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PRECEDENTS

Biohabitats conducted a brief literature review to identify relevant national and international models that have had a positive impact on increasing the health and connectedness of ecological and human systems. Of the projects selected for review, six examples arose as particularly relevant to the MARC GI Plan, whether in terms of ecological scale, biodiversity, transportation planning, the local ecoregion, or its overall comparable scope and quality.

Below is a list with links to all of the plans reviewed within the scope of the precedent study, followed by the literature review conducted by Biohabitats.

- The George Washington Region 2011 Regional Green Infrastructure Plan
<https://www.gwregion.org/regional-planning/reports-and-studies/regional-green-infrastructure-plan/>
- Land Mosaics for the Barcelona Metropolitan Region
<https://books.google.com/books?id=UlamKfshPCUC&pg=PA230&lpg=PA230&dq=Richard+TT+Forman+Barcelona&source=bl&ots=-2a-AmbT9D&sig=ahVcgSK97pgfXYEpDpsShM98uDs&hl=en&sa=X&ved=0ahUKEwiwxrebh-PPAhWJMx4KHbk-CnwQ6AEIQzAH#v=onepage&q=Richard%20TT%20Forman%20Barcelona&f=false>
- Barcelona Green Infrastructure and Biodiversity Plan 2020
http://w110.bcn.cat/MediAmbient/Continguts/Documents/Documentacio/BCN2020_GreenInfraestructureBiodiversityPlan.pdf
- Baltimore Green Network Plan
<http://www.baltimoresustainability.org/projects/green-network/>
- Regional Advance Mitigation Planning
<http://iopscience.iop.org/article/10.1088/1748-9326/9/6/065001>
- Ecoregional Conservation in the Osage Plains/Flint Hills Prairie
<http://iopscience.iop.org/article/10.1088/1748-9326/9/6/065001>
- London Biodiversity Action Plan
<http://www.gigl.org.uk/about-gigl/londons-biodiversity-action-plan/https://www.cityoflondon.gov.uk/services/environment-and-planning/planning/design/sustainable-design/Documents/Biodiversity-action-plan-2010-2015.pdf>
- Green City, Clean Waters: The Philadelphia Green Infrastructure Plan
http://www.phillywatersheds.org/doc/GCCW_AmendedJune2011_LOWRES-web.pdf
- Portland Watershed Management Plan
<https://www.portlandoregon.gov/bes/article/298042>
- Portland's Green Infrastructure: Quantifying the Health, Energy, and community Livability Benefits, 2010
<https://www.portlandoregon.gov/bes/article/107808>
- Baltimore Watershed Agreement Action Plan
<http://resources.baltimorecountymd.gov/Documents/Environment/Watersheds/bwaactionplanfinal09.pdf>
<http://resources.baltimorecountymd.gov/Documents/Environment/Watersheds/bwaprogressreport030410.pdf>
- Urban Watershed Framework, Triple Bottom Line (TBL) Model Dashboard for San Francisco Public Utilities Commission, Sewer System Improvement Program
<http://sfwater.org/Modules/ShowDocument.aspx?documentid=2552>
- "Sponge City" Program in China
<https://www.austrade.gov.au/ArticleDocuments/6585/China%20Sponge%20City%20Program.pdf.aspx>
- Paris Greening Programme, 2007
http://www.mcrit.com/climagranollers/index.php?option=com_content&view=article&id=24:paris-climate-protection-plan&catid=81:europa&Itemid=74
http://www.energy-cities.eu/cities/cities_actions_detail.php?id=1434
- City Biodiversity Index (Singapore Index): Urban Biodiversity
<https://www.cbd.int/doc/meetings/city/subws-2014-01/other/subws-2014-01-singapore-index-manual-en.pdf>
- San Jose and the Urban Village
<http://greenplanit.sfei.org/books/chapter-3-case-study-san-jose%E2%80%99s-urban-villages>
- Carbon Neutral Cities Alliance 2016 Energy System Transformation Playbook
Playbook available online soon. See the following link for current publicly available materials:
http://gettingtozeroforum.org/wp-content/uploads/sites/2/2016/01/WesterhoffLisa_NetZeroForumDenver-handout.pdf
- Bridgeport, CT Eco-Urban Assessment
<http://tnc.maps.arcgis.com/apps/MapJournal/index.html?appid=4912af1e58394129be9f7a895a755c66>

MEMORANDUM

Date: October 17, 2016

To: Christina Hoxie, BNIM

From: Claudia Browne, Biohabitats
Aiman Duckworth, Biohabitats
Jessica Norris, Biohabitats

RE: MARC Green Infrastructure Plan
Subject: Literature Review- Project Precedents

Literature Review

Biohabitats conducted a brief literature review to identify relevant national and international models that are having the most positive impact on increasing the health and connectedness of natural ecosystems and transportation systems. We began with projects for which we were on the project team and then turned to other published precedents of green infrastructure planning to select a small group of pertinent examples.

The purpose of the current effort was not to provide a comprehensive list of green infrastructure techniques, but rather to canvass some of the innovators and leaders in the field, which serve as touchpoints in green infrastructure planning. As would be expected, green infrastructure strategies vary depending on the regional context, types of environmental issue, and the selected focal metrics of the lead groups. The attached “MARC GI Precedents, dated 10/17/16” spreadsheet includes a focused list of select reference projects.

The six examples described below comprise a short list that each have a special relevance to the MARC GI Plan, whether in terms of ecological scale, biodiversity, transportation planning, the local ecoregion, or its overall comparable scope and quality.

Six Models in Green Infrastructure Planning

1. The George Washington Region 2011 Regional Green Infrastructure Plan

<https://www.gwregion.org/regional-planning/reports-and-studies/regional-green-infrastructure-plan/>

Comparable in scale and scope to the MARC GI Plan, this set of documents provides a useful model on several fronts, from assigning metrics at the initial stages of goal setting, to offering a comprehensive

policy review (*Green Infrastructure Toolkit*) for the coordinating municipalities. It is interesting for the approach to assessment and goals, which relies heavily on land cover designations and remotely sensed data. Land cover and tree canopy change over time was analyzed to identify trends. It also presents a scenario planning approach in support of a regional long-range transportation planning program by identifying regional goals and community values. The scenarios explored and evaluated alternatives for growth, development, and transportation investments. The final goals addressed various scales including total regional tree cover and modifications to tree considerations in the site plan review process.

2. Regional Advance Mitigation Planning

<http://iopscience.iop.org/article/10.1088/1748-9326/9/6/065001>

The RAMP framework is a cooperative model developed in California to leverage transportation mitigation projects into effective regional conservation actions. RAMP offers a model for development of cooperative regional planning that has met with success in its earliest examples. Using RAMP, state and federal agencies consider the environmental impacts of several planned infrastructure projects at once. Working together, natural resource and infrastructure agencies can estimate mitigation needs early in the projects' timelines. This can avoid permitting and regulatory delays and allowing public mitigation dollars to stretch further by securing and conserving valuable natural resources on a more economically efficient scale, before related real estate values escalate.

3. Ecoregional Conservation in the Osage Plains/Flint Hills Prairie

https://www.conservationgateway.org/ConservationPlanning/SettingPriorities/EcoregionalReports/Documents/final_plan.pdf

Although dating back to 2000, the TNC plan that encompasses the southern half of the MARC region is a useful model for several reasons. First, the ecoregional description and considerations remain pertinent even over a decade after its writing. Secondly, the planning process uses science to determine conservation targets and goals through a formal framework that is a precursor of the [Open Standards for the Practice of Conservation](#) and may prove useful to MARC's goal setting.

4. Green City, Clean Waters: The Philadelphia Green Infrastructure Plan

http://www.phillywatersheds.org/doc/GCCW_AmendedJune2011_LOWRES-web.pdf

Philadelphia's success story over the last five years of implementation of their Green City, Clean Waters program has several explanations. One of the key early policy decisions was instrumental in restructuring the departments that had to be involved in order to meet with success. Three formerly separate departments, Combined Sewer Overflow, Stormwater Management, and Source Water Protection were restructured around watersheds that are ecological coherent units, instead of around the anomalous regulatory structure. This restructuring was critical to moving them forward. Philadelphia is also a good example of flood risk reduction and flood abatement through GI practices.

5. City Biodiversity Index (Singapore Index): Urban Biodiversity

<https://www.cbd.int/doc/meetings/city/subws-2014-01/other/subws-2014-01-singapore-index-manual-en.pdf>

The Singapore Index is the pioneering assessment tool for developing steps to improve biodiversity conservation efforts over time. It emerged from the Convention on Biological Diversity, an international treaty body that recognized the need to incorporate biodiversity alongside other environmental indicators for developed areas. The resulting City Biodiversity Index was endorsed in 2010 and has been applied to

hundreds of cities and regions since. As a science-driven tool, the index is specifically designed to provide a formal basis of comparison for measuring progress through time. Through all of its permutations, the index retains a focus on addressing the primary biodiversity threats in developed regions – loss and fragmentation of natural areas.

6. San Jose and the Urban Village

<http://greenplanit.sfei.org/books/chapter-3-case-study-san-jose%E2%80%99s-urban-villages>

Although not a complete GI planning effort in itself, this account of the application of the GreenPlan-IT toolkit is a useful example that includes specific data sets and decisions. The step by step presentation of GIS data and decision points may serve as a useful illustration. In addition, this GIS tool is oriented entirely on watersheds as the most ecologically sensible planning unit. San Jose is identified as one of MARC's Peer Metros on Metro Dataline.

Refer to attached spreadsheet for additional information on the above approaches and comparison to other relevant examples.



