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# MILAN CREEK RESTORATION AND RECREATIONAL TRAIL PROPOSAL



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**PREPARED AND PRESENTED BY  
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# ABSTRACT

Part of addressing the climate crisis means creating healthy resilient cities. That framework includes increasing locality, creating green recreational spaces, and decreasing pollution while restoring/revitalizing natural urban waterways to their natural habitat. Transforming our neighborhood spaces allows cities to function in a healthier way which increases the overall quality of life in those communities. In the City of La Mirada, California, there is a waterway called Milan Creek that flows through the city. This creek, now channelized into a hard bottom flood control channel and gated, has served as a dumping ground for trash, is consistently broken into, vandalized, and ultimately has served as an eyesore to the community. My proposal is to turn this creek into a recreational trail while revitalizing the creek as close to its natural habitat as possible. After conducting a qualitative survey of the 221 houses that have the creek to their backyards, results show residents overwhelmingly support the creation of the recreational trail and revitalization of the creek. With these results, I am proposing to repurpose the riverbed into a walking trail while putting forth three different concepts for the revitalization: 1) a full revitalization, 2) a partial revitalization, and 3) leaving as a concrete flood control channel. This proposal prioritizes green space equity, heals the land, and promotes the exploration of how urban waterways have been socially constructed through colonization to serve as borders while illuminating how a Green New Deal framework can help transform our cities to meet the demands of the climate crisis.

# INTRODUCTION

The stability of our planet's atmosphere and ecosystems is in a fragile state. Since the industrial revolution, the planet has warmed approximately 1.1 C° due to anthropogenic emissions. Specifically, as a global community, we have until about 2030 to halt emissions no more than 1.5°C or catastrophic damage is imminent (Global Warming of 1.5° C —, 2021). Breaking this threshold would mean physical feedback systems perpetuating climate change would occur on its own (NASA - Water Vapor Confirmed as Major Player in Climate Change, 2021). This reality would likely entail reaching 2°C increase between 2040 and 2050 - resulting in catastrophic impacts to the planet. At 2° C warming there are expected to be 200 million climate refugees along with wildfires in the American west potentially being four times worse than today (Prakash and Girgenti, 2020). This continued anthropogenic warming is due to the capitalistic paradigm of continued extraction of natural resources coupled with an unregulated free-market (Gould, Kenneth et. al, 2020). As populations continue to increase and urban development steams forward, more of our wild spaces are disappearing along with their associated biodiversity. In Southern California, there was once a vast river network system that supported the Tongva tribe for tens of thousands of years. Today, it is estimated up to 90% of California natural wetlands have disappeared due to drainage, being filled, or altered (Allen et. al 1996). In addition, it is estimated as of 1989, up to 90%-95% of Southern California's riparian ecosystem have been destroyed (Stein et. al).



Figure 1: “Wiyot’s Children” by Mary Leighton Thomson, portraying the Tongva village of Sa-angna

The Tongva people were able to live in a sustainable relation with nature by only using what they needed. If they took from any flora, they would give an offering (Native Narratives: Tongva Traditions. 2020.) There was a common belief that in respecting the flora, fauna, water and land would result in the respect being returned. The rivers they settled among were healthy and are known today as the San Gabriel River and the Los Angeles River. Today, both have been systematically altered to control colossal floods that have wreaked havoc on the urbanized Los Angeles Basin. However, this anthropogenic engineering feat has led to severely compromised ecosystems. Through a settler colonialism development praxis of exploiting and controlling, rather than living in balance with the natural environment, the rivers now face alarming threats of pollution, native species decline, water toxicity, and groundwater poisoning. These threats are compounded by the climate crises which will exacerbate the current issues and conditions the rivers face. In addition to the two major rivers throughout Los Angeles County, there are much smaller tributaries and storm drain channels that contribute to the San Gabriel River network. Milan Creek, formally a small natural waterway, is now a storm drain channel in La Mirada and unincorporated Whittier stretching 2.7 miles and feeding into the San Gabriel River watershed system.

Figure 2: the red dot represents Milan Creek within the San Gabriel watershed system



In line with adapting to the climate crisis is the necessity to create healthier resilient cities that are able to implement adaptation and mitigation strategies to offset the impacts from global warming. I am proposing to transform Milan Creek into a recreational walking trail while rehabilitating the creek to a natural habitat. Repurposing land to benefit the community and environment can improve the overall quality of life while adapting to the climate crisis. I aim to demonstrate how transforming Milan Creek into a recreational green space can reduce greenhouse gas emissions through less vehicle miles traveled, increase locality, and reduce urban runoff into our oceans while creating more recreational green spaces for the community. As I discuss below, this work builds on the vast network of like minded projects spearheaded by organizations such as Amigos De Los Rios and others. Moreover, ideally, this project fits into the larger movement of land management, land reparations and land stewardship for Native Americans as there has been a growing movement to incorporate traditional knowledge into land management. These movements are being led by frontline organizations such as the NDN Collective and the Native American Land Conservancy.

## HISTORICAL ANALYSIS

Milan Creek currently sits on Tongva land. This land was stolen by Spanish colonizers as they aimed to destroy the indigenous population and convert them into White society as Hispanized Christians through missionization in the mid 18th century (Wolfe, 2006). Before the Spanish occupied indigenous lands, spread diseases and built their missions, the Tongva people were the predominant Native American tribe that inhabited the region and settled along the Los Angeles and San Gabriel Rivers (LA Tongva descendants). They were able to live in harmony with the environment for thousands of years because of their admiration and respect for the natural environment. So much so, when settlers first came upon the land, they noted it was like ‘paradise’ in their diaries (California Indians California Missions Foundation, n.d). This symbiotic relationship between the natural world and the Tongva people allowed the ecosystem to thrive with myriad ponds, wetlands, lakes, and streams which meandered through salt marshes, mudflats and river banks. Biodiversity was rich and plentiful with steelhead trout and arroyo chub along with copious other species. This type of ancestral wisdom, of how to respect the land, is



critical in confronting the climate crisis and has been inspirational to my proposal. It is imperative to adopt indigenous land stewardship practices to manage what is left of our natural environments. Within the academic realm, this is known as Traditional Ecological Knowledge, “the experience acquired over thousands of years of direct human contact with the environment” (Inglis, 1993).

Pushing into the 18th century, the Spanish Crown continued to eradicate native populations in Southern California. Scholar Roxanne Dunbar-Ortiz writes, “The history of the United States is a history of settler colonialism—the founding of a state based on the ideology of white supremacy, the widespread practice of African slavery, and a policy of genocide and land theft” (Ortiz, pg. 2, 2014). Many scholars and thinkers argue the collective genocide and undermining of indigenous sovereignty as a self-determining people contributed to environmental degradation and ecology violence of the natural environment. This land grab in Southern California would result in the building of 21 missions in California, where nearly all major cities in California exist today. As the missions sprang up, the Tongva people (who under this new system of missionization came to be known as the Gabrieleno Band of Mission Indians) faced violence, disease and environmental degradation due to invasive species, and were nearly forced into the missions. Once baptized, they were forced to work in dire conditions farming the land and working as servants. If they did not meet their work requirements, they were often locked in cells or whipped as punishment. (Latino Americans, 2020)

As powers shifted from Spain to Mexico to the United States, the San Gabriel River went from irrigating farmland and ranches to being developed into industrial and suburban land. This process of settlers aiming to reconfigure the land and to create their own ecologies out of the ecologies of indigenous peoples is a form of settler colonial domination (Whyte, pg. 135). As westward expansion fueled by the Anglo American ideology of Manifest Destiny propelled development of the Southern California region. As settlers were not aware of how the rivers naturally flowed - in the summer being arid and dry with minimal flow, and with natural flooding occurring in the winter - life threatening floods served as a major threat to the growing population. Scholar Stephen R. Van Wormer illustrates this time period as he writes:

Between the late 1880s and 1920, accelerated development and growth in both rural and urban areas occurred throughout the Los Angeles Basin. Los Angeles County's population jumped from 101,454 in 1890 to 504,131 by 1910. By the end of the first decade of the twentieth century, growth of the metropolitan, industrial, and agricultural districts in the area had reached a point where floods were a serious problem and threatened the continued existence and further development of Los Angeles. Floods had become more frequent and destructive during the early years of the twentieth century as a result of increased development, which stripped the terrain of its natural vegetation, thereby increasing the velocity and destructiveness of flood waters. The winter of 1910-11 saw devastating floods along the San Gabriel River that destroyed bridges and inundated fertile farmland with sterile sand and silt. (Wormer, pg. 59, 1991).



Figure 3: Photo courtesy of the Benjamin and Gladys Thomas Air Photo Archives, UCLA Department of Geography

The increased uncertainty and severity of flooding led to Southern California partnering with the Army Corps of Engineers to implement a grand flood control system that would divert and maintain the Los Angeles and San Gabriel River. After a massive flood in 1914, fourteen dams were created to control the unpredictable river. However, a massive rain system dumped a year's worth of rain in the San Gabriel Mountains in 1938 which caused a torrential flood that took down bridges, telephone poles, and killed 144 people (Simpson, 2012). These floods, which caused billions in damage and loss of life, led to the development of debris basins, cemented banks and channelization of the lower San Gabriel River in the 1950's (Medina, 2014).

The channelization of the San Gabriel river has had dramatic impacts on the natural environment. The river, which stretches 58 miles (seven miles longer than its sister river, the Los Angeles River), historically supported riparian inhabitants and wetlands once covered up to 47,000 acres (SCCWRP). Since the channelization, urban development, irrigation, and damming, there are approximately only 2,500 acres left of the once vast river system (Recovery of the San Gabriel River, 2020). Consequently, this contributed to the decline of many species in the lowland ecosystem. There are currently 160 threatened, rare or endangered species (San Gabriel National Monument, n.d). For example, the Steelhead Trout, which was once prevalent in both of the rivers, is nearing extinction. There are fewer than 500 Steelhead Trout left in Southern California (Caltrout, 2018). Moreover, there has been extensive damage done to the San Gabriel River due to hydraulic mining which often used mercury to assist in the extractive process. This played a role in poisoning groundwater which affected native fish. Pollution has also been a paramount issue. Urban and industrial runoff largely contribute to the pollution in addition to high recreational activity in the East Fork. During the summer, nearly 8,000 people visit the East Fork section every day, producing over 400 32-gallon bags of trash with over half of the trash bags being left in the stream-bed and river terrace as litter (East Fork San Gabriel River Trash, n.d). Toxic water levels have also been found in Coyote Creek, largely due to industrial chemicals, pollution, and pesticides (Schiff et. al, 2007). Milan Creek, because of its connection to the larger watershed system, is assumed to have similar characteristics.

# CLIMATE CHANGE IMPACTS

Because of climate change, temperatures are expected to rise significantly in the Los Angeles region which likely will have detrimental impacts on the San Gabriel River and the Los Angeles region at large. A 2016 UCLA study conducted by the Department of Atmospheric and Oceanic Sciences found temperatures could rise 3 to 5°F degrees in the years 2041 to 2060 and the region could experience “extreme heat days” with some cities experiencing five to six times their current level (UCLA, 2016). This increases the probability of urban heat island effects occurring, which often can be found in low socioeconomic communities with fewer shade trees, more pavement, and denser built environments. Because of the lack of tree canopy and vegetation, there is less albedo resulting in more short wave radiation being absorbed by the pavement and reemitted to the surrounding environment (Learn about Urban Heat Islands, 2014). These micro climate pockets are created which can cause significant temperature increases. A study by the Environmental Protection Agency found that urban streams are hotter than forested areas and that temperatures rose up to 7°F during small storms due to heated runoff from urban pollution (Somers, Kayleigh A., et al., January 2016). With higher temperatures, less precipitation and groundwater depletion, longer periods of drought are expected. With no tree canopy or any vegetation, longer periods of drought are expected to exacerbate warming. Excessive heat can have a medical impact on residents, which can include heat strokes which are particularly dangerous for the elderly and children who live in areas of higher temperature. As the Milan Creek became channelized in the 1950's it lost its natural ecology. Local La Mirada Historian Tony Aiello, who grew up next to the creek and was born in 1963, remembers wildlife teeming with frogs, lizards, and natural flora. By the year 1987-88, the frogs along with the natural flora had disappeared.



Figure 4: Milan Creek in its channelized form

As our planet warms due to anthropogenic activities, rivers in the Southwestern states are expected to see prolonged droughts coupled with less snowfall and precipitation. This can risk lowering water reservoir levels, jeopardizing water availability for Southern California residents. With warmer temperatures, there is also the risk for higher evaporation rates. However, studies also show that there is the possibility of increased extreme weather events occurring more often which could lead to increased polluted runoff. These types of weather events could lead to Milan Creek flooding more often and carrying more industrial and urban runoff into the ocean. This phenomenon, which becomes more normalized as it happens more often, is due to the atmosphere being warmer and able to hold greater amounts of precipitation. This is a high risk concern considering the river already is polluted and contaminated with toxic chemicals and pesticides.



# CURRENT WORK

It is of chief importance to recognize the work that has historically been done and the efforts that are ongoing regarding addressing the environmental degradation of the San Gabriel River. To address the aforementioned issues there have been several non-profit grassroots organizations and government agencies that have worked to create more access to green spaces along the river, improve the watersheds, increase educational opportunities, apply mitigation and restoration strategies to restore the river to its natural state while providing funding opportunities. These organizations include but are not limited to Amigos De Los Rios, the San Gabriel Mountains Regional Conservancy, and the San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy. Amigos De Los Rios creates and builds green spaces in underserved areas in the greater Los Angeles area. They are also spearheading the Emerald Necklace Way project, which aims to create a network of paths, trails and river greenways to connect the ‘mountains to the sea’ (Amigos De Los Rios, n.d). This project includes creating a 17 mile loop and entails creating multi-purpose parks that connect 10 cities and nearly 500,000 residents along the San Gabriel watershed (Emerald Necklace). The San Gabriel Mountains Conservancy has created nature park centers, connected urban areas with wild spaces, and developed a watershed management plan for the upper San Gabriel River. The San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy is one of the 10 conservancies under the California Resources Agency. They focus on preserving open space for recreational activities and educational uses while restoring habitats and improving watersheds within their jurisdiction (San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, n.d). This work is critical if the San Gabriel River and its tributaries are to be restored to its natural environment. If the river’s ecosystem is not addressed, it is at further risk of degrading into worse conditions, with the potential of certain species going extinct such as the Steelhead Trout. Climate change poses significant risks and can substantially affect the communities that surround Milan Creek and the overall river ecosystem. Addressing the aforementioned issues will take efforts from the federal, state and local level. It is with this justification, coupled with the precedent of repurposing land and rehabilitating the natural riparian environment, that I propose repurposing Milan Creek, a

tributary of the San Gabriel River, into a recreational walking trail while rehabilitating the creek to its natural habitat.

## CASE STUDY

Milan Creek runs from the Whittier/La Habra area through the westside of La Mirada. The creek was channelized and paved-over in the early 1950's. It is now a storm drain channel that drains to La Canada Verde Creek which is a tributary that leads into Coyote Creek. Coyote Creek then drains into the San Gabriel River which subsequently drains into the Pacific Ocean. Milan Creek is 2.7 miles long and stretches from La Canada Verde Creek to an easement located at the address of 12041 Singleton Dr., La Mirada, CA 90638. The easement leads to four main storm line branches that go up to Leffingwell Rd. and cross La Mirada Blvd. The creek itself passes under the main streets of Valley View Ave., Imperial Hwy. and Telegraph Rd. Milan Creek runs through the community with housing tracts on both sides. There are two bridges along its courses along with 12 entrances/exits. The gates remain locked at all times except for when the Los Angeles County Department of Public Works needs to access the creek. The origins of the creek connect to the larger San Gabriel River watershed stemming from the Whittier Hills. This watershed often changed its course and was unpredictable as the rainy seasons intermittently came. By comparing historical aerial imagery with the modern day GIS mapping tool called LA County Flood Parcel Viewer, it is evident Milan Creek is a natural tributary part of the greater San Gabriel River watershed. Aerial photos dating back to the 1950's suggest it was a small watershed connected to the larger Coyote Creek.

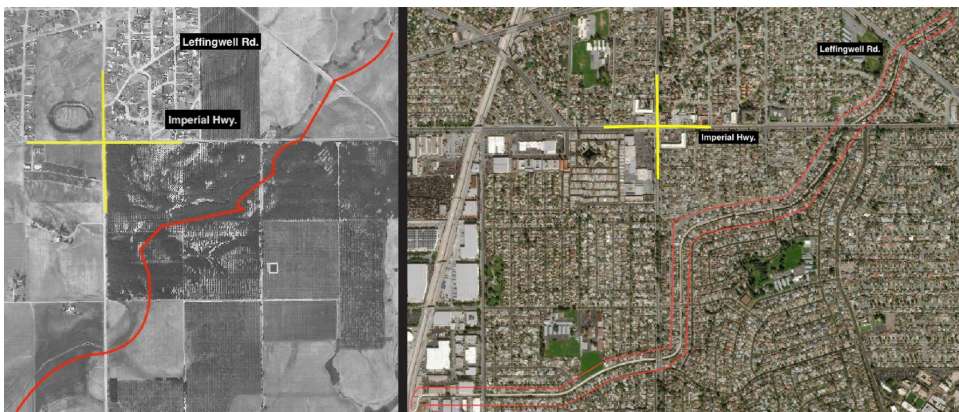


Figure 5: Side by side comparison of Milan Creek in 1953 and present day: County of Orange, Historical Aerial Imagery, Storymaps Arc ArcGIS

Since this natural creek was paved and channelized in the 1950's, while it has flood control advantages, it has become a problem for the environment and community in numerous ways. This creek once flourished with natural wildlife that has since been eradicated due to the concrete channel. This space has become a no-person's land that collects large amounts of pollution and trash. The creek has become a border within the community with only one bridge as a passage point. Walking across this bridge not only feels unwelcoming and dangerous at night, but constantly showcases the eye-sore the creek has become. Car tires, grocery carts, graffiti, and rotten water litter all over the riverbed. This channel and its banks have no vegetation which exacerbates the urban heat island effect. Because of the hard bottom channel being impermeable, industrial and urban runoff are also a major concern as this leads to pollution in the Pacific Ocean. The National Oceanic and Atmospheric Administration found that up to eighty percent of pollution to the marine environment comes from land, a majority from non-point source pollution, which results from runoff (What is the biggest source of pollution in the ocean, June 2021). During the summer, this impermeable surface creates still-water which is an ideal breeding ground for mosquitoes. This is a grave concern considering West Nile virus and other potential diseases.

The proposal I am putting forth has two different goals, of which the first is more immediate than the latter. The first goal is to open up the gates and use the utility road as a recreational walking trail. This trail would start at the entrance of Marquardt and just North of Rosecrans. The trail, staying within the City of La Mirada, would end at Imperial Hwy, stretching a total of 1.8 miles. Preferably, the trail can be continued for the remaining .9 miles, working collaboratively with Los Angeles County. According to documents from Los Angeles County Department of Public Works, all that would be needed to open up the trail would be to repave the path, cut down trees that hang over the path, come to a working agreement with the City of La Mirada, and most importantly, see if the community wants it.

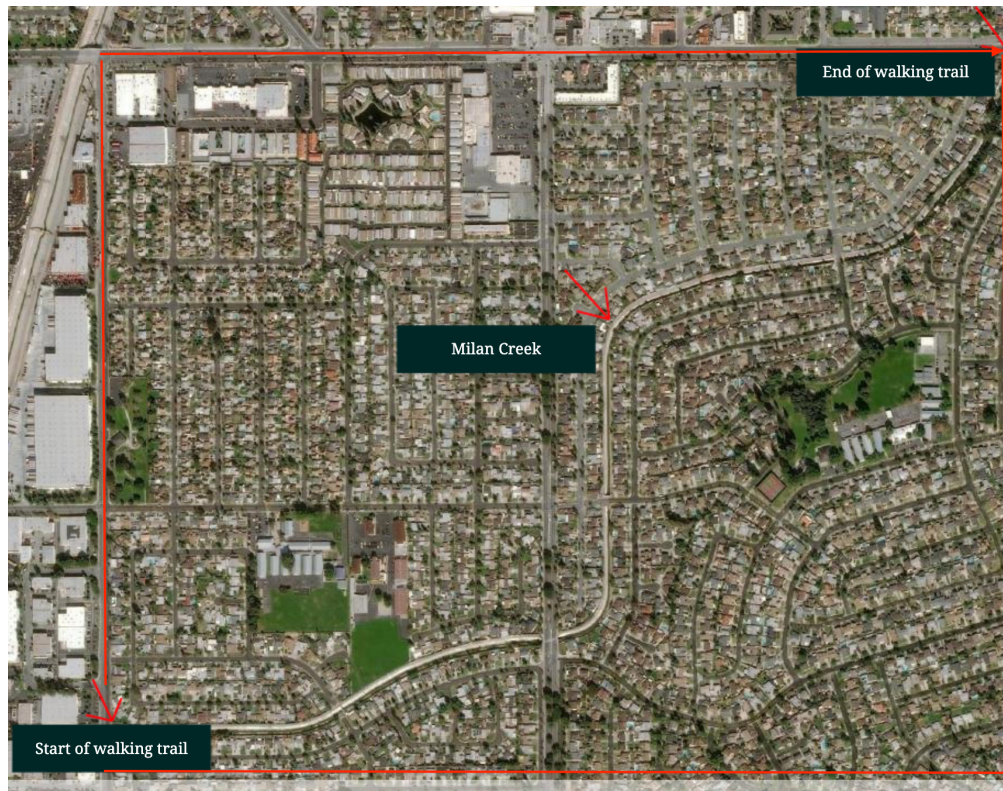


Figure 6: Proposed trail of Milan Creek

The second goal, which would ideally come at a later time, entails adding improvements to the walking trail and rehabilitating the creek. There would be benches placed along the trail along with markers that contain historical information associated with the area, specifically related to the City of La Mirada and the Tongva tribe. There would also be landmarks dedicated to the Tongva people, the original inhabitants of the land Milan Creek runs through. Furthermore, there would also be better gates put into place that the city can open and lock when the trail opens and closes.

For the rehabilitation of the creek, there are two different concepts pertaining to the rehabilitation of the creek that I propose: 1) a full rehabilitation, or 2) a partial rehabilitation. The third option is steady state and would be to leave as is. A full rehabilitation would entail removing the concrete in the channel bed and converting the hard bottom channel into a soft bottom channel, planting native plant species, and implementing boulders throughout the creek. This would dramatically improve the aesthetic appeal of the creek while recharging ground water through permeability, reducing urban runoff, and restoring riparian habitats.



A partial rehabilitation would entail leaving most of the concrete in the channel bed, but creating some eddies sparsely through the creek while planting native plant species. This would improve the aesthetic appeal of the creek along with restoring some riparian habitat. Leaving the creek as is it would entail nothing changing and would continue to create negative climate change impacts.



Figure 7: the current view of Milan creek, adjacent to St. Paul Church



Figure 8: A full rehabilitation and trail. This is a rendering for illustrative purposes only



This two prong concept proposal is not a new idea, but rather fits into the larger environmental movement of repurposing land and restoring natural habitats. Over the last two decades, there have been copious projects that have looked at the development of greenway trails and creek restoration. For example, Alameda County in Northern California restored a man-made channel back to its natural habitat. This project was called Peralta Creek Restoration Project. This project revitalized the marginalized community with ample green recreational space and park-like views of a natural creek. Where trash and debris once accumulated, an aesthetically pleasing corridor now thrives with frogs and other biodiversity in the springtime (Creek restorations, n.d). In the City of Pasadena, the restoration of Berkshire Creek project aims to solve problems with stormwater drainage at the headwaters of the Berkshire Creek in Los Angeles County (Urban Streams Restoration Program, 9 June). This project would improve the natural hydrology while upgrading the habitat and improving public safety (City of Pasadena, June 9)



Figure 9: trash and debris accumulated in man-made channel In Alameda County



Figure 10: The revitalized creek thriving in its natural habitat



Figure 11 : The Berkshire Creek restoration project completed in Los Angeles County



The Whittier Greenway trail repurposed old railroad tracks and created a walking trail that connects the community, creates educational opportunities, and reduces traffic congestion while increasing air quality (Whittier Greenway Trail, n.d). La Mirada is currently looking at re-naturalizing La Mirada Creek, which is a tributary stemming from the San Gabriel Mountains. The master plan has been developed and approved by La Mirada City Council, which calls for removing check dams and replacing concrete channels with more natural methods to control storm water flow (La Mirada Creek).



Figure 12: Master Plan drawing of La Mirada Creek Park, courtesy City of La Mirada

This plan incorporates native flora, educational elements, public art installation, fitness stations, and dog waste stations. These four projects, along with many others, symbolize the growing movement to redefine orthodox approaches to creating recreational green spaces. Cities are recognizing the need to create more spaces that prioritize localized mobility and revitalization of damaged ecosystems. This precedent warrants a proposal such as the one I am proposing for Milan Creek. To validate this project, I conducted a qualitative study that addressed whether or not the community wanted to create a recreational walking trail and revitalize Milan Creek to its natural habitat.

## METHODOLOGY

In order to understand if the community wanted a recreational trail and a restored creek, it was necessary to conduct a qualitative study to get an accurate statistical analysis. From Marquardt Ave to Imperial Hwy, which is the proposed distance of the trail, there are 221 homes that are adjacent to Milan Creek. Each of these homes were contacted and there was a uniform question asked which was “would you like to see a recreational trail built in the riverbed creek behind home for recreational opportunities”. Of those 221 houses that were visited, 112 answered the door which is half of the total population surveyed (51%). Of the residents surveyed, 65% of the population are in support of the recreational trail, while 17% of households said they are not in favor. Additionally, 13% of the population surveyed said they were unsure or needed more information, while 4.5% of the population was not accessible due to a language barrier.

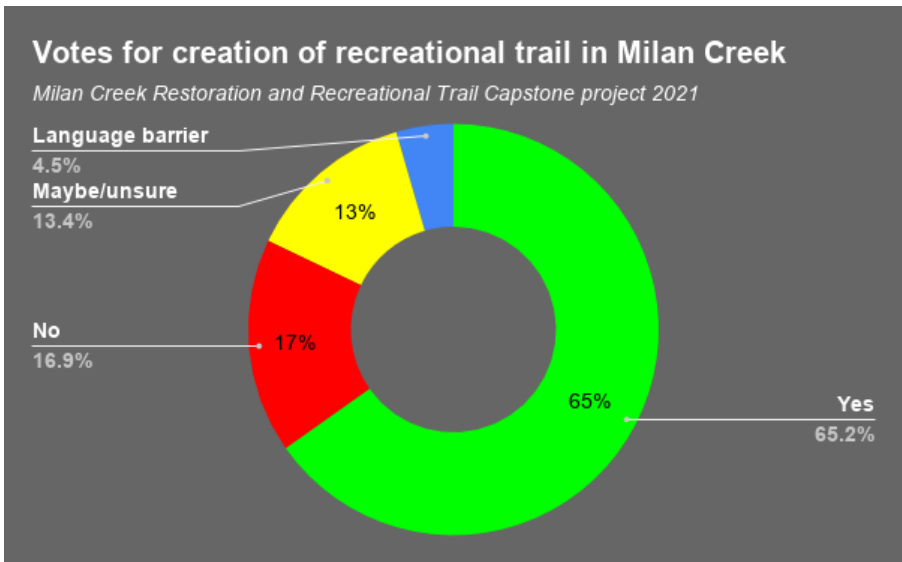


Figure 13: A pie chart showing the votes of creation recreational trail in Milan Creek

Each of the houses who responded “yes” to creating a recreational trail in Milan Creek, which was 73 (65.2%), there was a second uniform question asked. The question was “if you were using the trail, and you looked down at the creek, would you like to see the creek fully restored, partially restored, or left as is. 60.3% of the residents voted for a full rehabilitation while 19.2% were unsure, 17.8% voted for a partial rehabilitation, and 2.7% want to leave the creek as is. This is an initial survey and there would need to be more detailed surveys and community meetings to better assess the communities willingness to support the initiative.

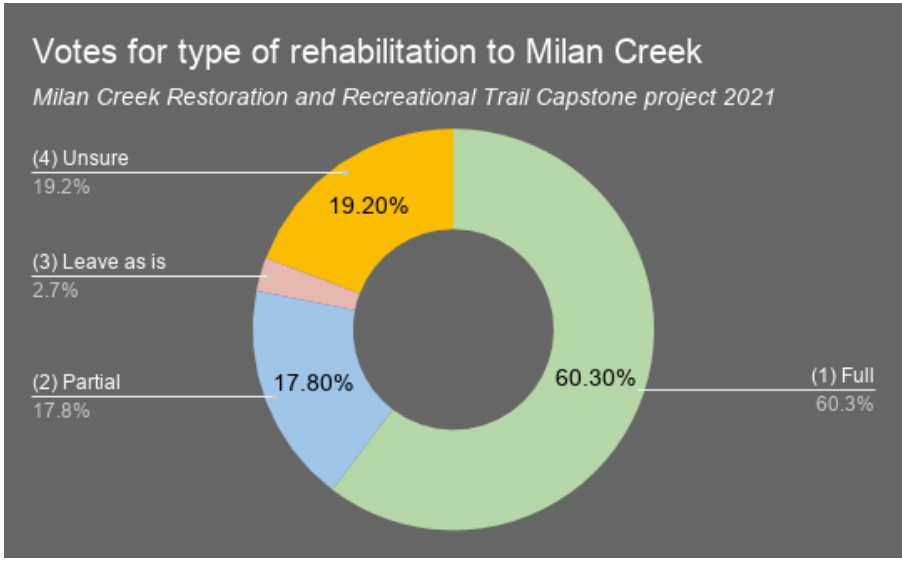


Figure 14: A pie chart that shows what type of rehabilitation to Milan Creek



These results overwhelmingly illustrate the community is in strong favor of creating a recreational trail while fully restoring the creek to its natural habitat. The opinions of the 221 homes adjacent to the creek hold the most weight, considering they would be the most affected by the proposal. It can be fairly assumed moving out from that parameter into the surrounding community, there would be less objection to the proposal because households would be further away from the site area. However, to account for the surrounding communities input, I conducted a confidence interval. Of the 112 households that answered the survey, I created a 95% confidence interval for the proportion of all residents who would reject the idea of creating a recreational trail. The lower bound was 10.5% and the upper bound was 25%. Less than a quarter of the residents at-large would reject this project. Out of the 112 community members who answered the survey, I created a confidence interval for the proportion of all residents who would approve the idea of creating a recreational trail. The lower bound was 59% and the upper value was 77%. More than three quarters of residents at-large would approve this project. This qualitative data suggests the community, both most-affected and at-large, are in great favor of creating a recreational trail while fully restoring the creek to its natural habitat.

## OPPORTUNITIES

There are a host of benefits and opportunities that would come from implementing this project. Particularly, there are two primary benefits that can benefit the climate and the ocean: reducing vehicle miles traveled and urban runoff. This recreational trail would connect the community in new ways that would encourage more locality. Residents could access the urban shopping center just northeast of the Imperial entrance/exit by foot or bike, eliminating vehicle trips. Implementing smart land use patterns like this project can help dramatically reduce vehicles miles traveled which in turn will reduce greenhouse gas emissions. Changing travel behavior can play a major role in cutting emissions from the transportation sector up to 65% below 2010 levels by 2050 (ROSA P, 2010). To calculate how this project could help reduce vehicle miles traveled, I did a calculation estimating how many miles residents in the southwest part of La Mirada could save by using the trail versus driving to the neighborhood grocery store. From the address 14140 Gladeside Dr. La Mirada, it would take

1.8 miles to drive to Walmart neighborhood market. If residents used the walking trail, it would be .71 miles to walk there. Assuming a household takes two trips a month, they would be saving 2.18 miles a month, which would be 26.16 miles a year. This is just for one household. This calculation illuminates the amount of vehicle miles saved over time can have an overwhelming amount of greenhouse gas reduction, thus, justifying the trail's creation.

In addition, removing the concrete from the bottom channel can be beneficial for several reasons. Doing so can allow water to permeate and recharge groundwater which is critical for water replenishment and part of the natural water cycle (Freeborn, 2012). Restoration efforts of the Los Angeles River efforts have included the desire to remove concrete to help restore fish populations and create more riparian habitats (Spectrum, 2021). However, this approach is still highly contested and is not included in the most recent draft of the County's LA River Master Plan. However, less concrete and more vegetation and canopy can reduce the urban heat island effect. With increased permeability, there is also less standing water, which can reduce mosquito breeding, which was a major concern from residents who answered the survey. Working with government agencies such as the Southern Regional Water Quality Control Board will be important to verify if concrete removal is doable. In Milan Creek, the total area I am proposing for concrete to be removed is 157, 500 sq. ft. This area would allow groundwater recharge and reduce industrial and urban runoff into the Pacific Ocean while restoring natural flora and fauna into the ecosystem.

There are additional benefits as well to implementing this project such as an increase in green space equity, reducing criminal activity in the creek, increasing property values in homes and contributing to the movement of Native American land conservancy, which is part of the racial justice movement. With the recreational trail and natural channel conversion in place, there would be a total of an additional 126,000 square feet of a recreational green space. Not only would this improve the aesthetic of the channelized scar, but it would give residents a chance to improve their mental health. A landmark study by researchers at Denmark's University of Aarhus found that access to green space during childhood is associated with lower risk of developing psychiatric disorders later in their life (Engemann, Kristine, et al,2019). In an age where mental health disorders are on the rise,

particularly during the Covid-19 pandemic, having green spaces available for community residents can be a strong alternative to address mental health concerns.

Moreover, another major study found that legitimate use of recreational green space can lower criminal activity (Shepley, Mardelle, et al. 2019) This is important because considering the mischief behavior that is consistently prevalent in Milan Creek. Additionally, studies show that having green spaces near homes can increase property values. For instance, a study conducted in Los Angeles in 2008 found that for every 1% increase in green space 200 to 300 feet of home, property values rose .07% (Conway, Delores, et al. 2012). Furthermore, the trail would create new spaces to exercise. A study by the Center for Disease Control found that “places for physical activity led to a 25.6% increase in the number of people exercising three or more days per week” (Center for Disease Control, 2001).

Lastly, having the trail in place along with native flora can allow co-management practices with the Tongva people and create new educational opportunities for the communities. Implementing co-management partnership with the Tongva people can help maintain and restore the ecosystem using ecological traditional knowledge. This partnership can also allow indigenous history and cultural knowledge to be placed along the path, helping teach communities how to care for the land using an indigenous praxis. Below, in the Next Steps section, I highlight concrete steps towards Tongva stewardship of the Creek along with other constituencies.

## CONSTRAINTS

It is important to acknowledge the constraints that exist in implementing this project. Of concern is the cost, time to implement, increased foot traffic behind homes, increased potential for homeless encampments, and potential lack of privacy. According to city officials, La Mirada Creek enhancement is estimated to be approximately \$7-9 million dollars. This proposal is relatively similar in distance; it is fair to assume the project would cost a similar amount or more, considering the desire to remove the concrete channel and replace it with a soft-bottom channel.

Another valid constraint would be the time to implement such a project, which could take up to 10 years for design, engineering and implementation. However, this is well worth the investment considering the aforementioned benefits to the climate, physical health, and mental health of the community.

Increased foot traffic was a concern from the community because of the lack of privacy that would come with more people walking behind their homes. Residents also expressed concern about who would pay to build their wall higher.

## NEXT STEPS


Considering the qualitative data and confidence interval, the data overwhelmingly suggest this is a project the local community would like to see implemented. As of June 2021, I have had a meeting with the City Manager of La Mirada, the Economic Development Manager, and a Senior Administrative Analyst about the proposal. They all expressed great interest in the idea. Deputy Director Ivan Sulic of Supervisor Janice Hanh's office, who oversees La Mirada, has expressed positive enthusiasm for the idea. I have also reached out to the Los Angeles County Department of Public Works and am currently in talks with their staff there. In addition, I am also in talks with the Tongva Chairman as their tribe is interested in the idea of collaborating with this proposal to build indigenous sovereignty. We are in preliminary discussions of what this partnership will look like. I am interested in proposing co-management of Milan Creek should it be revitalized.

The next steps in this project involved submitting an official proposal to the Los Angeles County Department of Public Works to open up Milan Creek as a recreational trail. The subsequent steps would involve future discussion with them about revitalizing the creek to more of its natural habitat. Also, analyzing and identifying possible grants and fundraising opportunities is critical in securing funding for this project.

# CONCLUSION

As the world pushes forward with emitting greenhouse gases at an unprecedented rate, resulting in anthropogenically warming of our climate, it is imperative that communities start to adapt their natural spaces into places of healthy resilience both for the community and the environment. This project blazes a new path forward, with hopes of inspiring other cities to do the same. Communities can be healthier physically, mentally, and socially while restoring our natural habitats. Taking bold action to creatively shape our communities to work for the residents and the community is possible. With ancestral indigenous knowledge shifting our culture to respect and admire the land, collectively our society can begin to heal the scars left behind from colonization, modernity and industrialization.


### Capstone Advisory Committee Signatures:

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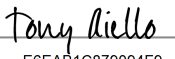
Kathleen Garcia, of Urban Studies and Planning, Capstone Committee Chair

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Dr. Elana Zilberg, of Communications

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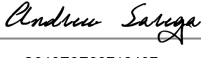
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Andrew Serega, La Mirada City Council Member



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## Images Credit

Figure 1: <https://smbasblog.com/the-tongva/>

Figure 2: [https://commons.wikimedia.org/wiki/File:San\\_Gabriel\\_River\\_Map.jpg](https://commons.wikimedia.org/wiki/File:San_Gabriel_River_Map.jpg)

Figure 3:

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Figure 4: Source: Miles Aiello

Figure 5

A) <https://storymaps.arcgis.com/>

B) <https://www.ocgis.com/ocpw/historicalimagery/index.html>

Figure 6: <https://storymaps.arcgis.com/>

Figure 7: Source: Miles Aiello

Figure 8: Illustration by Eduardo Del La Rosa

Figure 9: <https://www.acgov.org/sustain/what/ecosystem/creeks.htm#pcr>

Figure 10: <https://www.acgov.org/sustain/what/ecosystem/creeks.htm#pcr>

Figure 11: <https://www.arroyoseco.org/berkshirecreek/>

Figure 12: City of La Mirada

Figure 13: Data collection

Figure 14: Data collection