The benefit/cost ratio for this project is estimated to be 506:1

The estimated number of labor hours for the 2017 project is based on the number of hours that were spent for the 2016 project. The estimated soybean yield in bushels from the proposed total project area is based on 2016 data from the USDA, National Agricultural Statistics Service (NASS) Indiana County Estimates reported February 24, 2017. Soybean yield estimates in bushels were not available in the report for Vigo, Perry, Clay, Crawford, Floyd or Owen counties, so that data is omitted from the total estimate. The estimated price per bushel in Indiana is based on the USDA, NASS May 2017 report. Potential benefits from this project are estimated as soybean crop values protected by management of kudzu in the proposed total project area.

Kudzu is a host plant for Asian soybean rust (*Phakopsora pachyrhizi*) which has been shown to reduce soybean yields from 10 to 80% with yield losses of 10-50% being quite common (CRS 2005). It is also a host for the non native bean plataspid (*Megacopatera cribraria*) which has shown to cause crop loss of up to 50% in soybeans and other legumes in its native region (USDA 2010). The invasive nature of kudzu could also allow unmanaged kudzu growth to take over production acreage in those soybean fields that are in close proximity to kudzu infestations.

The number of kudzu sites and size of the site in each county is small. Therefore, assume that the soybean acres at risk to the above pests are also small, and not all the soybean acres in the county are impacted by kudzu and the above pests. It is estimated that 10% of the soybean acres would be at risk and associated with the kudzu sites.

**Costs:**
Herbicide application treatments, soil erosion work and brush clearing for entire project (includes contractor labor and product costs) $69,546

IDNR staff labor costs $38,571
(69 sites x 2 days each = 138 days, x 7.5 hours per day = 1,035 hours, x $24.68 per hour = $25,544 + 51% of total cost as administrative costs ($25,544 + $13,027) = total DNR labor costs.)
<table>
<thead>
<tr>
<th>Total Costs</th>
<th>$108,117</th>
</tr>
</thead>
</table>

**Potential Benefits:**
Total soybean crop value protected in the proposed project area.

(54,924,000 bushels of soybeans produced in the proposed project area in 2016, x $9.97 per bushel=$547,592,280 x 10% = $54,759,228)
*Assume 10% of soybean acres at risk to impact from kudzu associated pests and/or invasive growth from kudzu.

<table>
<thead>
<tr>
<th>Total Benefits</th>
<th>$54,759,228</th>
</tr>
</thead>
</table>

**Benefit/Cost Ratio** = $54,759,228 : $108,117