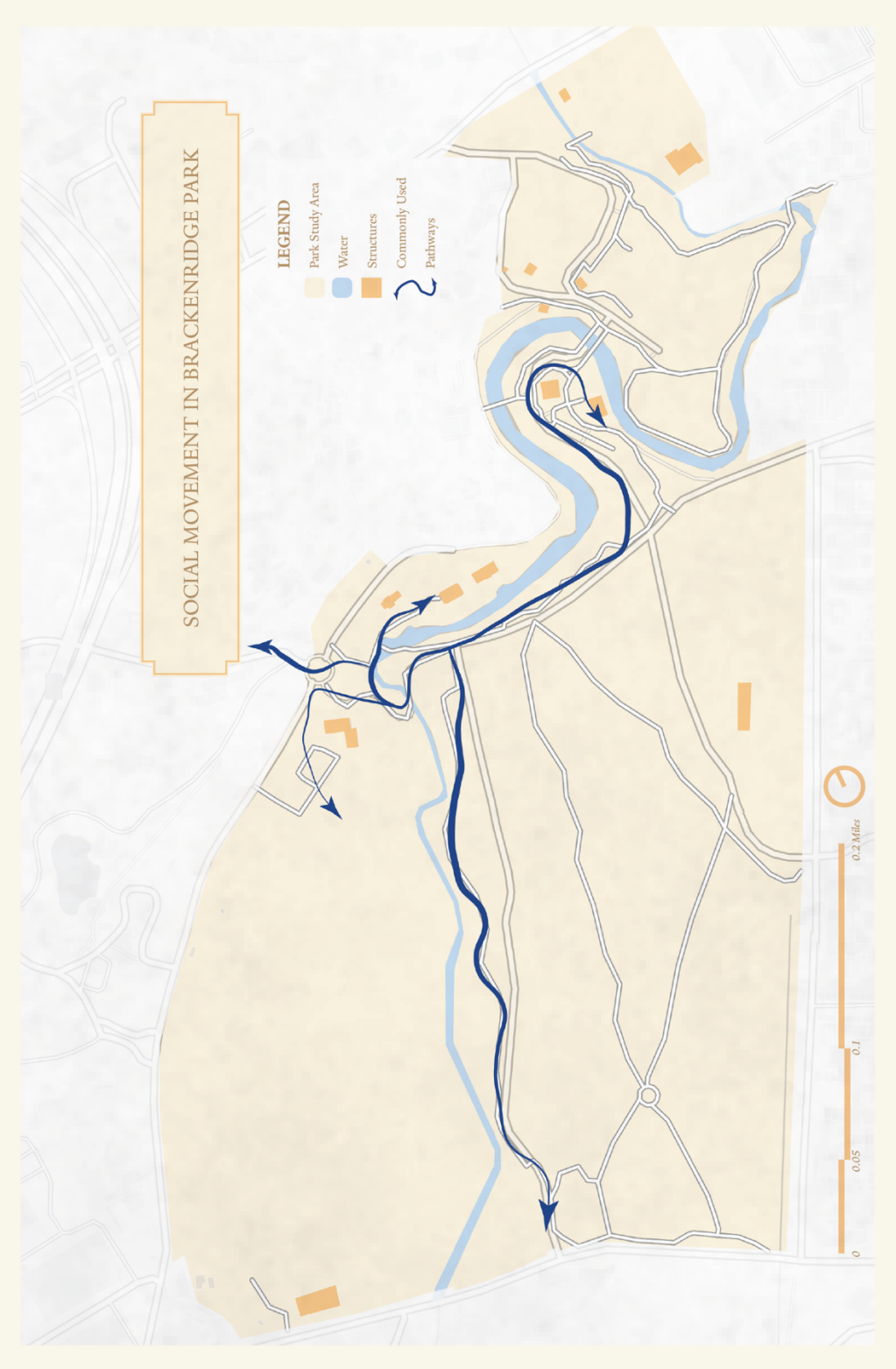

Figure 11: Social Movement of Brackenridge Park;

Most observed behaviors were centered on the park and river.

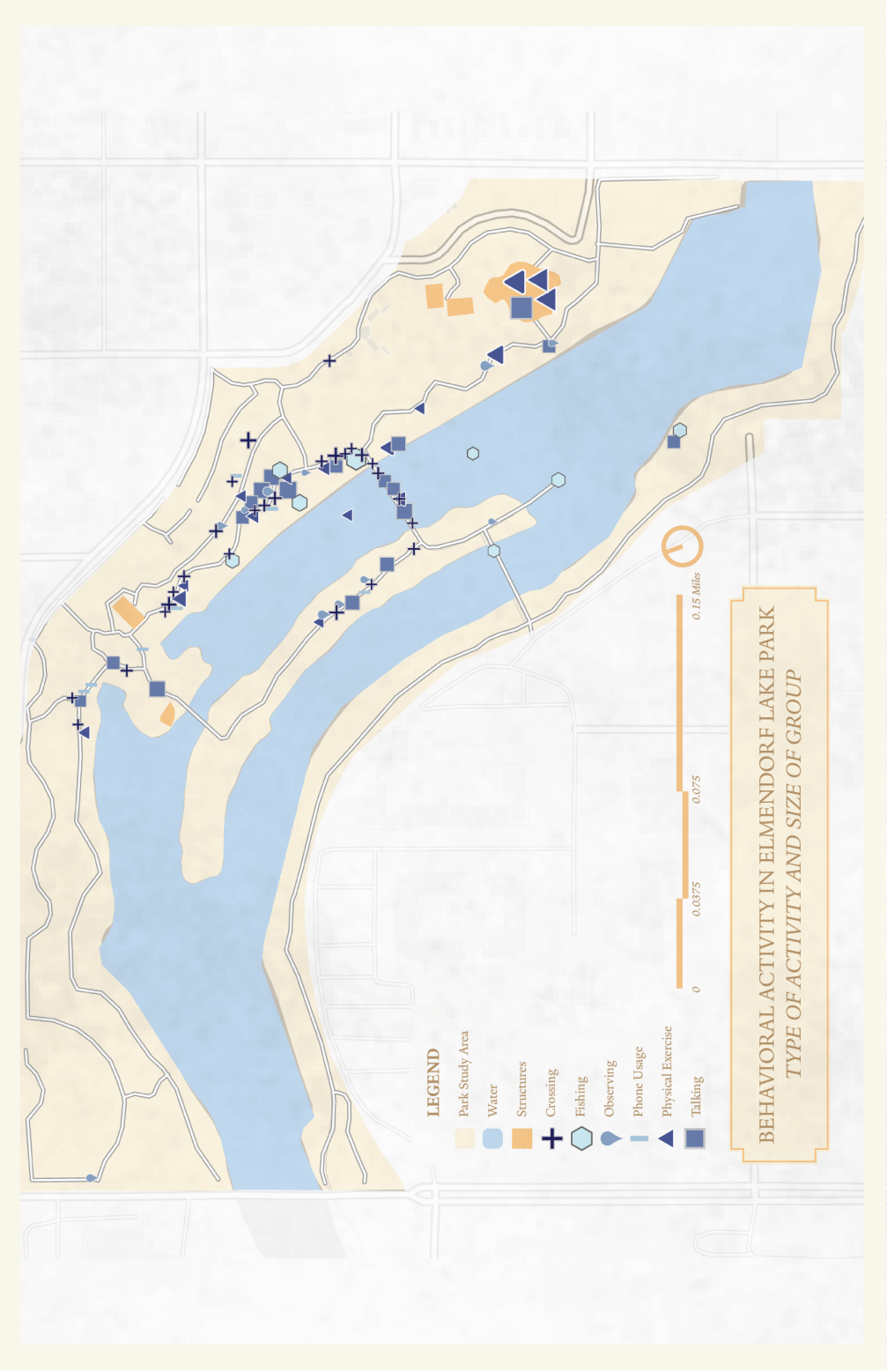

Figure 12: Behavioral Map of Elmendorf Lake Park;

Obseved behaviors were scattered, but closely attached to the parking lot.

Figure 13: Social Movement of Elmendorf Lake Park;

Movement thorugh the park concerned runners and bikers and followed the lake's curve

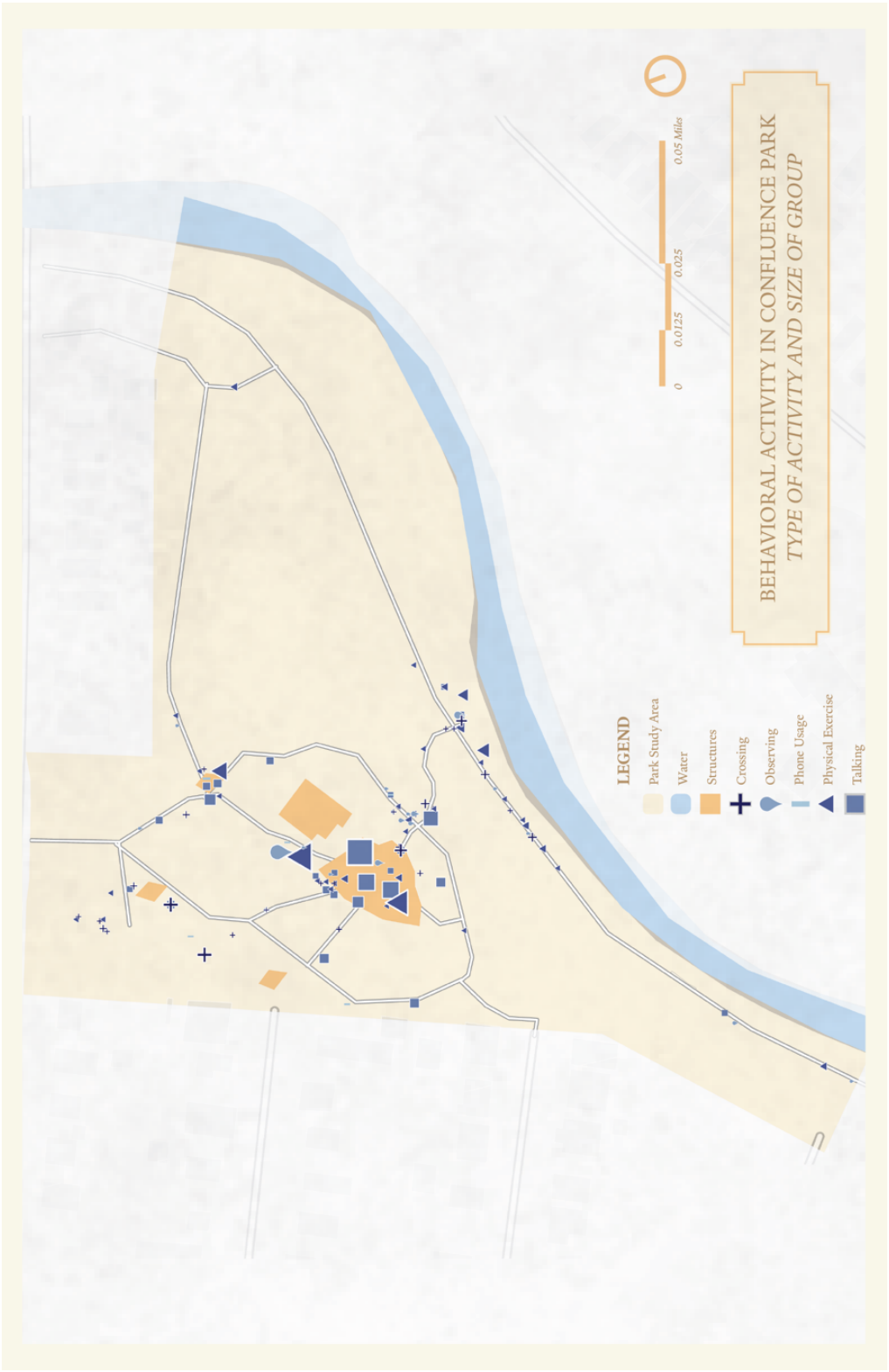

Figure 14: Behavioral Map of Confluence Park;

Observed behaviors were largest at the pavilion but scattered throughout the park.

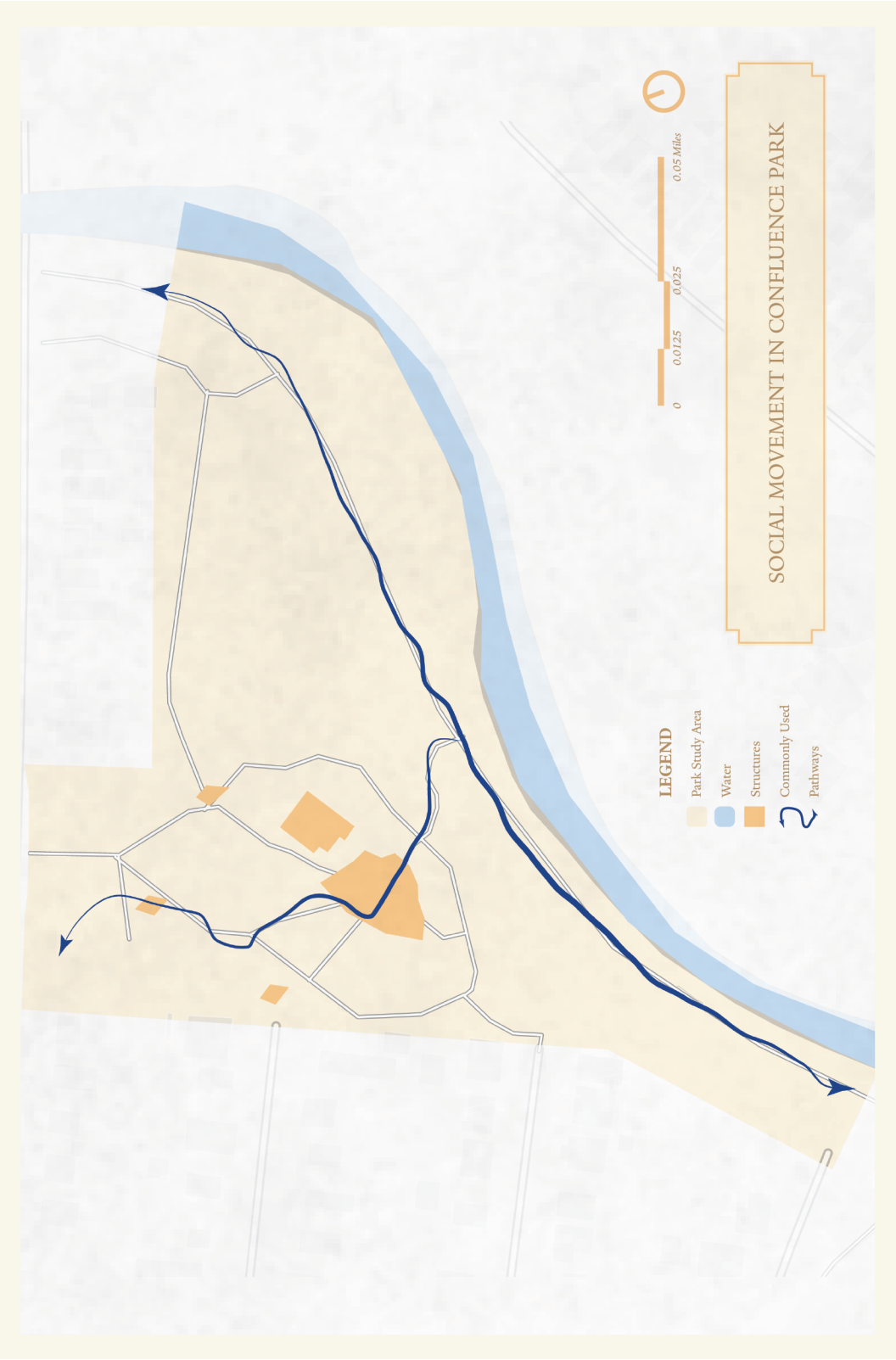

Figure 15: Social Movement in Confluence Park;

People would primarily follow the river and the adjoining trail but would stop at the pavilion.

While figures 9-15 do not showcase behaviors that may be unique to each public space, it does showcase which observed behaviors appear more prominently in some parks more than others. Brackenridge Park, for instance, observed many parties engaged in dog walking and Confluence Park saw higher rates of Physical Exercise in their park. Elmendorf Lake Park also saw fishing to be a larger proportion of its commonly observed behaviors along with physical exercise, an observation that might contribute to Elmendorf Lake Parks consistent usage across seasons. It is important to note that the listed behaviors in figure 10-15 only represent the 5 most common behaviors of each park and list of all observed behaviors can be found in the appendix. The combination of the quantified social interaction score and the types of observed behaviors does paint a picture of what cultural ecosystem services exist in the selected public spaces in San Antonio, however, it's critical to interpret this data through the lens of park infrastructure design, the presence of cultural heritage sites, and patterns of historic development.

Chapter 5: An Examination of Cultural Ecosystem Services in San Antonio

In the mosaic of San Antonio's urban landscape, this thesis investigated the array of human-environmental interactions and cultural ecosystem services of the city's public spaces. It is critical to understand that perceptions of San Antonio are deeply intertwined with its historical and cultural features, resulting in a wide array of cultural ecosystem services throughout the city's urban and environmental landscape. By observing how communities engage with nature in San Antonio, however, it revealed that human-environmental bonds go beyond utilitarian valuations of land such as cultural ecosystem services – In particular, communities' sense of belonging to the environment. To better understand this, however, it's critical to understand what human-environmental behaviors were observed and what bonds can be inferred from those behaviors.

Section 5.1 Cultural Heritage Sites

The original conception of this thesis interpreted the three parks as distinct cultural heritage sites that exemplify the varying forms cultural heritage can manifest: Brackenridge Park's designation under the National Register of Historic Places, Elmendorf Lake Park's commitment to preservation of Elmendorf Lake, and Confluence Park's award-winning commemoration of natural landscapes. Cultural heritage sites are places, structures, or areas that hold significant and distinctive historical or social value that serve as tangible reminders of a societies history, identity, or accomplishments. These sites can manifest in varying ways such as tangible remnants of the past, landscape-centered spaces, and areas that commemorate a society.

Through observing cultural ecosystem services in these parks, however, it is evident that the strict classifications that this thesis originally interpreted these parks is not correct. As each park possesses cultural heritage features that could classify each of them as tangible remnants of the past, landscape derived heritage sites, or commemorations that connect the past and present, it is critical to understand the fluid nature of the requirements of cultural heritage sites. As a result, evaluating the

forms of social behaviors and cultural ecosystems involving cultural heritage sites in these sites necessitates a holistic approach to understand broader similarities and differences between the parks.

Through this research, Brackenridge Park has a multitude of cultural heritage sites except for commemorations of the past. Given the size of Brackenridge Park, it is host to several cultural resources that are tangible remnants from history as well as derived from the natural landscape. Of note are historic structures such as retaining walls, old pump houses, and other built structures as well as landscape-derived cultural resources such as the river and trees around the park. As landscape-derived cultural heritage sites in these public parks primarily concerned water features, the next section details the bulk of social behaviors and cultural ecosystem services that they provide communities. However, the existence of heritage trees should be emphasized. It was not uncommon to see canopy trees of incredible size with visitors choosing to relax underneath the canopy cover rather than under the sun. Regarding cultural resources exemplifying tangible remnants of the past, these historic structures are still in use for community gathering purposes. Some structures are no longer in use and serve a purely educational purpose for visitors and communities to learn about through placards. Of the three parks, Brackenridge Park has little-to-no cultural heritage sites that act as commemorations of the past and present. This could be a result of strong conservationist attitudes regarding Brackenridge Park that prioritize tangible remnants of the past and landscape derived sites evidenced by the existence of organizations like the Brackenridge Park's Conservancy and Brackenridge Park Stakeholder Advisory Committee that other parks do not have. In fact, while observing Brackenridge Park, the presence of park managers and municipal stewards was constant – creating an atmosphere akin to a national park, an atmosphere that exudes that the entire park is under conservation. Thus, the human-environmental interactions observed in Brackenridge Park as they relate to cultural resources exemplify the aesthetic and education enrichment typical of these resources with the understanding that these cultural resources exemplify the complex history of San Antonio. The

materials utilized to build the historic structures, the architecture of these structures, and the persistence of landscape-derived cultural resources tell the story of historic development of Brackenridge Park and, by extension, the city of San Antonio itself from rich ecological biodiversity to architectural importance. It can be inferred that the cultural resources managed by Brackenridge Park emphasize the unique sense of place of present in the region to visitors in a way that distinguishes San Antonio from other cities. While Brackenridge Park may lack sites that commemorate the past, the presence of tangible remnants and landscape-derived sites provide numerous cultural ecosystem services for visitors and the local community.

Regarded as the Jewel of the West Side, Elmendorf Lake Park is the only public space that arguably manages all three forms of cultural heritage sites described. As stated in a previous paragraph, Elmendorf Lake Park's, and its neighboring sites historically date back to the early 20th century but they are not regarded as a historic site under the National Register for Historic Places. Despite this, the park has grown and developed to include various cultural resources alongside its centrally focused landscape-derived site – Elmendorf Lake. Contemporary developments of the past half century include mosaic benches, sculptures, and public art installations that are scattered throughout the park for visitors to admire and utilize. These additions serve as cultural resources that act as commemorations of the past and present. These art pieces were completed by local artists and often served dual functions to help guide visitors and illustrate the complex cultural history of the historic west side. Notably, there was an increased presence of placards that emphasized the unique history found at Elmendorf Lake Park. In contrast to Brackenridge Park, this juxtaposition speaks to the differences in financial resources available; This difference in atmospheres amplifies the aesthetic and educational ecosystem services that Elmendorf Lake Park's cultural resources provide. Wherein, it is evident that there is a concerted effort by stakeholder communities and leaders to uplift and protect their communal heritage. Notably, Elmendorf Lake Park was the only park where the observer was approached by park visitors

to inquire about the observer's presence in the park. This sense of stewardship and placemaking efforts suggests that the standard classification of cultural ecosystem services like 'sense of place' does not capture the importance of Elmendorf Lake Park. One would think that another park in the same city would provide residents with a similar sense of place, however the different forms of cultural resources inform communities of the disparate cultural values that urban communities can experience. As a result, while most human-environmental interactions connected to cultural heritage sites observed were like other parks, there were a few distinct observations in Elmendorf Lake Park that suggest its 'sense of place' is distinctive from other parks in San Antonio. However, further research involving community engagement and input needs to be completed to verify this claim. Through the combination of several cultural heritage sites, Elmendorf Lake Park exhibits cultural ecosystem services that embody the unique cultural heritage of San Antonio's west side.

Confluence Park is the youngest of the parks considered and has little-to-no cultural resources that exemplify tangible remnants of the past, focusing instead on structures designed to commemorate the complex history and legacy of the San Antonio River watershed. The human-environmental interactions associated with cultural resources were like those observed in the other parks. A majority-if-not-all the observed behaviors at Confluence Park were tied to the park's provision of aesthetic appreciation or educational fulfillment. The park's limited size centralized community interactions into a smaller space which was a pavilion designed to emulate the curvature of San Antonio's rivers and the convergence of water into a single body. Smaller shelters designed in similar fashions were interspersed throughout the park, alongside rainwater cisterns, native flora, placards detailing environmental knowledge, public art, and an enclosed shelter for educational facilities. It is evident that the focus of Confluence Park was its educational aspect as well as providing an event venue. Human-environmental interactions at Confluence Park, like Brackenridge Park, spiked during times of formal public events hosted by the city or communities. Informally, the structures commemorating San Antonio's landscape

were utilized for visual media. Taking photos of cultural resources was not unique, however, Confluence Park did see a difference in the way photos were taken. Rather than being the subject of photos, Confluence Park saw photography related behaviors for individuals experiencing coming-of-age rituals – i.e. prom photos, Pregnancy announcements, Quinceañera photos, etc. While other parks had event venues and provided space for similar photography behaviors, Confluence Park stands out as a space community's seemingly co-opted for particular kinds of photography. To reiterate, Confluence Park was designed, and its cultural resources managed to be an educational and event venue inspired by the convergence of water bodies. However, it was clear that outside formalized events, the general visitor would utilize forgo the educational aspect of the park and use the space's aesthetic value to engage in behaviors that uplift their personal accomplishments. While most of the human-environmental interactions at Confluence Park were still tied to educational and general aesthetic appreciation, the co-opting of the parks aesthetic value, again, contributes to an expansion of a sense of place from the park. Rather, it is possible that these human-environmental interactions highlight how park visitors can expand upon an existing sense of place and forge a new sense of place that better reflects communal needs – there is a chance that a sense of ownership over the area is being created. While Confluence Park may lack tangible remnants of the past, the cultural heritage sites that are present at the park facilitate the creation of cultural ecosystem services that are most relevant to local communities and visitors.

Despite the fluid nature of cultural heritage sites across the three parks, there were consistent human-environmental interactions shared across all of the selected parks despite differences in cultural resource management. To no surprise, aesthetic appreciation and educational fulfillment were the primary human-environmental interactions and cultural ecosystem service observed at each park. This took the form of visitors taking photos of the landscape, historic structures, and public art as both the subjects and background for photos. If the park made use of wayfinding and educational placards, it

was common to see visitors reading them before continuing to observe the park. For example, visitors in Elmendorf Lake Park would read the placards before taking a photo of the lake as well as the historic university the lake borders – Our Lady of the Lake University which was founded in 1985. Not only are the classifications of what type of cultural heritage site each park represents fluctuates, it is also influenced by the historic sites it is in proximity to. The combination of aesthetic and educational ecosystems services these sites provide lend to the concept that these parks provide a sense of place to communities. Given the rich cultural and historical heritage embedded into San Antonio's urban landscape, it is understandable that a sense of place drawing from cultural heritage sites within or outside the formal boundaries of public spaces would emerge. Despite these similarities across all the park's human-environmental interactions influenced by cultural resources, the extent and atmosphere surrounding each park's cultural resources differ immensely and speak to the differences in cultural ecosystem services that are being offered.

While there were similarities across all the parks regarding the forms of human-environmental interactions tied to cultural resources, it is possible that the form of cultural heritage sites that commemorate the past and present have varied influences on social behavior and human-environmental bonds. The potential sense of stewardship and ownership exhibited by Elmendorf Lake Park and Confluence Park are indicative of this phenomenon. As figures 16 - 18 illustrate, cultural resources are interspersed throughout park spaces and can have varying influences on social behavior. Public art installations, for instance, either emphasize narratives that communities want to uplift or allow for community interpretation which urges communities and park visitors to take an active role in shaping the cultural identity of the park. However, outside of Confluence Park, human-environmental interactions are predominately centered on landscape-derived features which speaks to the desire to reconnect with nature in an urban landscape and cultural resources provide supplemental support in fostering human-environmental bonds. Of which, landscape derived sites draw in visitors

into parks while tangible remnants of the past and commemorative objects shape the perceptions these visitors will develop of these parks. When engaged with these sites, the intangible aspects of cultural heritage such as knowledge systems, a sense of ownership, and a sense of place are activated. Effectively, these tangible aspects of cultural heritage act as mediums to which local communities and visitors can engage with intangible cultural ecosystem services. While the cultural heritage sites in these three parks manifest in different forms, how communities engage with them to access cultural ecosystem services are quite similar.

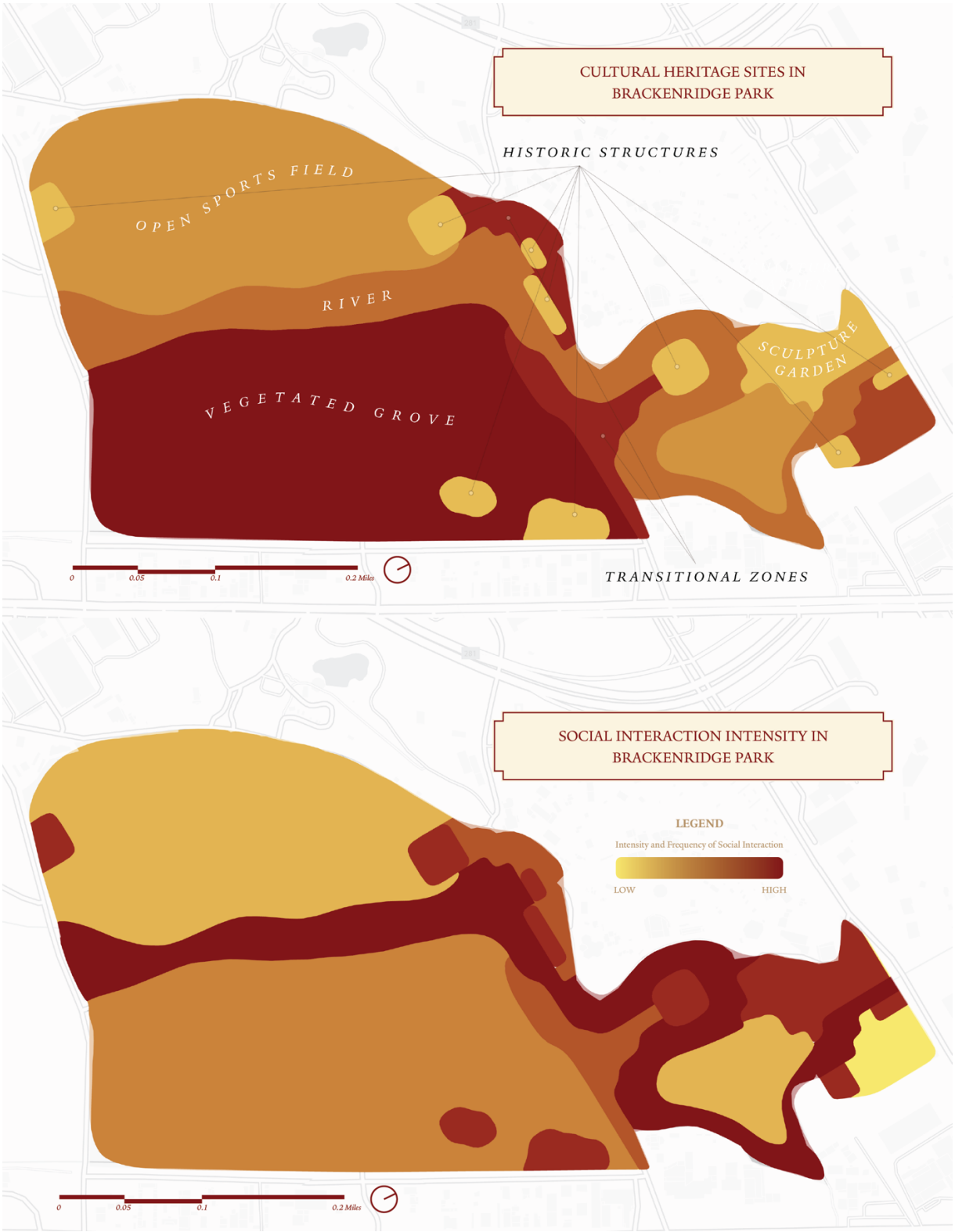

Figure 16: Cultural Heritage Site Map of Brackenridge Park;

Social behavior in Brackenridge Park is centered along the landscape derived site – the San Antonio River

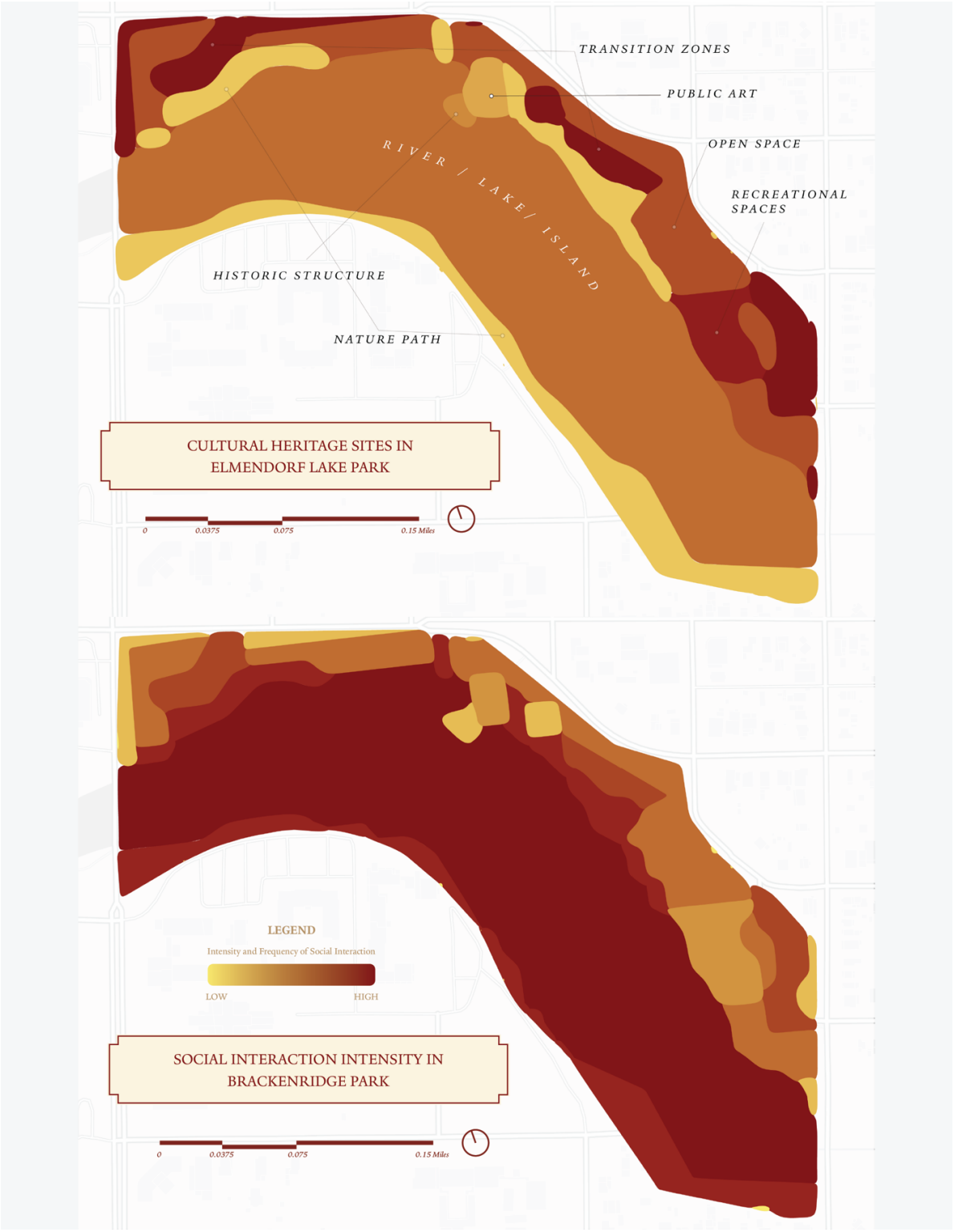

Figure 17: Cultural Heritage Site Map of Elmendorf Lake Park;

Social Behavior was centered along the landscape derived site – Elmendorf Lake

Figure 18: Cultural Heritage Site Map of Confluence Park;

Social behavior was centered along the nature paths and public art that commemorates cultural values.

In a similar fashion to water feature's influence on human-environmental interactions, the SOSIP approach struggles to encapsulate the value of cultural resources in public spaces. If the SIS was the only determining factor for the valuation of a park and its services, Elmendorf Lake Park and Confluence Park would be considered the least valuable than Brackenridge Park and, thusly, their cultural resources as less valuable. However, behavioral mapping and subsequent pattern recognition reveals that the cultural resources of Elmendorf Lake Park and Confluence Park are extremely valuable and provide distinctive cultural ecosystem services that Brackenridge may not such as meditation or identity affirmation. As a result, the SIS would overlook these unique behaviors in favor of highlighting the number of people attended a park and if they spoke to one another.

Through behavioral mapping and acknowledging the complexities of cultural resources, questions begin to emerge regarding the classification of cultural heritage sites. Who decides what is deemed to have historic value? Why do some areas receive historic designations and others don't? Are commemorations of the past and present an oversimplification of various cultural resources? All these questions are outside the scope of this thesis, but they emphasize how enumerating the value of parks through scores and classifications dilutes the value of cultural heritage sites. Cultural values are defined by community perspectives and attempting to quantify or categorize these values is misleading. There is value in using this approach as a starting point and indicator of the number of individuals utilizing cultural ecosystem services, but it's critical to remain inclusive. In this sense, there is a quantifiable number of visitors who engaged in social activities in proximity to landscape-derived sites and a series of patterns relating to the interspersal of cultural resources that foster human-environmental bonds.

Human-environmental bonds that suggest a sense of stewardship or ownership are distinct from behaviors that convey a sense of place that environments are argued to provide communities. While cultural heritage sites do influence the forms of human-environmental interactions within these spaces, cultural resources that readily incorporate community perspectives provide spaces for

communities to alter their circumstances and affirm their identities. For planners working in conservation of cultural heritage, this highlights the need to engage with communities and return the decision making power on conservation to relevant parties. More so, planners working in placemaking, and the creation of cultural heritage sites should practice community-engage design to better embody the values of local communities. By not doing so, it risks creating spaces that foster social decohesion and resilience planners who operate in these spaces may strain trust levels between the design and planning fields with local communities. Whether it is using the environment to advocate for the recognition of their historical importance or co-opting a space to celebrate themselves and their values, the ability to alter environmental circumstances spurs the civic power of communities to foster community resilience – highlighting the importance of human-environmental bonds outside of what environments can provide us. This sentiment is corroborated and explored in further detail by William Whyte's research on social interactions in public spaces like streets and Henri Lefebvre's call for urban communities to shape their surroundings outside of market systems (Henri Lefebvre, 1968; William H. Whyte, 1980). As Lefebvre points out, public spaces are not neutral areas and are sites of social struggle. This can manifest in typical forms of social struggles such as protests, but it can also manifest in hidden actions that reaffirm identities. By critically observing and interpreting the geography of these spaces, resilience planners can understand underlying power dynamics of the region and challenge dominant narratives that afflict these communities. It is by counter mapping these dominant narratives as this thesis aims to do and how the historic west side communities advocate for that equitable resilient spaces can be imagined. Park systems and planning may be outside the control of local communities; However, it should not prevent residents from using the spaces for their own empowerment and improve social resilience. Ultimately, it is evident that the reciprocal relationship between humans and their environment is critical to fostering resilience, as seen through the evaluation of how landscape design and cultural resource management influence resilience practices.

Section 5.2 Waterscapes

Of the three public parks observed in this thesis, all of them took widely varying approaches to incorporating their water system into their park design. As a result, it is no surprise that these parks would see different forms and levels of engagement with natural landscapes. However, a consistent observation found between all parks was the aesthetic appreciation of the water system and recreational fishing activities. This was seen through the general congregation of social activity along water bodies. Whether it was multiple people having a conversation along the banks of the San Antonio River or individual people observing the river, it was not uncommon for observed social activity to be concentrated along the water systems rather than other parts of the park. Recreational fishing was seen throughout the parks with varying age levels participating in the activity and even serving as an intergenerational activity between parents and children. In multiple locations across all the observed parks, father figures were often seen fishing with their children – with children, more often than naught, engaging in the active speaking role of conversations. Of note was a particular fishing interaction between strangers – a pair of middle-aged men and teenage boys. Wherein, the teenage boys appeared to have become interested in a pair of middle-aged men fishing. Noticing this, the middle-aged men offered up their fishing rods and instructed the teenagers on how to fish in the river. To speak from personal experience, events and spaces such as these are invaluable as they embody the passing of knowledge systems and traditional knowledge between people that may not be present in formalized systems. Despite not having a formal observable relationship to one another, this observation suggests and highlights the inter-generational bond between community members that water features could promote. One can assume that given the region's limited water bodies, it is understandable that people would congregate around the water features that are accessible to them and utilize it to build social bonds. Effectively, these water bodies create a sense of place in the city's urban landscape that offers recreational benefits as well as space of social relationship building.

The ability to provide a 'sense of place' in not limited to Brackenridge Park. As it serves as part of the larger San Antonio River, the park utilizes both hard and soft river edges that influence human-environmental interactions in different ways. Within the park's central gathering areas, the river was encased in harder stone edges while the parks more secluded regions had softer river edges. The harder stone edges of Brackenridge Park are seen throughout San Antonio, but especially the downtown riverwalk where hard urban edges dominate the tourist attraction. As a result of the hard edges, however, a harsh boundary between public space and the river exists. Unlike the softer edges, where visitors can interact with the water through tactile means, these hard edges create a sense of inaccessibility – one in which no visitors were observed directly interacting with the water. The maintenance and usage of these hard edges exemplify the historical need to 'control and maintain' the San Antonio River whereas the softer edges create spaces for direct human-environmental interactions.

Figure 19: Hard Edges in Brackenridge Park

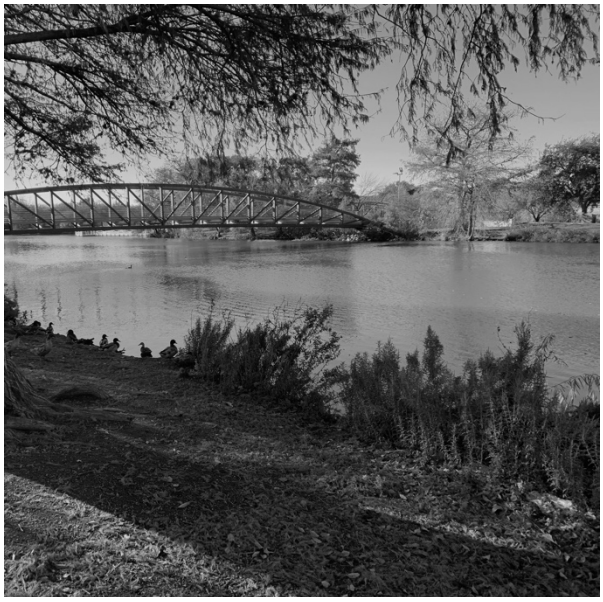

Figure 20: Soft Edges in Elmendorf Lake Park

There was one exception, a perpetually flowing low water crossing through the San Antonio River. Both children and adults made use of the low water crossing to engage with the river. Visitors took the opportunity to dip their feet in the water, children utilized the space to splash in the water, and parents would purposefully cross the river using the steppingstones along the edges of the low water crossing instead of utilizing an accessible bridge. There is an element of 'playfulness' that this water feature provides communities despite the restrictive atmosphere hard edges produce. Considering the foot traffic of the central gathering space of this park and its historic significance, the utilization of a play-centric element along the San Antonio River enhances the likelihood of visitors engaging in the cities recreational and aesthetic ecosystem services. By extension, increasing the sense of place that the San Antonio River exudes – a space of soft, hard, and mixed edges for communities to experience. This approach distinguishes itself from entirely hard urban-edged river spaces like the downtown Riverwalk, providing visitors with an atypical interaction with the San Antonio River and potentially more desirable for the community.

Figure 21: Low Water Crossing Usage of Brackenridge Park

Elmendorf Lake Park, on the other hand, is situated on the Elmendorf Lake in the historic westside. Unlike the mixed edges of the Brackenridge Park's River, Elmendorf Lake Park utilizes softer edges across it's lake before flowing into a dam and channel system. Additionally, there is a greater presence of birds in this park that was not discernable in the other parks that were considered as part of this thesis research. In particular, the major island accessible through footbridges in the lake is home to a large number of egrets and other birds that visitors can observe. The resulting aesthetic difference exudes a conservationist atmosphere in the park – that this park serves as an environmental oasis in a sea of concrete.

Like the other parks, social interactions and fishing behaviors in proximity to the central water feature was also present at Elmendorf Lake Park. Unlike the other observed parks, however, there

were formalized spaces for fishing to occur throughout the park – piers, railings, and soft edges. Unsurprisingly, this may have influenced the consistent levels of fishing behaviors observed throughout the warmer and colder months. Despite the colder weather, individual or group visitors engaged in fishing and relaxing by the water's edge. Additionally, Elmendorf Lake Park was the only park that saw kayaking behaviors in limited amounts due to lack of launch points at the other parks. The softer edges throughout the lake provide multiple spaces for launching into the water, incentivizing human-environmental interactions with the lake. Of the observed kayaking behavior, the observed individual was also fishing whilst moving across the lake's scenery. However, as of observing this site, there are no public kayaks at the park for visitors to utilize in the short term – limiting the availability of this behavior on the average person. Of note, Elmendorf Lake Park saw notable human-environmental interactions past standard daylight hours. Congregating in seating areas in close proximity to the lake, there were visitors engaging in fishing, physical exercise, and socializing behaviors. The consistent human-environmental interactions across time and seasonal conditions can be potentially attributed to how community oriented Elmendorf Lake Park is and the active role neighboring residents take in park stewardship. This community orientation not only contributes to the overarching sense of place by the city's ecosystem services, but a sense of comfort that this public park provides its neighboring communities.

Figure 22: Person Fishing and Kayaking in Elmendorf Lake Park

Confluence Park serves a unique role in this thesis as it was designed to be an educational and exhibit space concerning the San Antonio River watershed. Overlooking the San Antonio River, confluence park is centered on its pavilion structure and educational center. Unlike the other two parks, Confluence Park has an atypical soft edge along the San Antonio River known as a riprap; Composed of loose rocks to prevent river erosion, this boundary complicates human-environmental interactions and limits the ways that visitors can interact with water features. However, these same rocks create a sense of informality and invite visitors to interact with the river in their own ways.

Figure 23: Rocky Edges in Confluence Park

There were multiple occasions where visitors were seen traversing the rock boundaries to reach a flat concrete-like slab that reached the river's surface. Notably, solitary individuals utilized the space as a meditative place to rest, read, and/or use their phone whilst being in direct proximity to the river. Additionally, a pair of individuals engaged in a private conversation using this space on a separate occasion – suggesting an intimate nature of the conversation that necessitated a more secluded space. While the usage of this space was not formalized, it is telling that park visitors utilized the water features riprap edges and its ability to hinder movement to carve out a space for themselves. Unlike other water features that incentivize recreational ecosystem services, visitors have informally received a cultural ecosystem service dedicated to improving social relationships. By contrast, those that are not aware of this space's existence or accessibility can only perceive the water feature through an aesthetic lens. In

particular, the plethora of individuals partaking in physical exercise along the river or those experiencing the auditory quality of the water feature from afar. This dichotomy of benefits underlines how cultural ecosystem services are difficult to locate and that the ways in which water features were designed heavily impacts what forms of ecosystem services most communities can access. Despite existing outside the park's municipal boundaries, the close connection Confluence Park has with the San Antonio River and San Pedro Creek reveal the strong sense of place that water features radiate across public spaces and communities.

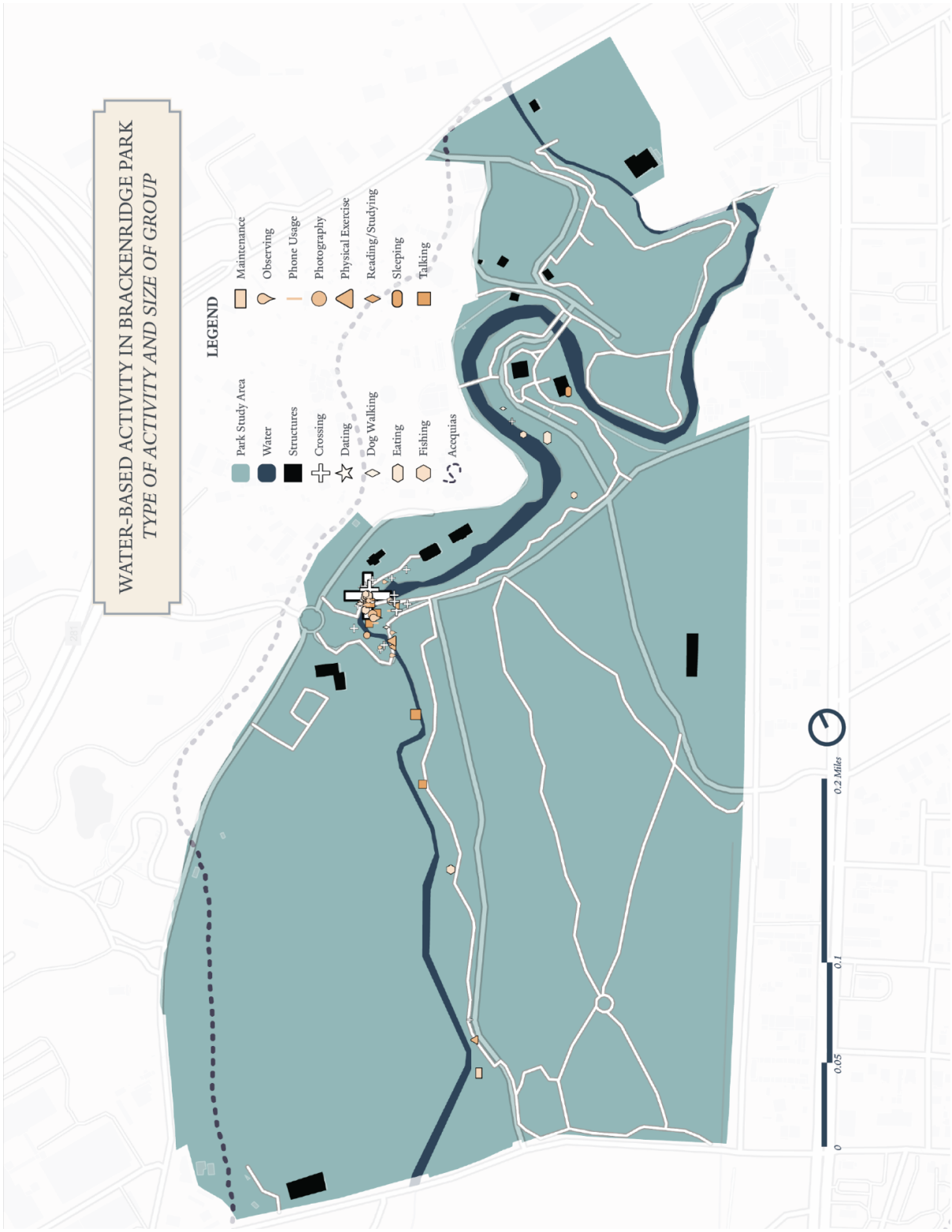

Figure 24: Water-Centric Behaviors in Brackenridge Park;

These maps reveal that most interactions with the river are along the low water crossing, one of the few spaces that allow for interaction with the water.

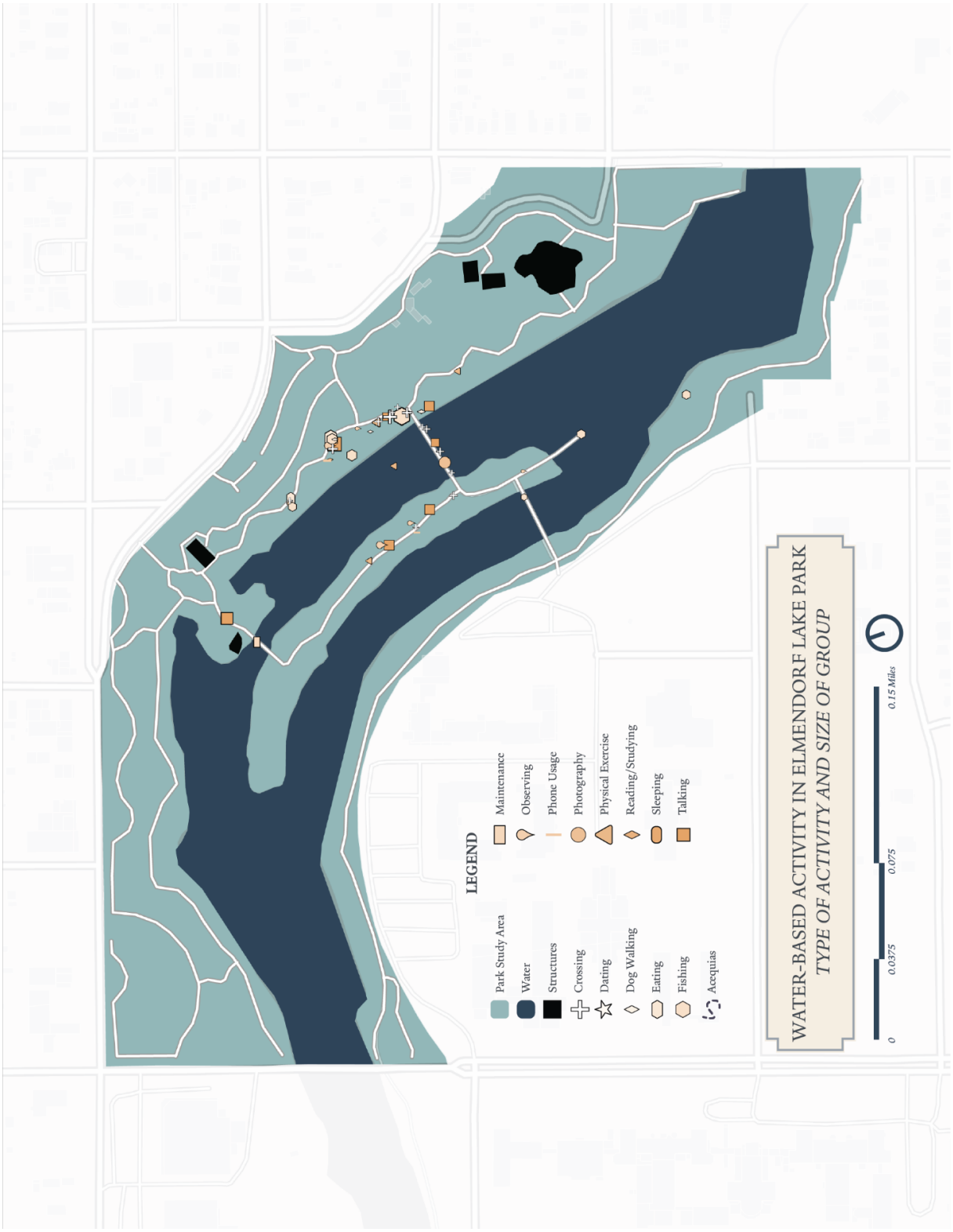

Figure 25: Water-Centric Behaviors in Elmendorf Lake Park;

Elmendorf Lake Park was one of the few spaces that allowed for direct interaction with the water that other parks along the San Antonio River are not allowed to do.

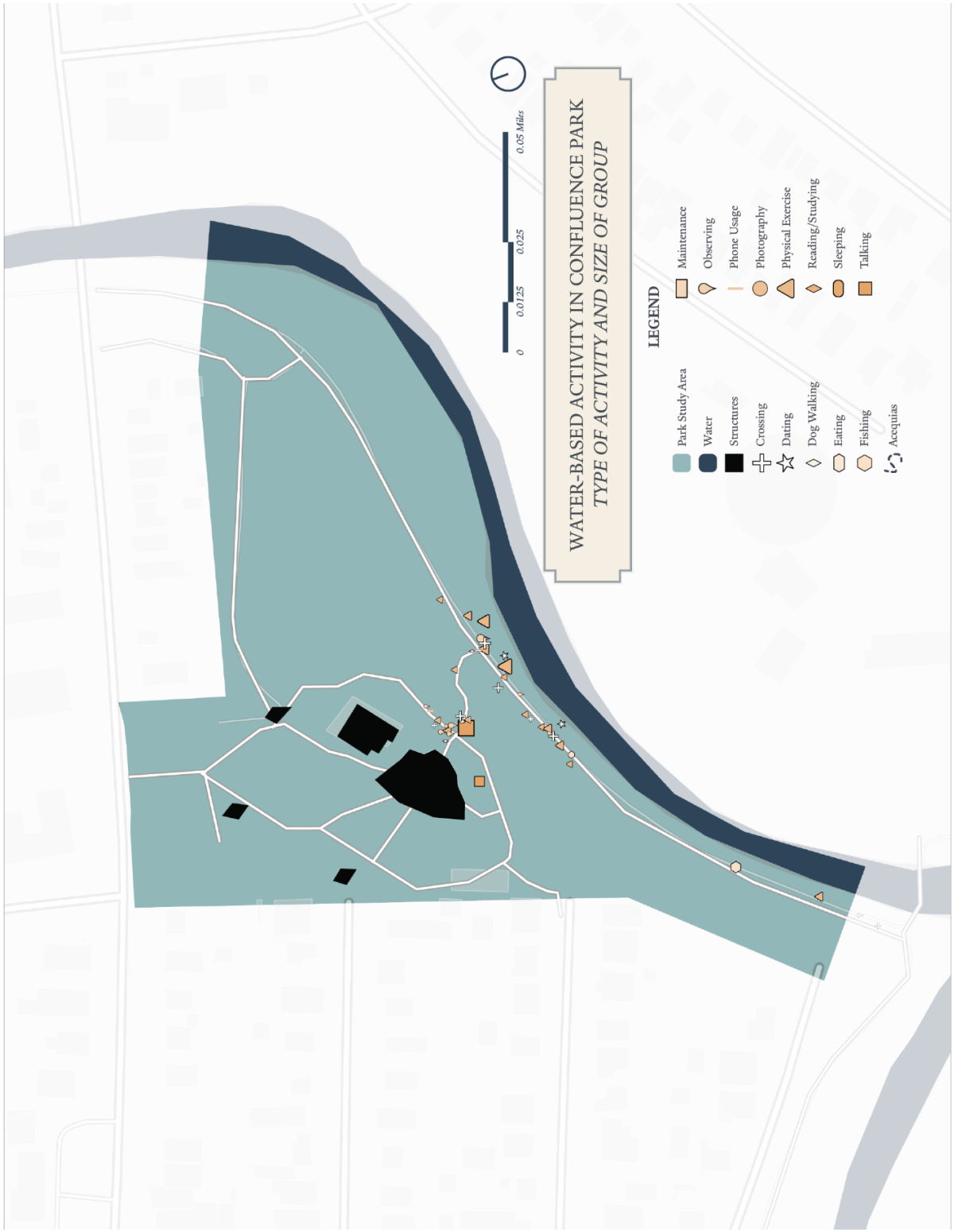

Figure 26: Water Centric Behaviors in Confluence Park;

While behaviors along the river were more prevalent, the number of behaviors observed closer to the pavilion and rely on auditory and visual engagement with the river rather than tactile.

All three parks saw a range of activities and waterscape designs that influenced the forms of human-environmental interactions displayed, however, they all contribute to a sense of place. This sense of place is an exemplar of the intangible benefits ecosystem can provide communities, a cultural ecosystem service. However, it is critical to note that the congregation of social interactions around water features could only be observed and not verified through community engagement. So, there is a potential for park visitors who engaged in engagement with the river from afar such as auditory engagement may not be considered while park visitors who walk alongside a river will always be considered. This discrepancy reinforces the idea that further research needs to be conducted on this topic to better understand the cultural ecosystem services water features provide.

With the considerations posed by the SOSIP approach, which posits a correlation between social interaction scores and social cohesion, it can be assumed that higher levels of social interaction and cohesion in a space is potentially attributed to greater cultural ecosystem service provisions in the selected public spaces. However, exploring human-environmental interactions within these parks reveals the nuanced reality of cultural ecosystem services. While Brackenridge Park may possess the highest social cohesion level and the cultural ecosystem services quality, the consistent visitor rates at Elmendorf Lake Park and the community-led placemaking efforts of Confluence Park challenge this interpretation. Behavioral mapping of these human-environmental interactions illuminates the limitations of assigning a numerical value to concepts like social cohesion and cultural ecosystem services, as it struggles to capture the breadth of diverse benefits derived from these spaces; It does provide planners, designers, and community members with valuable information about how nature-based solutions like public parks can improve social and environmental resilience through these benefits – information that could provide more meaningful support when paired with community interviews. While some of these benefits stem from intentional design choices to foster community recreation, others arose organically from the interactions between human agency and environmental

stewardship in areas that saw lower social cohesion levels – highlighting the incongruity of relying on quantification methods to ascribe value on nature.

Intergenerational bonds forged in nature and the sense of comfort experienced within those lower social cohesion parks underscore the reciprocal relationship between humans and the environment. Therefore, while the design of water features does define the forms of human-environmental interactions within these spaces, it is the acknowledgement of the profound connection between aquatic landscapes and communities that truly encapsulates the importance of these spaces. As this thesis continues to contemplate how cultural ecosystem services influences perspectives and practices of resilience, evaluating the role water features play in cultural values emphasize the importance of acknowledging the inherent value of human-environmental bonds to foster resiliency rather than simply relying on the quantification of these values.

Chapter 6: Historic Urban-Economic Development & Social Resilience

Like rivers, communities are not stationary; They flow in response to their surroundings, just as their environments are shaped by them. San Antonio is no different. Historical patterns of investment as well as contemporary economic development play an integral role in influencing human-environmental bonds. While some of these human-environmental bonds can be visually observed, there were a number of human-environmental bonds that were not immediately visible and required historical interpretation to be documented. By integrating these elements, future opportunities to enhance human-environmental relationships and to foster resilience can be illuminated and studied.

Section 6.1 Contested Spaces and Values

By contemplating on how human-environmental interactions reflect broader socio-political dynamics, the complexities of cultural values can be better understood. By centering indigenous and community knowledge and concerns into resilience planning, practitioners can redistribute the power of planning into community leaders that better understand local concerns and cultural values. Notably, the contestation of spaces in San Antonio has been a recurring trend in San Antonio's history– ranging from historic disinvestment, gentrification pressures, and political struggles between the city and state. To better understand human-environmental bonds and the cultural value of these spaces, it is critical to revisit historical and contemporary socio-political issues and their influence on the relationship between humans and their environments.

One of the most visible changes to occur in San Antonio's landscape and human-environmental relationship is the transition from a primarily agricultural community into a major metropolitan hub for South Texas. As people continued to settle into the region and the landscape began to reflect the growing population, the environmental landscape changed and so did the human-environmental relationships. This is evidenced by the formal restrictions on swimming due to historic drowning events and poor water quality caused by *E. Coli*, animal feces, and wastewater (Fanning,

2022). This comes in contrast to historic interactions between the river which allowed for residents to swim in the river, wash their clothes, and fish frequently (Chavana, 2023). Resulting from the expansive growth of the city and its population, traditional human-environmental bonds have endured immense strength. While it could be argued that this formal restriction to interacting with the water has severed the bond, the observed interactions between communities and the water point to the fact that the human-environmental bond has only changed to reflect changing circumstances. As explored in chapter 4, the number of observed individuals playing in the water, wading in the river, or relaxing by the river's rushing waters exemplify the community's continued dedication to aquatic recreation, aesthetic appreciation, and a sense of place. This is not to say that the pollution of the San Antonio River is not an environmental injustice that communities have accepted. There are concerted efforts to clean the river and communities across the region have made it their mission to restore the San Antonio River to be safely swimmable; In a region centered on cultural preservation, it is understandable to restore the aquatic landscapes cultural importance despite the changes in the broader urban landscape.

Despite the seemingly universal agreement about the need to restore the San Antonio River's water quality, public spaces across San Antonio are sites of immeasurable contested values. These contested values have roots in historical inequality that has prioritized investment in certain communities and left other communities omitted from San Antonio's financial growth. As the city grew and racial and ethnic communities moved around San Antonio, however, the legacies of these uneven geographies are made evidently clear. Public spaces across San Antonio act as reifications of the dispossession of ancestral and spiritual land from indigenous groups and their descendants. Many of these sites were created though the displacement of indigenous groups and perpetuate the marginalization of local communities that will further social decohesion if not addressed by planners. Brackenridge Park, for instance, was a park designed to be a tourist and recreational hub located in the

cities northern side; a collection of neighborhoods that are situated around the headwaters of the San Antonio River and the historical displacement of the Tejano populations by American colonists during the 19th century. With investment and civil services being prioritized in this region, this park saw the construction of a numerous attractions and large attendance from residents and tourists. Acting as San Antonio's premiere urban park, residents across the city of all communities were documented as attending the park regardless of ethnic background (Romo, 2022). However, as northern development continues to grow, communities in the surrounding neighborhoods of Brackenridge Park have shifted their use of green space into other areas while working class residents have been utilizing the park more frequently (Romo, 2022; Rivard, 2012). The large fluctuations of social interaction scores and human-environmental interactions could be a result from this change in dominant stakeholders of this park – wherein the communities geographically closer to the park are not using the space anymore, while communities further away from the park utilize the space to a greater extent at an infrequent rate. This fluctuation of social activity is compounded with historical and contemporary conflicts between municipal stewards of the park and indigenous communities that have religious and spiritual ties to the San Antonio River. As of writing this thesis, the legal case surrounding the *Lipan Apache Tribe and the City of San Antonio* has not come to a peaceful conclusion as municipal planners have planned for the removal of a spiritually significant trees in the northern Brackenridge Park region to preserve other historic structures and sites in the park (Harman, 2023). During site observations for this thesis as well as news reports, parts of the park were fenced off for preservation purposes whilst restricting access to indigenous religious sites. Effectively, this continuation of top-down planning perpetuates the dominant nature of resilience planning and green space management. If CES were honored and the values of local communities were centered in this planning approach, a peaceful conclusion could have been made that altered the system of conservation to meet the needs of all communities. This could have been done by establishing a community land trust for the river or using

a design charrette with the Lipan-Apache tribe to form a series of potential plans. There are several different methods city planners could have used to address the contestation of Brackenridge Park. While some may be slower than others, it highlights the importance of addressing these problems incrementally. While it may be a slower process, making use of smaller incremental changes in community engagement, design, or construction could have stronger benefits to address social decohesion than abruptly siding with one stakeholder over the other.

Despite the high social interaction score Brackenridge Park experiences and the level of social cohesion it implies, it is clear through historical and contemporary reports that the score doesn't account for the contestation of spaces and therefore values occurring in the region. Municipal planners, local neighborhoods, city residents, and indigenous groups all have different perspectives of what needs to occur at Brackenridge Park and what values they extract from the site. In particular, the spiritual and religious value of the park as well as the sense of place that some communities experience more than others are obscured. In a contested space like Brackenridge Park, municipal planners and park stewards are faced with the arduous choice of prioritizing the values of one group over others – complicating relationships between communities and their environment, subsequently shifting how human-environmental bonds manifest in the city.

Brackenridge Park is not the only space at the intersection between contested space and cultural values as historically disinvested neighborhoods, like the historic west and south sides, are experiencing gentrification pressures. Within the past decade, a mobile home community in proximate distance to the San Antonio Missions and Confluence Park was displaced in favor a luxury home development (Olivo, 2022). In the same vein, the historic west side has been experiencing immense gentrification pressures from the expansion of the University of Texas-San Antonio Downtown campus as well as predatory code enforcement/demolitions conducted by the city – a total of 626 orders to vacate and demolish were issued from 2015 to 2020 compared to the combined 16 orders in

Houston, Dallas, Austin, and Fort Worth (Bajaras, 2021). Gentrification and displacement are extremely evident in the region and, unsurprisingly, it places an immense toll on human-environmental relationships in their respective public spaces. This phenomenon serves as a reminder of the legacy of dispossession spurred by Spanish and American colonists in San Antonio that continues to displace historically marginalized communities. Notably, whilst observing social behaviors at Confluence Park, a group of local kids were crossing the park and entered a discussion with a municipal representative preparing for an event being held at the park. An event that required $80 to attend – the group of kids soon left the park. Without interviews, one cannot verify if the cost of accessing the public space at that time urged this group of kids to leave. However, one can only assume that in a predominately lower-income area experiencing gentrification, local communities have the potential of being priced out of experiencing their own public spaces. It's entirely possible that the lower social interaction score found at both parks could be a result of this contestation of space – wherein local residents no longer feel comfortable actively attending their public spaces because of the presence of gentrifying groups. In the same vein, it could be argued that the contestation of spaces in their local public spaces encourages these communities to engage with other public spaces that facilitate their sense of place – i.e. Brackenridge Park. As was observed during site visits, these concerns over displacement could encourage local residents to be protective of their spaces and their communities as seen by a resident inquiring about this thesis. Regardless of how it manifests, fears of displacement as well as the reality of gentrification necessitate for communities to adapt their perspectives, actions, and their relationship to their environments.

The concept of contested spaces does not just exist within public parks, but across the city of San Antonio. As the values of local residents collide with the US military-industrial complex and Texas state legislature, the human-environmental bonds of local communities are forced the change. The proximity and pressures from these larger agencies are tied to San Antonio's economic wellbeing and

shapes the priorities of the top down planning that the city employs. As a result, communities and public spaces are now framed in that dimension and any resistance to the city's top-down planning must contest with the larger structural forces like the US military that have greater systemic power. San Antonio's relationship to the military is not a contemporary development as the region's time as a Spanish settlement was centered on military generated revenue and the city's continued growth was attributed to the US military – as of writing this thesis, there are 4 military bases attributed to the Joint Base San Antonio. Due to the limited natural resources and economic industries of the region, from the perspective of local communities, the city has reportedly prioritized the interests of the military industry over the needs of city residents (Harman, 2019). Notably, demolition of a bird sanctuary on Elmendorf Lake Park was purportedly initiated by concerns from the nearby Air Force base despite community opposition (Harman, 2019). In a similar vein, a renovation of major transportation corridors that improved drainage, flood control, and ecological health was rejected due to disagreements with Texas Department of Transportation (Drusch, 2023). This need to appease federal and state agencies despite local concerns are echoed by historical events such as urban renewal, the seizure of the Yanaguana headwaters, and the colonization of Texas from Spain and the United States. These events were rooted in a form of top-down planning that designated the values and concerns from local groups as less important to the desires of groups with larger systemic power. It's evident that San Antonio's political and economic circumstances are influenced heavily by the larger stakeholders in the region, the US military and state agencies. As a result, both the goals of municipal planners, the cultural values of city residents, and the human-environmental bonds experienced by local communities are trumped by the sometimes conflicting values of bigger US stakeholders - values that prioritize economic growth and car-centric development in San Antonio over community empowerment and equitable development. These conflicting values that overpower community attitudes could also be the culprit for the resulting social interaction scores in the selected public spaces

or the protectiveness park visitors feel over their spaces like Elmendorf Lake Park, however, further academic research needs to be conducted to verify that claim. These pressures from political and economic pressures have always existed and have shaped the course over the cultural ecosystem services provided by these spaces as well as the expression of human-environmental bonds that shape San Antonio.

This analysis of human-environmental relationships in San Antonio illuminates the complexities between socio-political dynamics and the cultural values of environments. By considering historical and contemporary accounts of San Antonio's, it is evident that contested spaces and values play a critical role in understanding local communities' relationship with the environment and how they manifest in individual actions. As urban development and gentrification reshape communities across the city, fears of displacement and socio-economic tensions materialize in respective public spaces. These larger systemic forces disrupt historical human-environmental relationships and necessitate adaptations in social behaviors form local communities. Continued pressures to appease larger economic forces such as the US military and federal-state agencies also pressures changes in communal relationships with their environment. These complexities reveal the limitations of social interaction scores and other quantification methods and necessitate an acknowledgement of the inherent values of human-environmental relationships not immediately visible through site observations. The combined efforts of site observation and historical interpretation highlight the complex and often obscured value of the environment. These relationships are not stagnant, they are constantly adapting to larger systemic influences. There are spiritual, religious, and educational services made evident through this historical interpretation that, if omitted from resilience planning, would inadequately address the needs of local communities. With the fluid nature of these relationships, it is critical that resilience planning centers a humanistic and decolonial approach that recenters power to local and indigenous communities. If resilience practitioners want to create resilient spaces, it needs to

consider severe weather phenomena like flooding and structural inequalities like economic injustice and the contestation of spaces. This requires a transformation, whether incrementally or abruptly, in the values and methods resilience practitioners prioritize. A transformation that engages in a critical reflection of prior resilience strategies and cultural values, the inequities that these strategies contributed to by ignoring community concerns, and how resilience planning can redistribute power back to these communities and their values. Culture is tied to the human experience and, when looking at historical and contemporary cultural ecosystem services, resilience planning has the potential to meaningfully engage with communities and create resilient spaces despite socio-political complexities by incorporating cultural ecosystem services.

Chapter 7: Conclusion

Traditional urban planning and resilience practices is often concerned with a top-down understanding of people and place that reduces the sense of agency communities exhibit in response to larger systemic forces. In a similar vein, resilience is often conflated with the ability to withstand severe environmental events and, often, does not concern the larger socio-economic struggles that communities are faced with. As a result, traditional interventions in resilience are often only concerned with improving levels of environmental and financial sustainability that forgoes socio-economic equity, cultural sensitivity, and the informal placemaking efforts generated by local communities. This is not to say that scholars in resilience planning have not addressed these limitations, however, resilience practices in architecture and planning are still centered on the quantifiable benefits of environmental health and treat socio-economic problems as separate from the environment. However, it is evident that communities need to have an environmental connection and public spaces that foster social and environmental resilience to be truly resilient; While these spaces can be shared and co-opted, it does not intrinsically create circumstances for social cohesion or positive cultural ecosystem services.

To challenge these instrumentalist modes of resilience that aim to withstand environmental stressors without addressing structural inequalities, it is critical to examine sites of traditional resilience solutions and designs – public parks. By looking at the number of people engaging in these spaces as well as how they interact in the environment, researchers can extract ideas about human-environmental relationships and what these reciprocal bonds can tell us about resilience projects as a whole. San Antonio is a city with complex environmental and social systems that provided this thesis with complex insights on human-environmental relationships across time and space. By evaluating these spaces through geographical, environmental, and social perspectives detailed through historiographies and public articles, the intrinsic value of human-environmental bonds is made evident - Bonds that highlight individual agency and resilience to larger system forces. Through documenting and recording

these relationships, alternative and mixed methods to assess the human dimensions of resilience can be imagined by planners, designers, and community members.

Of the human-environmental relationships present in San Antonio's public spaces, these spaces provide recreational tourism, educational values, aesthetic appreciation, spiritual and religious bonds, and diverse cultural heritage to their communities. These all can contribute to a strong sense of place, belonging, and ownership. Notably, the sense of belonging and ownership by stakeholder communities is credited to their strong sense of place, informal placemaking, environmental and social stewardship, and guardianship of their communities' spaces. While the way these services and reciprocal actions manifest evolve over time, they are ever present as evidenced by the municipal restrictions and socio-economic pressures that have failed to curb social activities. For planners, it is critical to engage with residents in a long-term fashion to better understand these everchanging values and relationships. Whether it be through a communal land-trust or redistributing the powers of planning to local groups, planners can ensure that the cultural values of these communities are honored and not severed when implementing environmental resilience strategies.

Through this thesis, I aimed to understand how cultural ecosystem services can inform planners, designers, and communities about resilience projects and planning. At the conception of this thesis were four critical research questions:

1. *What are the levels and forms of social interactions observed in public urban green spaces in the city of San Antonio?*
2. *What cultural ecosystem services can be inferred from observed behaviors in San Antonio's cultural heritage sites, within the context of San Antonio's public spaces?*
3. *What cultural ecosystem services can be inferred from observed behaviors along San Antonio's River system, within the context of San Antonio's public spaces?*

4. *How does historical and socio-economic context influence the interpretation of observed behaviors in San Antonio?*

Through observing three public parks in San Antonio and completing archival research on relevant topics, this thesis was able to accomplish answering these questions. Firstly, by utilizing the SOSIP approach, this thesis was able to determine that Brackenridge Park had the highest level of social interactions observed in public urban green spaces. This was followed by Confluence Park and then Elmendorf Lake Park. Across all parks, the most common form of social interactions observed in these parks were crossing, talking, dog walking, physical exercise, fishing, phone usage, and observing. Secondly, the cultural ecosystem services that could be inferred from observing cultural heritage sites were aesthetic appreciation, educational fulfillment, cultural heritage, a sense of ownership, and a sense of belonging. Thirdly, the cultural ecosystem services that could be inferred from observing interactions with the San Antonio River system were recreational tourism, social relations, aesthetic appreciation, and a sense of place. Finally, historical and socio-economic contexts reveal cultural ecosystem services that were not immediately visible through observation and could not be viewed due to system limitations like spiritual and religious values, knowledge systems, and cultural diversity. By exploring these questions, it was evident that while there are a plethora of cultural ecosystem services that public parks in San Antonio can engage in. It points to how cultural wisdom and values are tied to resilience planning. Culture is tied to resilience as human and social connections to the environment are defined by the human propensity to adapt, change, influence the environment, and be influenced by the environment. So, observing what behaviors were present despite physical design and planning limitations as well as behaviors that were not observed due to systemic barriers in public urban green spaces reveals the current limitations of resilience planning. These questions reveals how cultural wisdom is not often incorporated into resilience planning and, if it is, planning practitioners can move toward a more human urbanism.

As a result, more questions emerged as to what ways planning practitioners can meaningfully make change in the field of resilience. Community engaged planning and design are effective tools, but how well can they incorporate cultural wisdom into their practice? More so, how can a renewed focus on culturally sensitive resilience strategies shape instrumentalist planning modes that prioritize economic concerns? If planners that are willing to meaningfully engage in these strategies want to do so, they need to incrementally push for community engaged planning that centers local wisdom and cultural values. Resilience planning practitioners working in private practice have the option to engage in radical shifts by implementing community engaged planning strategies such as community land trusts or counter mapping. Ultimately, this work is dependent on the potential altruism of planning practitioners. However, this thesis and its findings serve to aid in countermapping the dominant narratives of San Antonio's public parks and resilience strategies by highlighting the socio-cultural connection to resilient urbanism.

It is critical for this thesis to acknowledge that it could not interview community members or utilize other forms of community engagement. As a result, the full breadth of these human-environmental relationships could not be verified and only inferred. This reliance on documentation of these behaviors, then, relies on historical and written records found through public media. Consequently, this thesis is by no means comprehensive to the forms of cultural values and cultural ecosystem services present in San Antonio or other cities. However, it has the potential to be indicative of larger human-environmental relationships and their connections to resilience planning. Regrettably, the historically Black American east side that also has a unique history like the historic west side could not be researched in this thesis due to time constraints. Due to the time restraints and financial limitations, the number of sites observed, and the amount of time spent on the sites had to be simplified into a few parks. Future research needs to be conducted to document and engage with those

communities to obtain a comprehensive view of cultural ecosystem services and resilience – providing both researchers and local communities with discretionary information on their communal needs.

In terms of methodology, limitations of the SOSIP approach have been detailed throughout the thesis. While it can provide an adequate indicator for social levels, it struggles when applied through a comparative lens as it does not address how some social and cultural activities compare to others – does one behavior count more than others? Additionally, the usage of Survey123 to document these behaviors, while helpful, did prove cumbersome at certain points because of the lag in time needed to fill out information and the number of passing individuals at each park. Future research should consider making a streamlined system to record data and potentially incorporate citizen science. Documenting human-environmental interactions is an iterative process and should be repeated over time as these bonds and relationships change alongside larger system shifts. By doing so, a comprehensive understanding of resilience and cultural values can be understood.

Regardless, the research accomplished through this thesis' research process has provided a foundation for future researchers to delve into the complexities of human-environmental relationships as it relates to resilience planning practices. More so, it provides the planning and design fields and local communities with discretionary information and knowledge of how to not only improve climate resilience projects, but to meaningfully empower local communities. This thesis argues that that normative resilience practices in the design fields needs to consider and acknowledge the inherent value of human-environmental bonds outside of a utilitarian perspective as quantifiable measures for climate resilience projects are not accurate measures of environmental quality. It is critical to center local wisdom and cultural values to make meaningful change in their practices. If they do not, resilience strategies may perpetuate social decohesion and social inequities in resilience. By designing diverse public spaces and acknowledging the human-environmental bonds ingrained into the urban landscape, planners and designers can create resilient spaces that tackle both environmental and socio-economic

considerations. Behavioral mapping and observations offer valuable opportunities for designers to incorporate community perspectives and think outside traditional environmental measures. By locating and highlighting cultural resources in the public realm, resilience projects can incorporate holistic perspectives. Evidenced by the observed interactions throughout this thesis regarding various cultural heritage sites, if planners and designers were to incorporate these facets in resilience design, community resilience and well-being can be enhanced. Acknowledging these human-environmental relationships can reveal new possibilities about what resilience practices has accomplished in the past and what needs to change for the future – how some public spaces see greater cultural and social cohesion and others are facing contestation of values and stakeholders. In the same way humans are influenced by the larger environmental around them, so too is the environment. The value of this reciprocal relationship is extremely powerful and can lead to the creation of complex urban and natural landscapes.

Bibliography

Alejandra Martinez. (2023, November 13). Bison return to Texas Indigenous lands, reconnecting tribes to their roots. *Texas Tribune*. https://www.texastribune.org/2023/11/13/texas-native-american-tribes-bison-return/#:~:text=Bison%20return%20to%20Texas%20Indigenous%20lands%2C%20reconnecting%20tribes%20to%20their,see%20the%20herd%20in%20person.

Alexa Ura. (2022, December 8). On the margins of downtown San Antonio, a maligned neighborhood mobilizes to save itself. *Texas Tribune*. https://www.texastribune.org/2022/12/08/san-antonio-redevelopment-neighborhoods/

Amorim Maia, A. T., Calcagni, F., Connolly, J. J. T., Anguelovski, I., & Langemeyer, J. (2020). Hidden drivers of social injustice: Uncovering unequal cultural ecosystem services behind green gentrification. *Environmental Science & Policy*, *112*, 254–263. https://doi.org/10.1016/j.envsci.2020.05.021

Atlas of Texas. (1976). Ethnolinguistic Distribution of Native Texas Indians [Photo]. Published by The University of Texas at Austin, Bureau of Business Research. https://maps.lib.utexas.edu/maps/atlas_texas/ethnolinguistic_natives.jpg

Baddour, D. (2022, July 6). *Labeled "Hispanic."* https://www.texasobserver.org/labeled-hispanic/

Bajaras, M. (2021, December 20). How Code Enforcement Fuels Displacement in San Antonio. *Texas Observer*. https://www.texasobserver.org/san-antonio-housing/

Brackenridge Park Conservancy, San Antonio Parks & Recreation, & San Antonio River Authority. (2020). *Brackenridge Park Cultural Landscape Report*. https://www.brackenridgepark.org/conservancy-projects/cultural-landscape-report

Brunn, S. D., Zeigler, D. J., Hays-Mitchell, M., & Graybill, J. K. (Eds.). (2020). *Cities of the World: Regional Patterns and Urban Environments* (7th ed.). Rowman & Littlefield Publishers;

https://www.amazon.com/Cities-World-Regional-Patterns-Environments-ebook/dp/B0844VGZMW/ref=sr_1_1?crid=1EWBKA9L2GOTE&keywords=Cities+of+the+World%3A&qid=1692757999&s=digital-text&sprefix=cities+of+the+world+%2Cdigital-text%2C145&sr=1-1

Calderón-Argelich, A., Benetti, S., Anguelovski, I., Connolly, J. J. T., Langemeyer, J., & Baró, F. (2021). Tracing and building up environmental justice considerations in the urban ecosystem service literature: A systematic review. *Landscape and Urban Planning*, *214*, 104130. https://doi.org/10.1016/j.landurbplan.2021.104130

Campbell, L. K., Svendsen, E. S., Sonti, N. F., & Johnson, M. L. (2016). A social assessment of urban parkland: Analyzing park use and meaning to inform management and resilience planning. *Environmental Science & Policy*, *62*, 34–44. https://doi.org/10.1016/j.envsci.2016.01.014

Chavana, A. V. (2023). *Reclaiming Tribal Identity in the Land of the Spirit Waters: The Tāp Pīlam Coahuiltecan Nation* [Thesis]. University of Minnesota.

Chen, S., Sleipness, O., Christensen, K., Yang, B., & Wang, H. (2023). Developing and testing a protocol to systematically assess social interaction with urban outdoor environment. *Journal of Environmental Psychology*, *88*, 102008. https://doi.org/10.1016/j.jenvp.2023.102008

Cheng, X., Van Damme, S., Li, L., & Uyttenhove, P. (2019). Evaluation of cultural ecosystem services: A review of methods. *Ecosystem Services*, *37*, 100925. https://doi.org/10.1016/j.ecoser.2019.100925

Chéry, D.-N., & Morales, C. (2023, June 12). Little Haiti Residents Fear Losing Their 'Home Away from Home.' *The New York Times*. https://www.nytimes.com/2023/06/12/realestate/little-haiti-miami.html

City of San Antonio. (2017). *Brackenridge Park Master Plan*. https://www.brackenridgepark.org/files/documents/2017-COSA-park-master-plan.pdf

City of San Antonio. (2024, May). *Migrant Dashboard*. Migrant Dashboard. https://stories.opengov.com/sanantoniotx/published/fiHSF0BLe

Clarke, M., Cadaval, S., Wallace, C., Anderson, E., Egerer, M., Dinkins, L., & Platero, R. (2023). Factors that enhance or hinder social cohesion in urban greenspaces: A literature review. *Urban Forestry & Urban Greening*, *84*, 127936. https://doi.org/10.1016/j.ufug.2023.127936

Cortez, M. (2019, June 7). In Praise of Nuisance Heronries. *Deceleration News*. https://deceleration.news/2019/06/07/birding-san-antonio-herons/

Dickinson, D. C., & Hobbs, R. J. (2017). Cultural ecosystem services: Characteristics, challenges and lessons for urban green space research. *Ecosystem Services*, *25*, 179–194. https://doi.org/10.1016/j.ecoser.2017.04.014

Drusch, A. (2023, July 24). 'No longer our project': San Antonio officials move on from plans for Broadway corridor. *San Antonio Report*. https://sanantonioreport.org/san-antonio-txdot-broadway-corridor-funding/

Enlow, C. (2023, July 31). Three Epic Park Projects That Could Transform SA. *San Antonio Current*. https://infoweb-newsbank-com.proxy1.library.virginia.edu/apps/ne...rk%22%20AND%20History&pedirect=true&docref=news/14C0D535A5271BC0

Fanning, T. (2022, September 16). Feces levels in the San Antonio River not safe for swimming. *San Antonio Express-News*. https://www.expressnews.com/news/local/article/Feces-levels-San-Antonio-River-tiktok-17446839.php#:~:text=Not%20only%20is%20it%20illegal,to%20human%20health%20when%20swallowed.

Fish, R., Church, A., & Winter, M. (2016). Conceptualising cultural ecosystem services: A novel framework for research and critical engagement. *Ecosystem Services*, *21*, 208–217. https://doi.org/10.1016/j.ecoser.2016.09.002

Gonzalez, J. (2024, January 6). San Antonio Citizens Invited To Shape Brackenridge Park's Future At Advisory Committee Meeting. *Hoodline*. https://hoodline.com/2024/01/san-antonio-citizens-invited-to-shape-brackenridge-park-s-future-at-advisory-committee-meeting/

Gonzalez, J. W. (2012, July 6). WEST SIDE ; Restoration of creeks in Corps of Engineers' plans. *San Antonio Express-News*. https://infoweb-newsbank-com.proxy1.library.virginia.edu/apps/new…dorf%20Lake%20Park%22&pedirect=true&docref=news/13FDC749FB7465E0

Guerra, C. R. (Ed.). (2019). *300 years of San Antonio and Bexar County*. Maverick Books, Trinity University Press.

Harman, G. (2019, December 11). *Destruction of San Antonio's Bird Island.* https://deceleration.news/2019/12/11/elmendorf-bird-island-san-antonio-destruction/#:~:text=The%20once%2Dthriving%2C%20raucous%20rookery,but%20wild%20nature%20under%20assault.

Harman, G. (2023, October 26). The Sacred & The Law in San Antonio, Texas. *Esperanza Project*. https://esperanzaproject.com/2023/activism/the-sacred-the-law-in-san-antonio-texas/

Hølleland, H., Skrede, J., & Holmgaard, S. B. (2017). Cultural Heritage and Ecosystem Services: A Literature Review. *Conservation and Management of Archaeological Sites*, *19*(3), 210–237. https://doi.org/10.1080/13505033.2017.1342069

Jasmindra Jawanda. (n.d.). *Decolonizing and Reimagining Urban Public Spaces*. Primary Colours. https://www.primary-colours.ca/projects/154-decolonizing-and-reimagining-urban-public-spaces-with-art-from-indigenous-black-people-of-colour-

communities#:~:text=By%20embracing%20Creative%20Placemaking%20in,imaginations%20to%20breathe%20new%20life

Johnson, D. R. (2020). *In the Loop: A Political and Economic History of San Antonio*. Trinity University Press.

Jonathon Burnett. (2008). *Flash Floods in Texas*. Texas A&M University Press. https://muse.jhu.edu/pub/174/monograph/book/2733

Jum Bohland, Simin Davoudi, & Jennifer Lawrence. (2018). *The Resilience Machine*. https://www.routledge.com/The-Resilience-Machine/Bohland-Davoudi-Lawrence/p/book/9780815381136

Klein, C. A., & Zellmer, S. B. (2014). *Mississippi River Tragedies: A Century of Unnatural Disaster*. https://www.amazon.com/Mississippi-River-Tragedies-Unnatural-Disaster-ebook/dp/B00IJ440U0/ref=sr_1_1?crid=1S10ONRZ7G5Q3&keywords=mississippi+river+tragedy&qid=1692758225&s=digital-text&sprefix=missisippi+river+tragedy%2Cdigital-text%2C388&sr=1-1

Lefebvre, H. (1968). *The Right to the City*. https://theanarchistlibrary.org/library/henri-lefebvre-right-to-the-city

Lombardi, A. (2014). Ecosystem Under Restoration: A Sustainable Future For The Cultural Landscape Of San Antonio River, Texas. *WIT Transactions on Ecology and the Environment*, *191*, 1139–1151. https://doi.org/10.2495/SC140962

Longato, D., Cortinovis, C., Albert, C., & Geneletti, D. (2021). Practical applications of ecosystem services in spatial planning: Lessons learned from a systematic literature review. *Environmental Science & Policy*, *119*, 72–84. https://doi.org/10.1016/j.envsci.2021.02.001

Mahmoudi, B., Sorouri, Z., Zenner, E. K., & Mafi-Gholami, D. (2022). Development of a new social resilience assessment model for urban forest parks. *Environmental Development*, *43*, 100724. https://doi.org/10.1016/j.envdev.2022.100724

Marini, R. (2024, March 11). *Broadway Construction*. https://www.sanantoniomag.com/broadway-construction/

Mathis, D. (2017, January 20). Park at Elmendorf Lake reopens to public. *NOWCastSA*.

McCarthy, M. (n.d.). *A History of Urban Renewal in San Antonio*. Planning Forum UT. https://sites.utexas.edu/planningforum/article-2-a-history-of-urban-renewal-in-san-antonio/#:~:text=The%20Federal%20Urban%20Renewal%20program,and%20failed%20to%20rehouse%20them.

McElwee, P., Vũ, H., Võ, G., & Lê, D. (2022). Patriotism, place, and provisioning: Assessing cultural ecosystem services through longitudinal and historical studies in Vietnam. *Ecology and Society*, *27*(1), art3. https://doi.org/10.5751/ES-12615-270103

Michelle Daigle & Margaret Marietta Ramirez. (n.d.). *Decolonial Geographies*. https://depts.washington.edu/relpov/wordpress/wp-content/uploads/2019/01/DaigleRamirez2019.pdf

Milcu, A. I., Hanspach, J., Abson, D., & Fischer, J. (2013). Cultural Ecosystem Services: A Literature Review and Prospects for Future Research. *Ecology and Society*, *18*(3), art44. https://doi.org/10.5751/ES-05790-180344

Miller, C. (n.d.). Streetscape Environmentalism: Floods, Social Justice, and Political Power in San Antonio, 1921–1974. *Southwestern Historical Quarterly*. https://doi.org/doi.org/10.1353/swh.2014.0097.

Miller, C. (2001). *On The Border: An Environmental History Of San Antonio*. University of Pittsburgh Press. https://doi.org/10.2307/j.ctv14z1b83

Miller, C. (2018). *San Antonio: A tricentennial history*. Texas State Historical Association.

Miller, C., & Castro, J. (2021). *West Side rising: How San Antonio's 1921 flood devastated a city and sparked a Latino environmental justice movement*. Maverick Books / Trinity University Press.

Modern in San Antonio. (2019, March 11). *Confluence Park: A Confluence of Watershed and Conservation*. MISA Modern in San Antonio. https://moderninsanantonio.com/confluence-park-confluence-watershed-and-conservation#:~:text=One%20of%20San%20Antonio's%20newest,Confluence%20Park%20won%20an%20A.I.A.

Morales-Zamarripa, L. (1997, August 27). Residents list safety as top worry at park. *Westside Sun*. https://infoweb.newsbank.com/apps/news/document-view?p=WORLDNEWS&docref=news/0EAFE7EF1AE7071C.

Natasha Vall. (2017). A view from the wharf: Historical perspectives on the transformation of urban waterfront space in Stockholm during the twentieth century. *Urban History*, *45*(3), 524–548. https://doi.org/10.1017/S0963926817000608

Nowak-Olejnik, A., Schirpke, U., & Tappeiner, U. (2022). A systematic review on subjective well-being benefits associated with cultural ecosystem services. *Ecosystem Services*, *57*, 101467. https://doi.org/10.1016/j.ecoser.2022.101467

Olivo, B. (2022, June 11). 'We've been gentrified.' McKee-Rodriguez spurring new conversation about gentrification in San Antonio. *San Antonio Heron*. https://saheron.com/mckee-rodriguez-displacement-gentrification-san-antonio/

Plieninger, T., Dijks, S., Oteros-Rozas, E., & Bieling, C. (2013). Assessing, mapping, and quantifying cultural ecosystem services at community level. *Land Use Policy*, *33*, 118–129. https://doi.org/10.1016/j.landusepol.2012.12.013

Pratt, B. (2023a). Equitable Urban Planning for Climate Change. *Journal of Planning Literature*, *38*(1), 59–69. https://doi.org/10.1177/08854122221138125

Pratt, B. (2023b). How Should Urban Climate Change Planning Advance Social Justice? *Kennedy Institute of Ethics Journal*, *33*(1), 55–89. https://doi.org/10.1353/ken.2023.a899459

Racquel R Marquez, Louis Mendoza, & Steve Blanchard. (2007). Neighborhood Formation on the West Side of San Antonio, Texas. *Latino Studies*, *5*. https://doi.org/10.1057/palgrave.lst.8600265

Ramirez, D. (n.d.). At the crossroads of debate, historic structures in Brackenridge Park brim with tales of San Antonio's layered past. *Texas Public Radio*. https://www.tpr.org/history/2022-03-14/at-the-crossroads-of-debate-historic-structures-in-brackenridge-park-brim-with-tales-of-san-antonios-layered-past

Rigolon, A., & Németh, J. (2021). What Shapes Uneven Access to Urban Amenities? Thick Injustice and the Legacy of Racial Discrimination in Denver's Parks. *Journal of Planning Education and Research*, *41*(3), 312–325. https://doi.org/10.1177/0739456X18789251

Rivard, R. (2012, May 23). Brackenridge Park: San Antonio's Neglected Crown Jewel. *San Antonio Report*. https://sanantonioreport.org/brackenridge-park-san-antonios-neglected-crown-jewel/

Romo, R. (2022a, January 25). Parks Are Good For Latinos. *Latinos in America*. https://latinosinamerica.substack.com/p/parks-are-good-for-latinos

Romo, R. (2022b, January 28). Saving Our Parks: The Case For Brackenridge Park. *La Prensa Texas*. https://laprensatexas.com/saving-our-parks-the-case-for-brackenridge-park/

SA Office of Sustainability. (n.d.). *SA Climate Ready Action Plan*. SA Climate Ready. Retrieved August 21, 2023, from https://www.sasustainability.com/action-plan

San Antonio City Council. (2019). *SA Climate Ready: A Pathway For Climate Action & Adaptation*.

San Antonio River Authority. (2015). *Westside Creeks: Elmendorf Lake Park and Linear Creekway Trails Project*. http://www.westsidecreeks.com/wp-content/uploads/2015/10/20150811-Presentation.pdf

Se Haran Mejoras En Dos Parques De Esta Ciudad Se construiran albercas, y lugares adecuados. (1926, July 9). Prensa, p. 7. Available from NewsBank: Access World News – Historical and Current: https://infoweb.newsbank.com/apps/news/document-view?p=WORLDNEWS&docref=image/v2%3A11F30FF2F63C9976%40WHNPX-1210015D55502188%402424706-120B1F9EAE0B3370%406-124685386C37BA12%40Se%2BHaran%2BMejoras%2BEn%2BDos%2BParques%2BDe%2BEsta%2BCiudad%2BSe%2Bconstruiran%2Balbercas%252C%2By%2Blugares%2Badecuados.

Small, N., Munday, M., & Durance, I. (2017). The challenge of valuing ecosystem services that have no material benefits. *Global Environmental Change*, *44*, 57–67. https://doi.org/10.1016/j.gloenvcha.2017.03.005

Spectrum News Staff. (2018, June 28). Elmendorf Lake Park home to new "Aguas Onduladas." *Spectrum Local News*. https://spectrumlocalnews.com/tx/san-antonio/news/2018/06/28/elmendorf-lake-park-home-to-new--aguas-onduladas-#:~:text="Aguas%20Onduladas"%20(Rippling%20Waters,metal%20that%20resembles%20rippling%20water.

Texas Almanac. (n.d.). *The Spanish Missions in Texas* [Map]. https://www.texasalmanac.com/articles/the-spanish-missions-in-texas

Texas Water Newsroom. (n.d.). Texas Approves First-Ever Regional Flood Plans. *Texas Water Newsroom*. Retrieved August 21, 2023, from

https://texaswaternewsroom.org/articles/texas_approves_first-ever_regional_flood_plans.html

Van Well, L., Isayeva, A., Axel Olsson, P., & Hollander, J. (2023). Public perceptions of cultural ecosystem services provided by beach nourishment and eelgrass restoration in southern Sweden. *Nordic Journal of Botany*, *2023*(1), e03654. https://doi.org/10.1111/njb.03654

Vidal, D. G., Teixeira, C. P., Fernandes, C. O., Olszewska-guizzo, A., Dias, R. C., Vilaça, H., Barros, N., & Maia, R. L. (2022). Patterns of human behaviour in public urban green spaces: On the influence of users' profiles, surrounding environment, and space design. *Urban Forestry & Urban Greening*, *74*, 127668. https://doi.org/10.1016/j.ufug.2022.127668

Walker, R. (2023, July 6). *Fight continues over Yanaguana site in San Antonio.* https://ictnews.org/news/fight-continues-over-yanaguana-site-in-san-antonio

William H. Whyte. (1980). *The Social Life of Small Urban Spaces.*

Zintgraff Studio. (1968). Lady Bird Johnson speaks at HemisFair'68 inaugural ceremony in HemisFair Arena [Photo]. University of Texas at San Antonio. https://digital.utsa.edu/digital/collection/p9020coll7/id/2558/rec/36