Floral Park Stormwater Management Design
Auburn University - Biosystems Engineering
Client - City of Opelika
Team 7 - Joseph Carthel, Caden Hannah, Alyssa Malonson, Jessie Williford

Introduction
- Project site is Floral Park, located in Opelika, Alabama.
- Total site area is 23 acres.
- The client requests that the stormwater management system is updated.
- Other client requests include additions of a water feature, a secondary parking lot, pavilions, new sports field, and a playground.
- Appropriate site grading will be performed for the stormwater management plan and new site features.

Objectives
- Design a stormwater management system to improve water quality and decrease runoff volume by directing and storing runoff in excess of pre-development while maintaining the cleanout velocity of 2 ft/s, within a budget of $150,000, while following local, state, and federal guidelines.
- Design should be sustainable, integrate into existing infrastructure, and have capacity for future park expansion ensuring long-term park viability.
- Design a low-impact land grading plan for Floral Park in Opelika, Alabama within its 23-acre boundary using the park’s existing topography and natural characteristics, accounting for the proposed site features.

Methods
- Surface-runoff calculations made using the Rational Method.
- Stormwater network sized to accommodate a 25-year storm with a 24-hour duration.
- Minimal land grading designed for low-impact development.
- Bioretention cells implemented to slow and reduce the flow of water leaving the park and improve water quality.

Grading Plan
- Building and pavilion sites elevated above natural ground and leveled.
- Proposed soccer field at consistent slope, drains in one direction.
- Proposed parking lot raised and drains toward the proposed bioswale and the bioretention cell.

Cost Estimate

<table>
<thead>
<tr>
<th>Management Practice</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Grading</td>
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<td>Hydrology Infrastructure</td>
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<td>Bioretention</td>
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<td>Buffer Vegetation</td>
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<td>Total</td>
<td>$98,186</td>
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</tbody>
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Summary
- Surface runoff in the park increased with new impervious features.
- The bioretention cells offset the addition of storm water through increased infiltration.
- The grading plan directs the stormwater to the intended inlet.
- Stormwater pipes sized to account for future park growth.

Acknowledgements
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