Marcellus by Design
Eco-Tourism Exploration
Mayer // Lyons
Fall 2013
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"Travel makes one modest. You see what a tiny place you occupy in the world" - Gustave Flaubert
Intro

Problem Statement:
Without reinvestment, the economy in Sullivan County will return to its pre-Marcellus stagnation.

Project Description:
“This project proposes the development of an eco-tourism destination funded through natural gas development. Through investigation of sustainable strategies and low-impact development, exploitation of the needs of the gas industry and recreational potential of Sullivan County, the resort will serve as an educational vehicle and catalyst for future tourism development.”

Benefits/Goals of Project:
- Revitalize the local economy
- Provide service jobs
- Catalyst for future designs
- Provide for new recreational and tourism opportunities
- Put the beautiful landscape of Sullivan County on display
Gas development has been a huge source of capital in Sullivan County, producing over 3 billion dollars, as well as over a quarter of a billion dollar in royalties to landowners. The current unemployment rate combined with the success of the nearby Poconos tourism destination, we think that funding eco-tourism resorts through money that comes from gas development will not only bring in economic benefits to the surrounding communities, but will also serve as a precedent for further design.
**Suitability Analysis**

**Roads**

Access is important for a sight like this, therefore goals were to put the design in the vicinity of major roads in the county. In order to keep privacy and lessen the noise impact, land within one mile of the major roads was given the least score. Lands between 1 and 3 miles scored the highest for ease of access and maximum seclusion. Land outside of 3 miles scored in the middle as it was very secluded, but further from road access.

**Towns**

Locations to towns is of great priority for visitors to be able to access shops and eateries. Being located close to a town can also be a concern for a recreational destination. Land within a 1 mile radius of town scored the lowest value, along with land located outside of 6 miles. Land between 1 mile and 3 miles scored the highest for ease of access and valued seclusion. Lands between 3 and 6 miles receive an average score based on proximity and seclusion.
Suitability Analysis

Recreation Spots

The importance of connecting this site to other recreational opportunities in Sullivan County was valued high. A scoring system based on proximity was used to value land closer to these recreational spots throughout the county. The highest value land was located within 1 mile of these sites, the average value was between 1 and 3 miles, and the least valuable land was outside of 3 miles of each recreational destination.

Streams

Location within a 300 foot buffer of the stream was deemed least suitable. The highest rating was given to the area between 300 and 1000 feet from the stream. Anything outside of the 1000 feet was scored a 2. Locating the site close to a stream, but not within an environmentally important corridor was the top priority for visitor access.
Suitability Analysis

Lakes
Locating the sight near water recreation sites such as lakes was another top priority. Lands within 1 mile scored the highest, land between 1 and 3 miles scored average, and land outside of 3 miles scored the lowest.

Deteriorated Land
Through the goals of the design, utilizing abandoned or deteriorated lands would be an ideal situation. The lands identified as such were given the highest of the score, while lands outside of this were given the lowest score.
The image on the left is a suitability analysis map that done for the entire county to help guide us to the best location for our site. In this, we took into account things such as proximity to towns, roads, water sources, and deteriorated landscapes to lead us to potential site locations. The darker the color, the more suitable that location is for our site. As you can see, there are five potential areas that would be great, but four out of those five locations are within public lands, so that leaves us to one location, which is roughly 1000 acres of abandoned mine land, just south of Mildred.
Site Analysis

After identifying the location, this site visit showed promise that an eco-tourism destination would be suitable on this landscape, lending itself to a low impact design.

Further site analysis identified land covers, existing roads, and elevation change. It is important to utilized the deteriorated land cover as the core space for design, because that will minimize impacts on the current state of the landscape.
Amenity analysis was a crucial part of creating an effective design. On the left is an amenity demand diagram, which helps us to determine what people are interested in having in a site like this. Here, the larger bubbles are amenities that are in more demand than others. On the right is an amenity inter-relationship diagram. This helps determine how the site lends each program on site to one another.
To further understand the site, we constructed a **physical model** showing contours on site, which helped to determine the **best routes** for trails. Attempting to comply with our **low impact** theme, the **site was used to guide** where the trails would be, rather than placing trails wherever we pleased.
Final Site Master Plan

- Family Oriented
- Structured Recreation
- Couple Oriented
- Wetland
- Archery Course
- Welcome Center
This slide showcases the **sustainable design benefits** implemented throughout this resort. The first chart covers **stormwater**. Without doing any stormwater best management practices (BMP), stormwater that runs off site annually would reach over **400 thousand gallons**, which is **60%** of an Olympic sized swimming pool. With the use of BMP’s, which include **green roofs** and a **retention wetland**, we can lower that number by **75%** to about **100 thousand gallons**. Additional BMP’s could lower that number to **0%** runoff. By utilizing space on site for agriculture, we can **feed all occupants** for the duration of their stay by devoting less than **10%** of the total site for food production. For our **energy needs**, through the exploration of **solar panel technology**, we can take the site entirely **off the grid**, making it **self-sustaining** with only using **1.37** acres of land.

### Solar

#### 40 kWh Per Day

**226 Operating Days**

Estimated Usage Per Year : **632,800 kWh**

<table>
<thead>
<tr>
<th>Solar Panel Production</th>
<th>Roof Coverage</th>
<th>Alternative Production Requirement</th>
<th>Totals</th>
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</thead>
<tbody>
<tr>
<td>Number Of Panels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>81</td>
<td>280</td>
<td>361</td>
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<table>
<thead>
<tr>
<th>Acres</th>
<th>.0038</th>
<th>.31</th>
<th>1.06</th>
<th>1.37 Acres</th>
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<tr>
<td>kWh</td>
<td>1752</td>
<td>141,912</td>
<td>490,888</td>
<td>632,800</td>
</tr>
</tbody>
</table>

Total Solar Percentage of Site : **0.14%**

### Food

- **70 People**
- **2 acres** required per person per year
- Annual occupancy rate is **62.7%**
- Requires **86 acres** of site for food production
- **8.6%** of total land on site will be devoted to food production

### Stormwater

<table>
<thead>
<tr>
<th>Natural Forest</th>
<th>Design Without BMP's</th>
<th>Design With BMP's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runoff Per Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.33&quot;</td>
<td>2.79&quot;</td>
<td>0.74&quot;</td>
</tr>
<tr>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>47,000 gal</td>
<td>404,000 gal</td>
<td>107,000 gal</td>
</tr>
<tr>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>7%</td>
<td>61%</td>
<td>16%</td>
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Olympic Pool | Olympic Pool | Olympic Pool
Storyboard: Arrival

Entering the site will be like entering an entirely different world. Immediately, guests will be immersed within the landscape. The rolling hills, lush forest cover, and interaction with wildlife will come full circle into one holistic experience with nature unlike any other.
Storyboard: Lodging

While visiting, guests can enjoy many wonderful views from either our couples retreat, or our family retreat. From the front porch, guests can enjoy their morning coffee while being surrounded by a vast panoramic view of the beautiful Sullivan County Landscape.
Storyboard: Relaxation

Relaxation time can be spent at our couples spa, or here at the infinity pool. The effect that is created here is that the water appear never-ending and looks as if it is flowing straight into the landscape.
While visiting, guests can also enjoy the 3D archery course that will be on site. It provides a unique recreational experience, and really helps to relate to the surrounding communities, seeing that the vast majority of residents in Sullivan County are avid hunters.
Another form of recreation on site will include a hiking trail that is just over 3 miles long. Along this trail, there are many opportunities to take in 180-degree views of the landscape, which will be fantastic chances to snap a photo or do some bird watching.
Storyboard: Biking Trails

In addition to the hiking trail, there will be a biking trail that will be roughly 5 miles long. This trail will include stretches through the forest, as well as through meadows, which can act as an experience where the landscape will be revealed through the forest clearing. Also, there will be flat stretches, as well as some hills for the more intense mountain bikers.
Design Implications

Final impacts from this design include various service jobs created and over 1.5 million dollars in annual sales. This design can also attract more people to local businesses throughout the area, as it will bring in approximately 16,000 visitors per year. Finally, the design can serve as a precedent for sustainable practices and alternative economic growth in Sullivan County.
Sources

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