

Exploring Green Infrastructure at Atlanta's Airport

SESWA Regional Stormwater Conference

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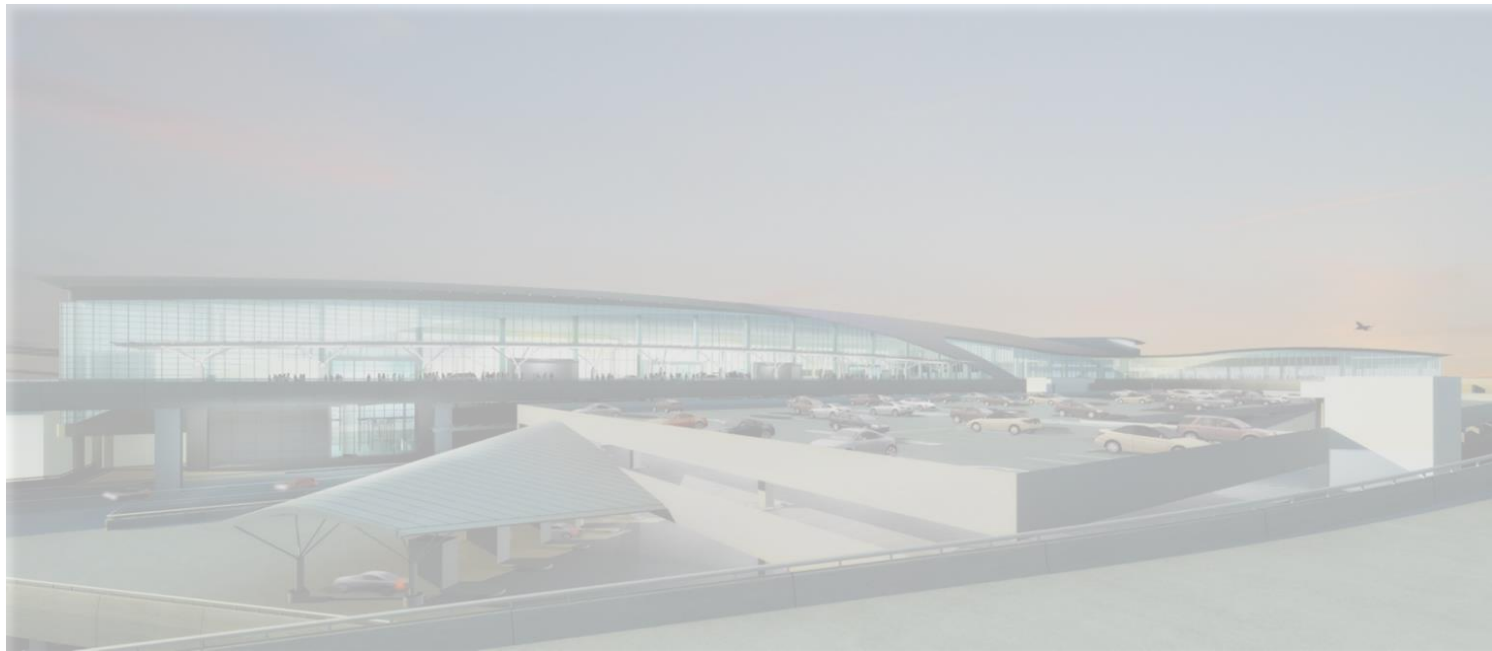
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Overview

- HJAIA
- Flint River Headwaters at HJAIA
- Land Suitability Analysis
- Green Infrastructure Policy and Solutions



Hartsfield-Jackson Atlanta International Airport

Our Vision

Be the global leader in airport efficiency and customer service excellence.

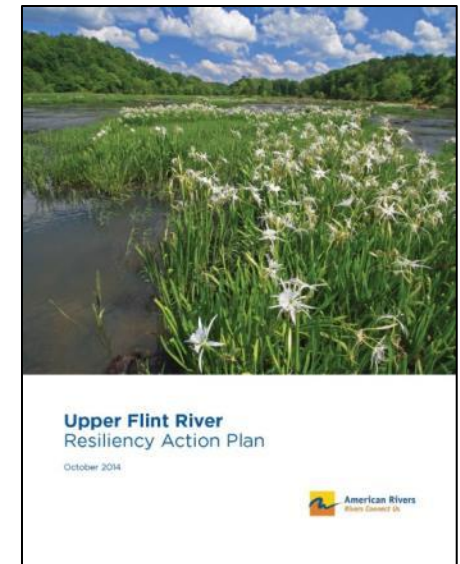
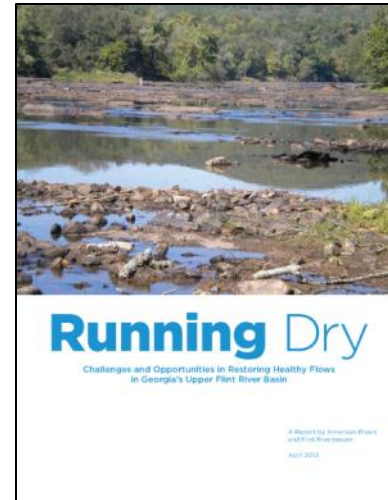


Our Mission

Provide the Atlanta region a safe, secure and cost-competitive gateway to the world that drives economic development, operates with the highest level of efficiency and exercises fiscal and environmental responsibility.

At a Glance

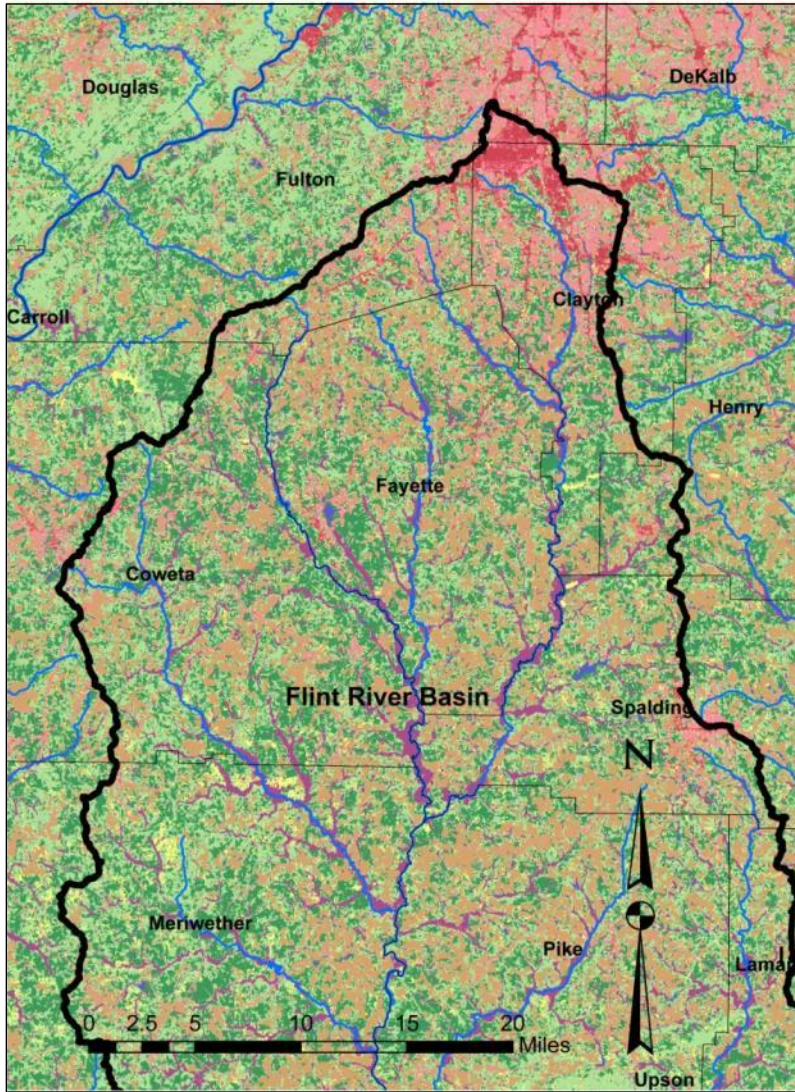
- 94 million passengers in 2012
- 931,554 total flights per year
- 250,000 average daily passengers
- Nonstop flights to 156 U.S. cities
- Nonstop flights to more than 80 cities in 50 countries
- 6.8 million-square-foot terminal complex
- 4,700-acre campus with cargo, maintenance, support facilities



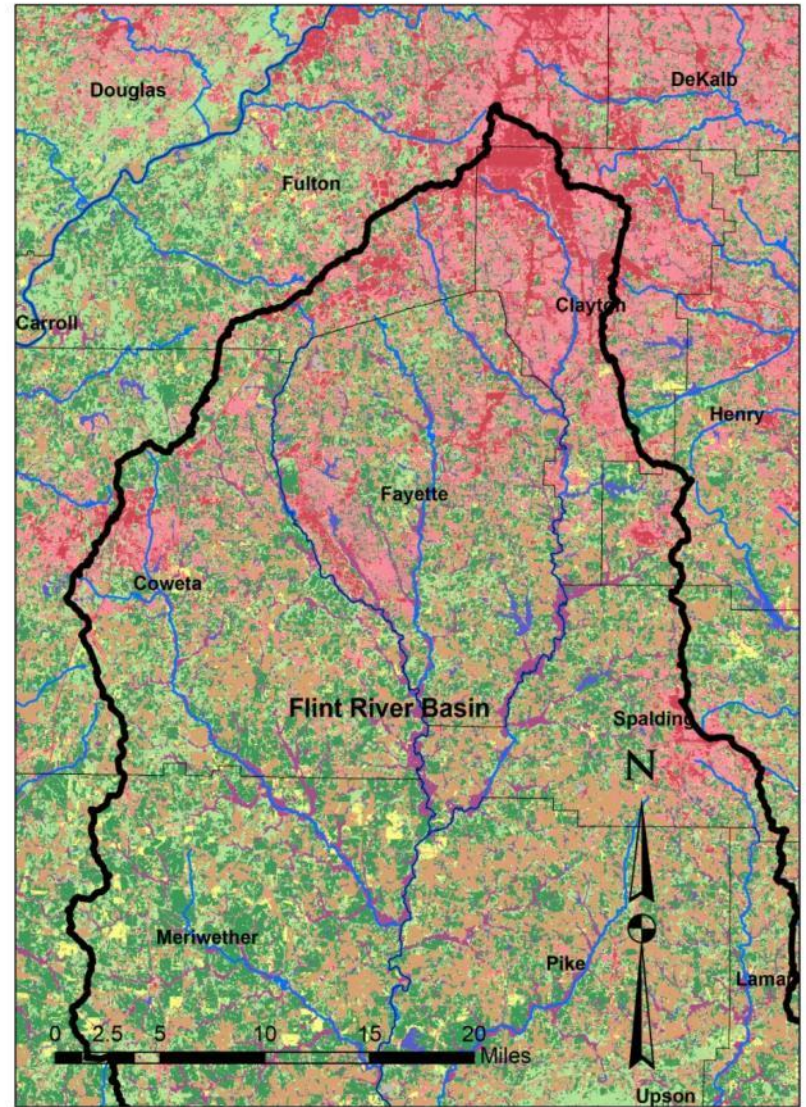


Flint River at Pasley Shoals, 2011 [photo: Bea Dallas]

Landcover: Upper Flint River Basin - 1974



Landcover: Upper Flint River Basin - 2008



Landcover Data from UGA NARSAL

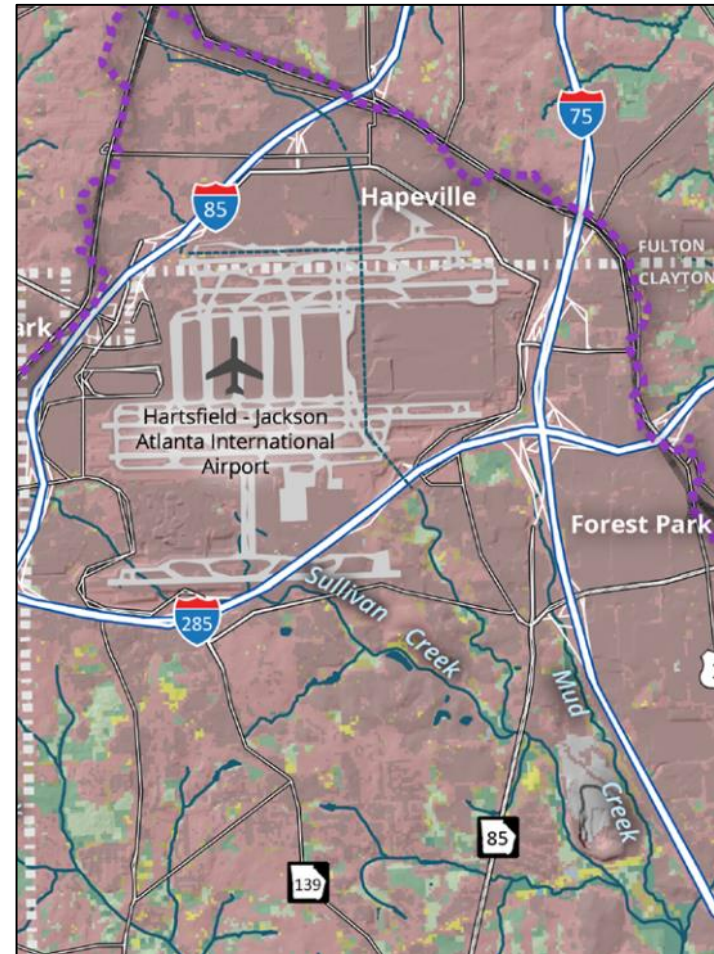
Land Suitability Analysis for

GREEN INFRASTRUCTURE

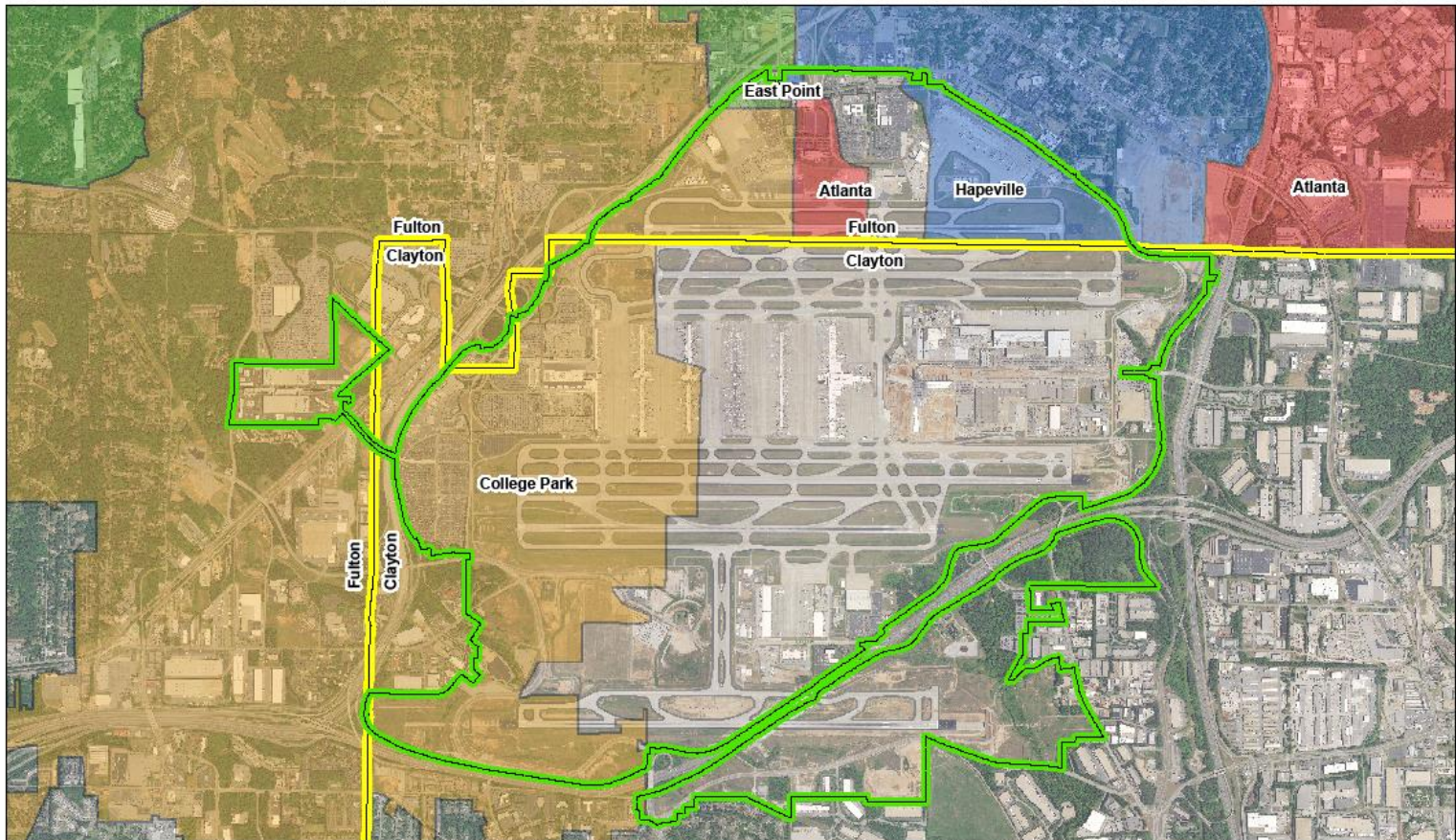
Stormwater Management at
Hartsfield Jackson Atlanta International Airport

Goals of Green Infrastructure at the Airport

- Increase base-flow to the headwaters of the Flint River through interventions that address the quality and quantity of stormwater runoff on-site
- Continue to establish ATL as a worldwide leader in sustainable practices.
- Improve environmental quality
- Build partnerships with local stakeholders and neighboring municipalities



Jurisdictional Map



DISCLAIMER
This map and all data contained within are supplied as is with no warranty. The Hartsfield-Jackson Atlanta International Airport Authority assumes no responsibility for damages of ANY kind that may arise out of the use of this map. The data contained herein is derived from a variety of sources and is not guaranteed. It is the user's responsibility to obtain proper survey data, presented by Georgia Landmark and Surveyors, when required by Georgia law.



Legend

Cities

- Atlanta
- College Park
- East Point
- Hapeville

- Airport Boundary
- Counties



Airport , Cities and Counties

* Unshaded area Unincorporated Clayton & Fulton Counties

Stormwater Management at ATL

- Grey Infrastructure manages stormwater runoff through pipes, storm drains and concrete.
- Green Infrastructure manages stormwater runoff by mimicking natural systems.



Green Infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments.

Stormwater Management at ATL

- At ATL, green infrastructure can leverage natural processes *in combination with* existing infrastructure to manage stormwater runoff.

- Special Considerations for HJAIA:
 - FAA Regulations
 - Advisory Circular 150/5200-33B Hazardous Wildlife Attractants on or Near Airports (Bird Strikes)
 - Existing Grey Infrastructure Systems
 - Headwaters of the Flint River
 - Limited open space and impervious surface
 - History of Land Disturbance

Stormwater Runoff

Flint River (main stem) receives runoff from approx. 42% of the total tributary area of 2406 acres.

- North Cargo,
- City and Delta Fuel Farms,
- Delta Operations Center,
- Existing terminal complex A-E, and
- The eastern halves of the four runways and associated taxiways.



Sullivan Creek receives about 35% of the total tributary area of 1,580 acres.

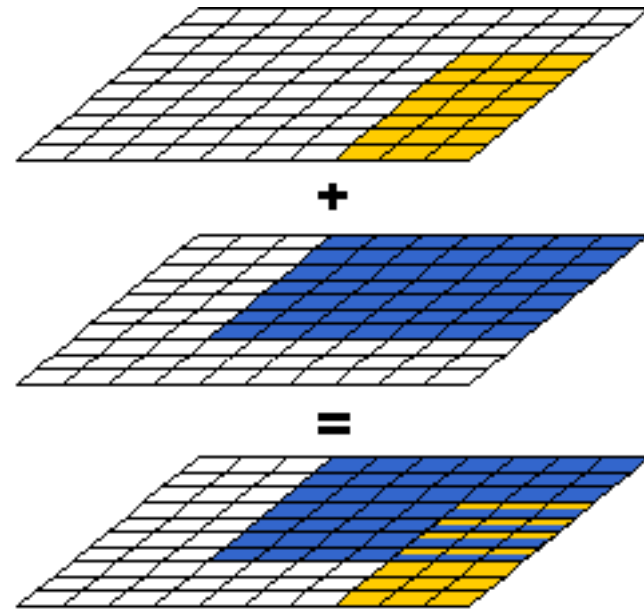
Mud Creek receives about 23% of the total tributary area of 379 acres.



Methodology: GIS Land Suitability Analysis

■ Background

- Suitability Mapping
- Suitability Analysis: *Weighted Overlay*
- Raster based Analysis



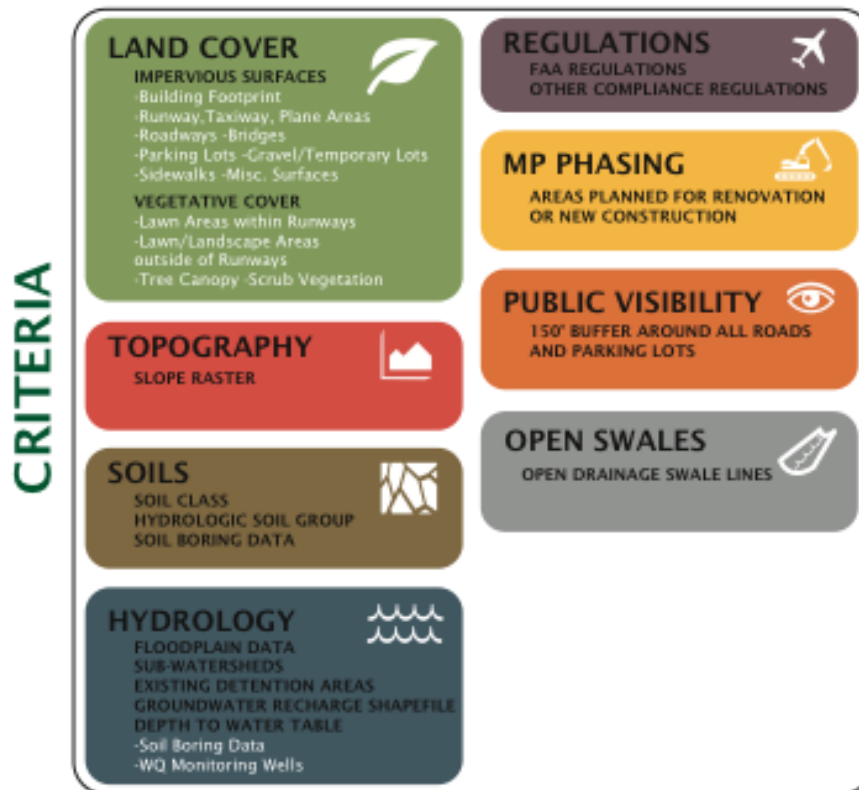
■ Benefits

- Transparent way to combine and analyze the complex layers of information present at HJAIA
- Through GIS model suitability maps can be easily updated as more information becomes present

Grid Overlay

https://www.e-education.psu.edu/geog482fall2/c9_p6.html

Methodology: Identification of Criteria + Data Collection, Creation, and Management



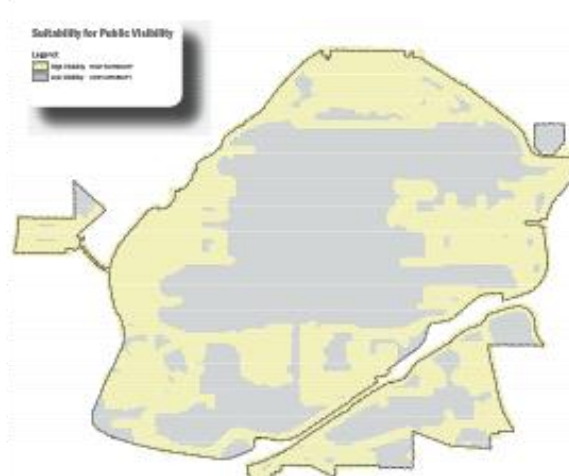
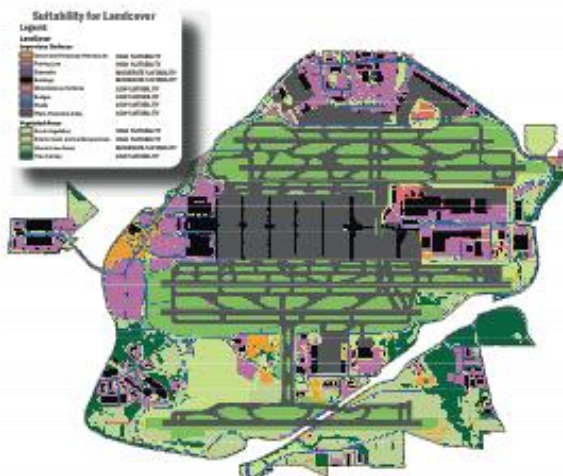
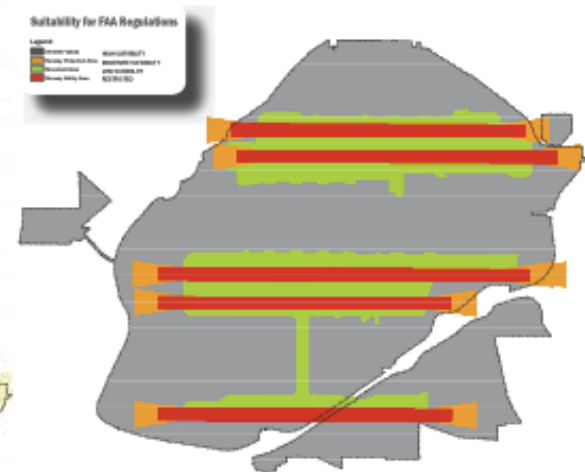
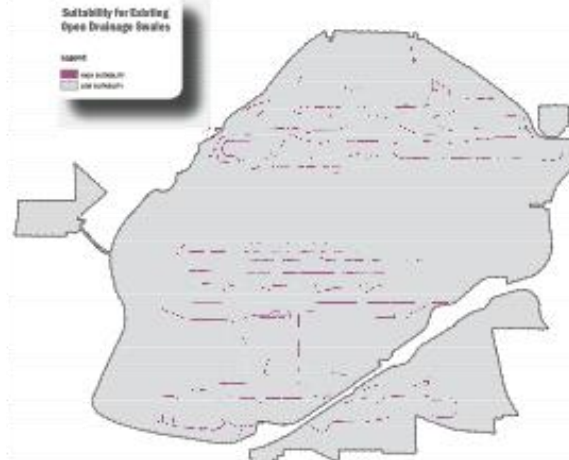
Criteria initially identified as having a significant effect on the land suitability for green infrastructure at HJAIA

Limitations:

Availability and accuracy of certain data sets

- *Soils*
- *Hydrology*
- *Master Plan Phasing*

Methodology: Initial Suitability Mapping



Methodology: Reclassification + Weighted Overlay

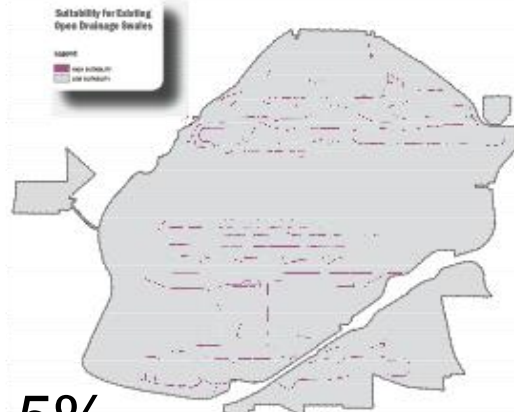
Values reclassified to:

1 to 9 by 1

1 is least suitable
9 is most suitable



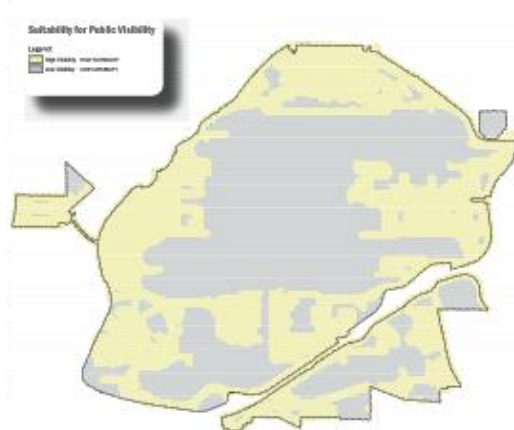
20%



5%



60%

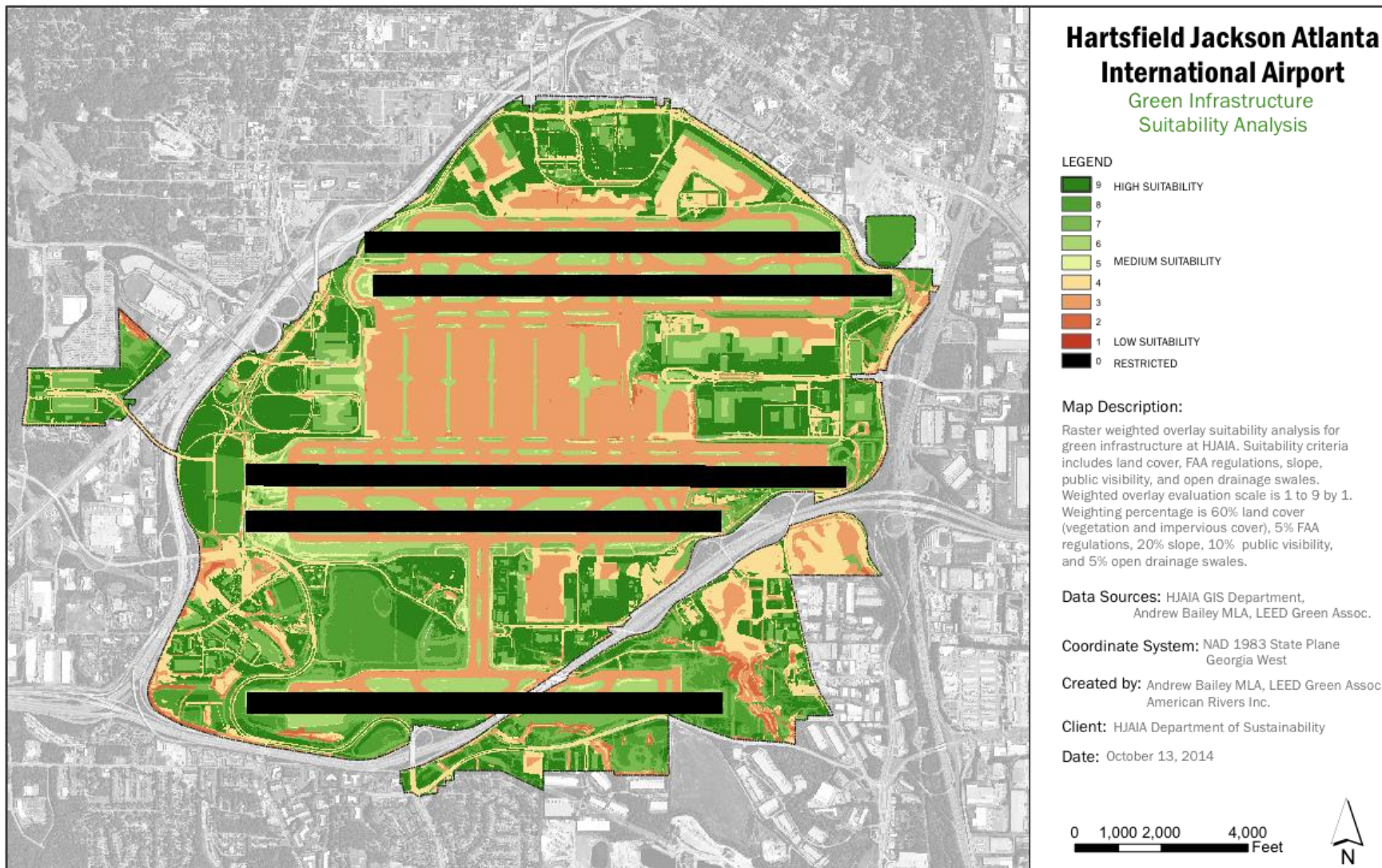


10%

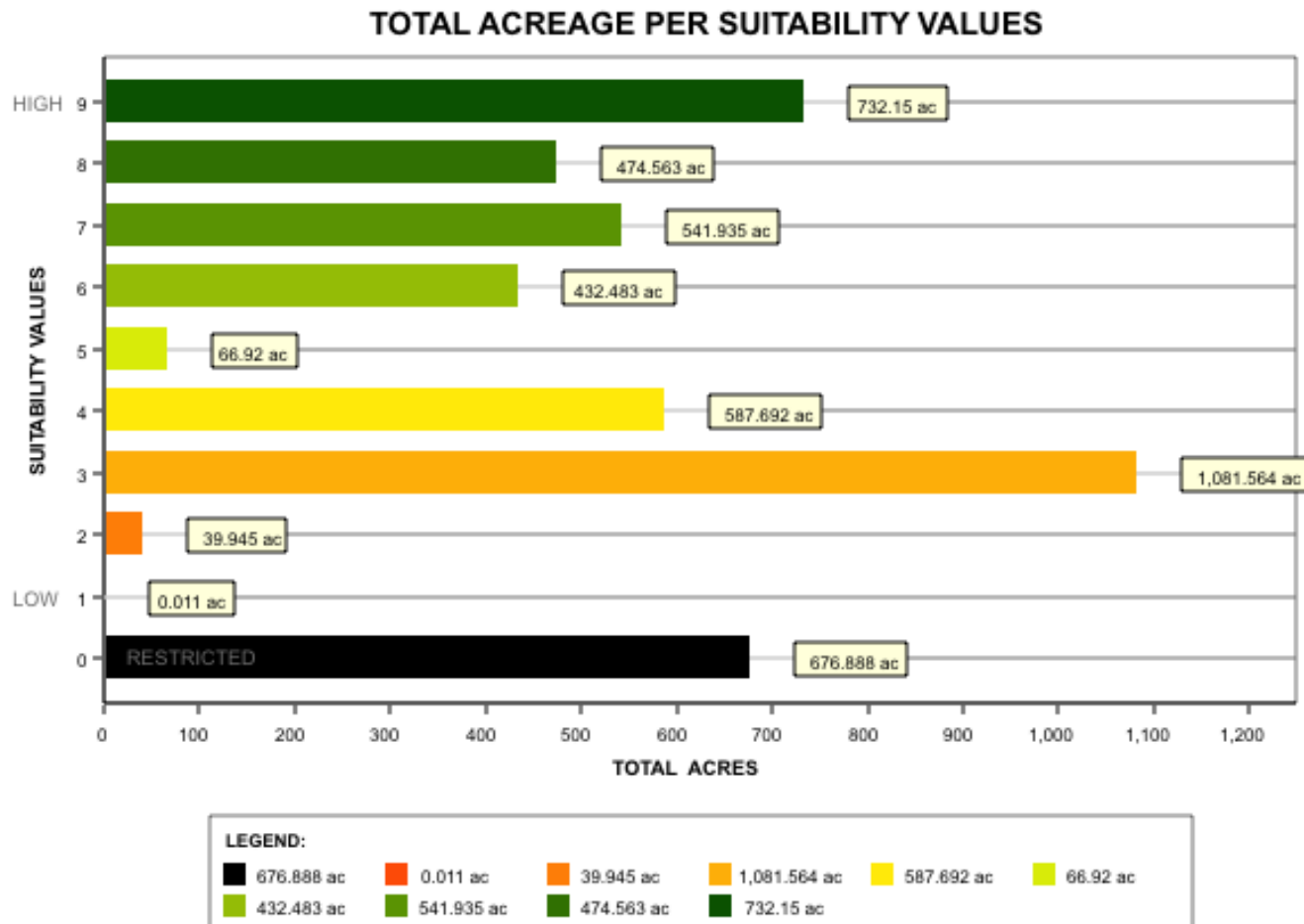


5%

Results: Composite Suitability for Green Infrastructure



Results: Composite Suitability for Green Infrastructure



High suitability value numbers indicate high suitability. Data derived from GI_Overlay_Dissolve shapefile.

Recommendations: Next Steps

1. Create an interdepartmental task force to address goal-setting, planning and internal policies, such as:
 - Develop a stormwater infiltration goal and policy to guide airport capital projects going forward.
 - Develop GI goals and metrics as well as a standard operating procedure for considering GI consistently in airport planning and design.
2. Implement, monitor and maintain pilot GI projects.
3. Develop plan for distributed GI systems throughout the airport site to manage stormwater sustainably.
4. Conduct additional research to address data gaps to optimize GI planning and implementation.



ATL's Stormwater Goal

OVERALL GOAL: Adopt the City of Atlanta's policy to use Green Infrastructure and runoff reduction practices that require the first 1.0" of rainfall to be managed on-site.

The airport generates approximately 102 million gallons of runoff during each 1" (over a 24-hour period) storm. If we achieved even 1% of the goal per year we would be infiltrating 10 million gallons of runoff within 10 years.



Progress report

- HJAIA partnered with American Rivers and completed the Land Suitability Analysis for Green Infrastructure: Stormwater Management at HJAIA to look holistically identify opportunities to incorporate Green Infrastructure(GI).
- Adopted the City's 1-inch rain event infiltration policy
- Received a US EPA Sec. 319 Clean Water Act grant
- GI methods have been proposed for a number of new projects
 - Tree wells
 - Filter planter boxes
 - Bioinfiltration cells
 - Porous paving



Proposed projects:

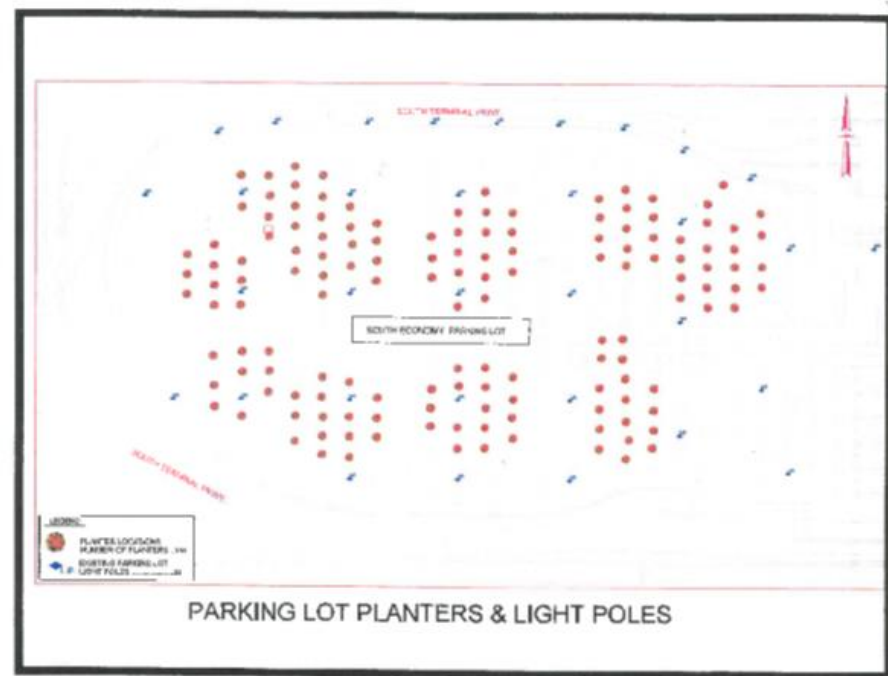


Biofiltration planters



Biofiltration for new
Sullivan Road parking lot

Proposed Projects



Tree wells for existing parking areas

Questions?

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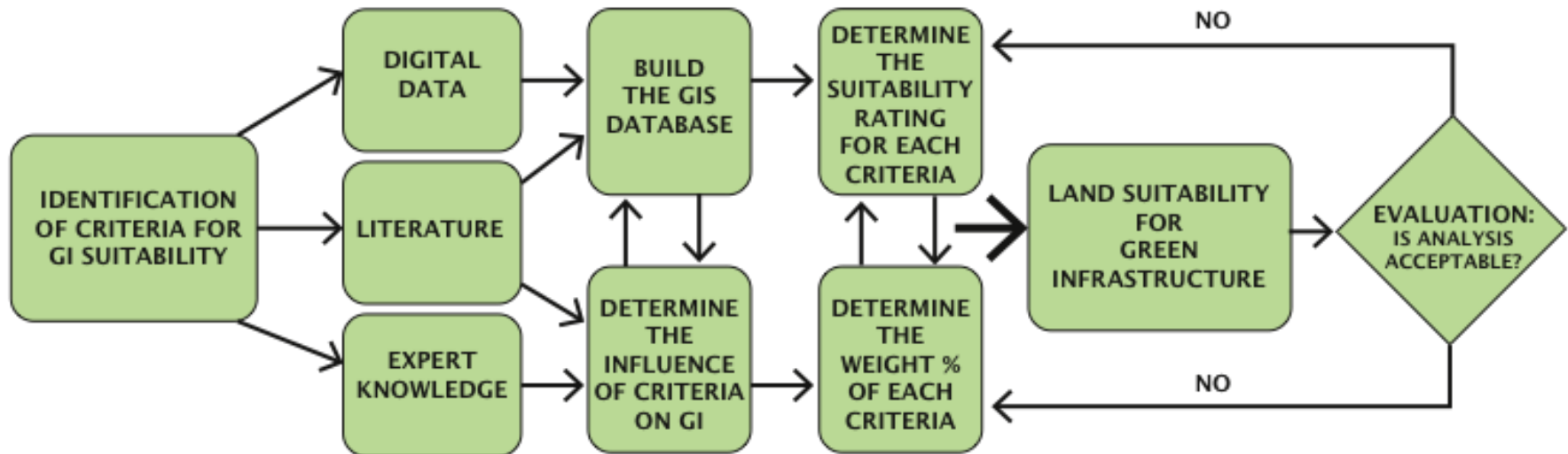
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(American Rivers) and Andrew
Bailey, Dr. Jon Calabria & Alfie
Vick (University of Georgia).
Suitability analysis performed by
Andrew Bailey.*

Methodology: Workflow



Steps

- 1) Identification of Criteria
- 2) Data Collection, Creation, and Management
- 3) Initial Suitability Mapping
- 4) Reclassification of Data (1 to 9 by 1)
- 5) Weighted Overlay Analysis
- 6) Evaluation and Site Selection

Methodology: Workflow

