



Bioregional Assessment

The Visioning Program encourages the use of sustainable design, a philosophy that human development is integrated with the natural world and should exemplify the principles of conservation for future generations.

An important component of sustainable design is bioregional assessment. By understanding the natural systems that influence our communities and landscape we can plan and design in accordance with those systems. The landscape architect and interns conducted an inventory of its natural resources, including both biological and physical characteristics, such as geology, climate, soils, vegetation, topography, and drainage.

Vegetation

The native vegetation for the region is tall grass prairie which supported the fauna of the historic Midwest grassland, including deer, bison, elk, and antelope. Since the settlement of Iowa in the 1840s most of the native prairies have been tilled up for use as agricultural fields. Most of the land surrounding Madrid is used for agricultural purposed, primarily row crops. Some areas, closer to the river, that are not suited for agricultural production are new growth and flood plain forest communities.

Climate

The climate of Madrid is characterized by a regular annual weather cycle typical of Midwest, a humid temperate region. The average temperature varies from 74°F in the summer and 18°F in the winter, although much higher and lower daily temperatures occur annually. June is the wettest month with an average of over 5 inches of precipitation, while January is the driest with under an inch of precipitation on average.

Topography and Drainage Patterns

The community of Madrid sits approximately 1,000 feet above sea level. Portions of the community lie in a flood plain as indicated by the FEMA (Federal Emergency Management Agency) 100 year boundary on the map. Since Madrid is near the flood plain and the Des Moines River, annual flooding occurs. There is a drainage way that snakes through the town, flooding on occasion. The City has taken steps to manage this flooding.

Geology

Bedrock consisting of sedimentary layers of shale, sandstone, and limestone deposited during the Mississippian and Pennsylvanian periods about 360 million years ago are common in central Iowa and in Madrid. Coal deposits are included in these formations. Around the turn of the nineteenth century, coal mining, was an important part of the economy of Madrid. Windblown soils, alluvium, and further glacial deposits contribute to the overall fertile soils in central Iowa, including those around Madrid. Foundations for buildings can be constructed on these relatively stable soils.

Soils

Soils are formed by the weathering of bedrock over thousands of years and the addition of wind or waterborne sediments, and organics added from vegetation. The soils in Boone County can be broken down into light and dark-colored soils. The dark soils lie beneath where the upland prairie once existed. These soils consist of primarily loam. The light soils are underneath where forest was when the county was first settled. They are composed of silt and loam.



Johnson Family Trailhead. Source: Nate Schlorholtz



High Trestle Trail. Source: Sifei Liu



Saylorville Wildlife Management Area. Source: Nate Schlorholtz

Madrid

Bioregional Assessment

Landscape Architects: Brett Douglas, ASLA & Grant Thompson, Assoc. ASLA, Genus Landscape Architects
 LA Interns: Nate Schlorholtz, Sifei Liu, ISU Landscape Architecture Extension

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development

