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Marcellus Shale Exploration in Greene County, Pennsylvania: A Land Cover Study of the Cumulative Effects of Forest Fragmentation in Well Pad Site Selection and Construction

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MARCELLUS SHALE EXPLORATION IN GREENE COUNTY, PENNSYLVANIA:
A LAND COVER STUDY OF THE CUMULATIVE EFFECTS OF FOREST
FRAGMENTATION IN WELL PAD SITE SELECTION AND CONSTRUCTION

A Thesis

Submitted to the School of Graduate Studies and Research

In Partial Fulfillment of the

Requirements for a Degree

Master of Science

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Title: Marcellus Shale Exploration in Greene County, Pennsylvania: A Land Cover Study of the Cumulative Effects of Forest Fragmentation in Well Pad Site Selection and Construction

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The exploration and development of the Marcellus Shale geologic formation has increased greatly over the last decade. Of all the states that share this resource, Pennsylvania has the most land area within the formation. The development of this resource has caused environmental concerns due to the controversial hydraulic fracturing process along with water and air pollution. An issue that also deserves attention: the fragmentation of forested land. This research will examine the cumulative effects between forest fragmentation and the Marcellus Shale pad site selection. This research assumes that Marcellus Shale pad development is having an adverse impact on contiguous forest land-cover. By using spatial data of Marcellus Shale pad sites and satellite imagery from pre- and post-pad development, a calculation of cumulative impacts on forest-land cover can be developed to quantify the amount of acreage that has been transformed from a forested use to an industrial use.