- Sustainable-Something which can be maintained indefinitely (for the long term) at the same rate. In this case it refers to actions or objects which do not decrease future generations' ability to perform the same actions or obtain the same materials.
- Tax Increment Financing (TIF)- A mechanism that allows local governments to use future projected taxes to finance current infrastructure investments.
- Transfer of Development Rights (TDR)- Provisions in a zoning law that allow for the purchase of the right to develop land located in a sending area and the transfer of these rights to land located in a receiving area.
- Urban Soils- Soils in urbanized areas can be comprised of a range of materials beyond the parent soils; they have often been excavated and filled many times, mixing the soil horizons together. Often they have also been compacted (decreasing infiltration capacity); these vary greatly and require site specific testing for accurate information.
- Watershed- The collective area typically defined by topography in which all precipitation that lands within it drains into a common water body (lake, river, stream, creek). Watersheds are typically linked together by a high order stream. For example, the Allen Creek watershed is a sub-watershed within the Huron River watershed.
- Zoning Overlay District- A set of land use regulations that apply in addition to the typical zoning; this is often used to achieve specific functions within the greater land use framework.



Appendix II: Non-Motorized Transportation Maps



Figure 56: City of Ann Arbor Non-motorized Transportation Long term Opportunities Plan 2007

Appendix III: Design Alternatives

Throughout the design process, the practicum team received valuable feedback from the Allen Creek Greenway Conservancy regarding site programming and site designs. The practicum team created three design alternatives for each parcel based on site analysis, field observation, different site uses and features desired. This appendix represents the original designs created for each opportunity parcel, First and William, 415 W. Washington, and 721 N. Main. The final designs presented in the body of the report were chosen based on feedback from the Conservancy and project advisors and strive to incorporate the best site features from the alternative designs into a single, unified site design. It should be emphasized that these designs are purely conceptual, meant to inspire dialogue and excitement as planning for the greenway moves into the public realm.

First St. and William St.

1st Alternative:

This alternative for the parcel at the intersection of First St. and William St. is designed to highlight phytoremediation, improve accessibility, and create an urban pocket park. As it exists now, the slope from Ashley St. down to First St. does not allow for easy access for persons with even minor physical limitations. To solve the issue of accessibility between these two streets, this design proposes a series of planter boxes and retaining walls that create a ramped series of switchbacks. The defining feature of this design is a plaza space with a series of planter boxes filled with flowering plants and trees. Additionally, there is a large area of the site that is dedicated to be an interpretive phytoremediation experience. This area is not to be used for recreation but is there to demonstrate how plants can be used to remove contamination from the soil. The western edge of the site houses a bicycle storage facility. To the north is a small plaza space for food carts or a similar low input, mobile business. This alternative also explores the potential for an elevated greenway path to traverse the complex intersections created by First St., Liberty St. and the Ann Arbor Railroad. It is important to note that the design intent is not dependent on the elevated section of greenway. The main benefit of using an elevated greenway is safety by reducing interactions between cars, pedestrians, and trains. It also allows for uninterrupted flow of traffic along the greenway for improved connectivity to 415 W. Washington.

721 N. Main

1st Alternative:

The main feature of this alternative is the mixed-use building on site, able to be located here because this is the only site of the three opportunity parcels that is not entirely in the floodway, providing opportunity for some revenue generation for the city. This option also includes surface parking and an attached parking structure to serve the mixed-use building. An extensive system of stormwater management has been proposed between the parking lot and the more open area to the east. There are formal plantings interspersed with prarie to give the southeastern part of the site a true park feeling. It was also important to create a strong pedestrian connection between the mixed use area and the neighboring Ann Arbor Community Center. The path in this option diverges to the south as one section climbs the berm to get up to grade on the RR and connect with the future greenway path. It also traverses along the eastern edge and connects to N. Main St., where street routes could be used to connect to the Border-to-Border trail.



2nd Alternative:

This site contains enough land outside of the floodway to allow for a building to be sited. This design includes a small commuter rail station with supporting businesses because it provides the closest connection to the current Amtrak station on Depot St. (within a five minute walk). One of the interesting on-site features to be included into the building is a small section of elevated railroad track, which could potentially become a balcony or overlook. The majority of the site would be a short-grass prairie to provide habitat for pollinators, birds, and small mammals. For seasonal interest and a quiet space to enjoy a nice day, a small garden filled with ornamental natives has been included in the south central portion of the prairie. Stormwater is managed on site through native re-vegetation and a wet meadow area. To promote a sense of community, small urban agriculture plots have been included adjacent to the Ann Arbor Community Center.



3rd Alternative:

This design focuses on native habitat restoration and passive recreation opportunities. A large patch of prairie would offer pollinator and bird habitat as well as opportunities for contemplation and personal restoration. A large bioswale would collect stormwater on the site and provide education opportunities. In the northwestern portion of the site would be shorter native grasses and trees which would allow for more human-centered recreation space such as basketball courts or other ideas. A small parking area would allow access for trail visitors to the larger greenway as well as the site. Finally, a community garden adjacent to the Ann Arbor Community Center would provide a wonderful community-building space as well as a chance to engage community members and children in hands-on learning about where their food comes from.



Appendix VII: About the Authors

Ariel Shaw

Originally from southern Indiana, Ariel grew up with a love of wild places which she has carried into her current work as a landscape architect. She received her Bachelor of Arts in English and anthropology from Kenyon College; these majors allowed her to refine her writing and analytical skills as well as explore a broad swath of human nature.

After graduating, she worked with the Michigan Environmental Council (MEC) as their land use and energy associate. Here she gained experience collaborating with stakeholders on smart growth and stormwater management projects; she also educated policymakers on the benefits of renewable energy and energy efficiency in preparation for the passage of state energy legislation. Following her time at MEC, she apprenticed for a season on a small organic vegetable farm in southeast Michigan.

While pursuing her masters of landscape architecture program with University of Michigan, she spent her summers with community garden nonprofits in Boston and San Francisco, engaging in horticulture and garden design. This strengthened her commitment to both food justice and urban green space initiatives. She hopes to continue in this field following graduation when she moves to San Francisco.

Jordan Sebastian

Jordan is originally from the foothills of the Appalachian Mountains in southeastern Kentucky. Having spent the better portion of his life on a farm, he acquired a unique perspective on how people interact with their surrounding landscapes. This interest in environmental interaction and design pushed him into the field of landscape architecture and he received a Bachelor of Science in this field from the University of Kentucky.

Jordan has taken part in several different summer internships including design and planning work for the UM Matthaei Botanical Gardens and Arboretum as well as working at the University of Kentucky's State Botanical Garden and Arboretum. He has also been a landscape architect intern for SmithgroupJJR in Ann Arbor, MI.

His participation in planning a regional trail system for the Bluegrass Region of Kentucky (Beyond the Legacy project) was an invaluable opportunity. From conducting public meetings and creating presentations, to dealing with stakeholder and public officials concerns, the experience created even more of a desire for creating safe, usable spaces for people. Jordan hopes to continue his desire for creating pleasing public spaces after graduation. Peter first discovered a passion for plants as a teenager in Ann Arbor, MI, when he began working in a local nursery. Later, he began working in residential landscape construction for a local landscape architect. Coupling his construction experience with his plant knowledge and creative personality, he found a career path in landscape architecture. Peter attended Michigan State University (MSU) where he received a Bachelor of Landscape Architecture in 2008. Following graduation from MSU, Peter was a design intern at Pollack Design Associates (PDA). There he was able to learn from Peter Pollack, FASLA, who introduced him firsthand to the concepts of ecological design and inspired him to attend the University of Michigan for a Master of Landscape Architecture degree with a focus on ecological design.

At the University of Michigan, his main areas of concentration have been ecological design of the urban environment with an emphasis on using LID (Low Impact Development) to feature stormwater as a site amenity. Additional areas of interest include: walkable design, non-motorized transportation and wayfinding, and the human perception of the built environment. Peter also twice enjoyed the privilege of helping to teach the ecological planting design studio as a Graduate Student Instructor. Additionally, he completed independent research using GIS that analyzed implementation strategies for LID on southeast side of Detroit. Currently, he is working as a planning intern with Washtenaw County Parks and Recreation where he has learned a great deal about regional non-motorized transportation networks and planning through experience with the County's Border to Border (B2B) trail. After graduation, Peter plans to continue his pursuits in landscape architecture and ecological design of urban spaces.

Bibliography

(2012). Retrieved April 2012, from Let's Movel: http://www.letsmove.gov/

- Ahern, J. (1995). Greenways as a planning strategy. Landscape and Urban Planning, 33, 131-155.
- Allen Creek Greenway Task Force. (2007). The Allen Creek Greenway-Findings and Recommendations. 1-81 and Appendix prepared by Jerry Hancock.
- Alta Planning + Design. (2002). Rails-with-Trails: Lessons Learned. U.S. Department of Transportation (US DOT); Federal Highway Administration, Federal Railroad Administration, National Highway Traffic Safety Administration, Federal Transit Administration.
- Ann Arbor Downtown Development Authority (DDA). (2010). Ann Arbor Rankings and Awards. Retrieved April 2012, from http://www.a2dda.org/resources/rankings/
- Benedict, M. A., & McMahon, E. T. (2002). Green Infrastructure: Smart Conservation for the 21st Century. Renewable Resources Journal , 20 (3), 12-17.
- Bischoff, A. (1995). Greenways as vehicles for expression. Landscape and Urban Planning , 33, 317-325.
- Bole, R., di Cristino, M., Glover, M., & Kurath, F. E. (2005). Allen Creek Greenway: Preliminary Feasibility Study. University of Michigan, Stephen M. Ross School of Business.
- Brown, I., & Kellenberg, S. (2009). Ecologically Engineering Cities Through Integrated Sustainable Systems Planning. Journal of Green Buildling , 4 (1), 58-75.
- Carreiro, Margaret M., Song, Yong-Chang, Wu, Jianguo (2008). Ecology, Planning, and Management of Urban Forests: International Perspectives. New York, NY: Springer Science and Buisness Media LLC.

- Centers for Disease Control and Prevention (CDC). (2011, March 30). State-Based Programs: Nutrition and Physical Activity Program to Prevent Obesity and Other Chronic Diseases. Retrieved April 2012, from Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion : http://www.cdc.gov/obesity/stateprograms/index.html
- City of Ann Arbor. (2004). City of Ann Arbor Natural Features Master Plan, 3-32. Retrieved from http://www.a2gov.org/GOVERNMENT/COMMUNITYSERVICES/ PLANNINGANDDEVELOPMENT/PLANNING/Pages/MasterPlans.aspx
- City of Ann Arbor. (2007a). Flood Mitigation Plan City of Ann Arbor, 10-110. Retrieved from http://www.a2gov.org/GOVERNMENT/COMMUNITYSERVICES/ PLANNINGANDDEVELOPMENT/PLANNING/Pages/MasterPlans.aspx
- City of Ann Arbor. (2007b). City of Ann Arbor Non-Motorized Transportation Plan, 2-181. Retrieved from http://www.a2gov.org/GOVERNMENT/ COMMUNITYSERVICES/PLANNINGANDDEVELOPMENT/PLANNING/ Pages/MasterPlans.aspx
- City of Ann Arbor. (2009a). Ann Arbor Downtown Plan, 4-55. Retrieved from http://www.a2gov.org/GOVERNMENT/COMMUNITYSERVICES/ PLANNINGANDDEVELOPMENT/PLANNING/Pages/MasterPlans.aspx
- City of Ann Arbor. (2009b). City of Ann Arbor Master Plan Land Use Element, 5-126. Retrieved from http://www.a2gov.org/GOVERNMENT/ COMMUNITYSERVICES/PLANNINGANDDEVELOPMENT/PLANNING/ Pages/MasterPlans.aspx
- City of Ann Arbor. (2009c). The City of Ann Arbor Transportation Plan Update, 1-6 to 6-32. Retrieved from http://www.a2gov.org/GOVERNMENT/ COMMUNITYSERVICES/PLANNINGANDDEVELOPMENT/PLANNING/ Pages/MasterPlans.aspx
- City of Ann Arbor. (2011a). Downtown Ann Arbor Design Guidelines, 41. Retrieved from http://www.a2gov.org/GOVERNMENT/COMMUNITYSERVICES/ PLANNINGANDDEVELOPMENT/PLANNING/Pages/MasterPlans.aspx

- City of Ann Arbor. (2011b). Parks & Recreation Open Space Plan 2011-2015, 11-123. Retrieved from http://www.a2gov.org/GOVERNMENT/ COMMUNITYSERVICES/PLANNINGANDDEVELOPMENT/PLANNING/ Pages/MasterPlans.aspx
- City of Ann Arbor Parks and Recreation. (Edited February 11, 2011) Parks and Recreation Open Space Plan 2011-2015. Retrieved from http://www.a2gov.org/ government/communityservices/ParksandRecreation/Documents/Final%20 Draft%20PROS%202-11-11.pdf.
- Coalition for Healthy Children. (n.d.). Combating Childhood Obesity. (A. Council, Producer) Retrieved April 2012, from http://www.healthychildrencoalition.org/
- De Ridder, K., Adamec, V., Bañuelos, A., Bruse, M., Bürger, M., Damsgaard, O., et al. (2004). An integrated methodology to assess the benefits of urban green space. Science of the Total Environment, 334-335, 489-497.
- Fabos, J.G. (1995). Introduction and overview: the greenway movement, uses and potentials of greenways. Landscape and Urban Planning, 33, 1-13

FEMA, (2010) No-rise Certification for Floodways. Retrieved from

http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/no_rise.shtm

- Gill, T. (2011, November). Sowing the Seeds: Reconnecting London's Children with Nature. 1-76.
- Gobster, P. H., & Westphal, L. M. (2004). The human dimensions of urban greenways: planning for recreation and related experiences. Landscape and Urban Planning , 68, 147-165.
- Grahn, P., & Stigsdotter, U. A. (2003). Landscape planning and stress. Urban Forestry & Urban Greening , 2, 1-18.
- Gregor, A. (2010, August 10). As a Park Runs Above, Deals Stir Below. The New York Times .

- Groenewegen, P. P., van den Berg, A. E., de Vries, S., & Verheij, R. A. (2006). Vitamin G: effects of green space on health, well-being, and social safety. BMC Public Health , 6, 1-9.
- Hunter, M. (2010). Class Lecture, Site Engineering.
- Kaplan, R., & Kaplan, S. (1989). The experience of nature: A psychological perspective. Cambridge: Cambridge University Press.
- Kaplan, R., Ivancich, J. E., & De Young, R. (2007). Nearby nature in the city: Enhancing and preserving livability. University of Michigan, School of Natural Resources and Environment, Ann Arbor.
- Lerner, Steve and William Poole. (1999) The Economic Benefits of Parks and Open Space. San Francisco: The Trust for Public Land
- Louv, Richard. (2005) Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder. Chapel Hill, NC: Algonquin Books
- Maas, J., van Dillen, S. M., Verheij, R. A., & Groenewegen, P. P. (2009). Social contacts as a possible mechanism behind the relation between green space and health. Health and Place, 15, 586-595.
- Maas, J., Verheij, R. A., Groenewegen, P. P., de Vries, S., & Spreeuwenberg, P. (2006). Green space, urbanity, and health: how strong is the relation? J Epidemiol Community Health , 60, 587-592.
- Machemer, P., et al. (2000). Transferable Development Rights- A Policy Brief for the Michigan Legislature. Urban and Regional Planning Program, Department of Geography, Michigan State University, 0-2. Retrieved from http://www.ippsr.msu.edu/publications/ARTransDevRights.pdf
- Michigan Healthy Communities. (2010). Retrieved April 2012, from http://www. mihealthtools.org/mihc/

Moss, S. (2012). Natural Childhood. 1-25.

Nassauer, J. I. (1995). Messy Ecosystems, Orderly Frames. Landscape Journal , 14 (2), 161-170.

O'Neal, J. (2011). (P. Sanderson, J. Sebastian, & A. Shaw, Interviewers)

- Opdam, P., & Steingröver, E. (2008). Designing Metropolitan Landscapes for Biodiversity: Deriving Guidelines from Metapopulation Ecology. Landscape Journal, 27 (1), 69-80.
- PlaNYC. (2008). Sustainable Stormwater Management Plan 2008. 1-92.
- Project Evergreen. (2010) "Environmental Fact Sheet: The Environmental Benefits of Green Spaces." Retrieved from http://www.projectevergreen.com/pdf/ EnvironmentalFactSheets.pdf.
- Rouwendal, Jan, Willemijn van der Straaten, J.(2008) The Costs and Benefits of Providing Open Space in Cities. Tinbergen Institute, Retrieved from http://www. tinbergen.nl/discussionpapers/08001.pdf
- Rybczynski, W. (1999). A Clearing in the Distance: Frederick Law Olmsted and America in the 19th Century. New York: Simon and Schuster.
- Searns, R. M. (1995). The evolution of greenways as an adaptive urban landscape form. Landscape and Urban Planning , 33, 65-80.
- SEMCOG (Southeast Michigan Council of Governments). (2012). Alternate Commute to Work, 2010-Southeast Michigan. Retrieved from http://www.semcog.org/ uploadedFiles/Data_and_Maps/Map_library/ACS_Alternate_Commute.pdf
- SEMCOG (Southeast Michigan Council of Governments). (2012). Community Profile for the City of Ann Arbor, MI. 1-13. Retrieved from http://www.semcog.org/ Data/Apps/comprof/profile.cfm?cpid=4005
- Shafer, C. S., Lee, B. K., & Turner, S. (2000). A tale of three greenway trails: user perception related to quality of life. Landscape and Urban Planning , 49, 163-178.

- Sheehan, H., et al. (2008). Allens Creek Stormwater Initiative: Individual Projects.1-38. Retrieved via email from Sheehan, H., Washtenaw County Drain Commissioners Office
- Smart Growth America. (2010). What is "Smart Growth"? Retrieved March 13, 2011, from Smart Growth America: http://www.smartgrowthamerica.org/what-issmart-growth
- The World Bank Group. (2009). World Development Report 2010: Development and Climate Change. The World Bank Group.
- University of Delaware, Botanical Gardens. (2009) "Human Benefits of Green Space" Sustainable Landscape Series. Retrieved from http://ag.udel.edu/udbg/sl/ humanwellness/Human_Benefits.pdf.
- US Environmental Protection Agency. (2005). Using Smart Growth Techniques as stormwater best management practices. Retrieved April 13, 2011, from EPA Smart Growth: http://epa.gov/smartgrowth/
- US Environmental Protection Agency. (2011, February 3). HUD-DOT-EPA Partnership for Sustainable Communities. Retrieved March 13, 2011, from EPA Smart Growth: http://epa.gov/smartgrowth/partnership/index.html
- van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. Social Science and Medicine, 70, 1203-1210.
- Van Herzele, A., & Wiedemann, T. (2003). A monitoring tool for the provision of accessible and attractive urban green spaces. Landscape and urban planning, 63, 109-126.
- Washtenaw County. (2007). Allen Creek Watershed- 415 W. Washington Street and 721 N. Main Street. 1-2. Retrieved via email from Sheehan, H., Washtenaw County Drain Commissioners Office

- Washtenaw County Parks and Recreation Commission. (2010), Parks and Recreation Master Plan 2010-2014, 1-8 & appendices D-F. Retrieved from http://www.ewashtenaw.org/government/departments/parks_recreation/ parksplan/2010-2014/draft/draft_5yrplan.html
- Washtenaw County Parks and Recreation Commission (2010) Parks and Recreation Master Plan 2010-2014: E. Planning and Public Input Process. Pdf.
- Woo, J., Tang, N., Suen, E., Leung, J., & Wong, M. (2009, January 24). Green space, psychological restoration, and telomere length. The Lancet, 373, pp. 299-300.

GIS Data Sources:

- City of Ann Arbor Planning and Development Services and the Alternative Transportation Program, (2006)
- Ann Arbor Geographic Information System http://www.a2gov.org/gis/Pages/default.aspx
- MI Geographic Data Library http://www.mcgi.state.mi.us/mgdl/

Washtenaw Area Transportation Study http://trafficcounts.miwats.org/

Washtenaw County GIS http://www.ewashtenaw.org/government/departments/gis