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# 3. *Evaluation Process*

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To evaluate the illustrative alternates, a list of preliminary factors was first chosen by the consultant. Public input was then solicited to amend the list. This occurred through the June round of public meetings. During the August round of public meetings, citizens were asked for their input to prioritize the factors. The list was also posted on the project's web site ([www.mdot.state.mi.us/m15](http://www.mdot.state.mi.us/m15)) for input until September 15, 2000. For the first-level screening of alternatives, the preliminary list of evaluation factors is shown in Figure 3-1.

To manage the evaluation database, a geographic information system (GIS) is being used. GIS is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information. For example, historic sites, farmland, wetlands, and other distinct areas can be mapped. With this background information, one can determine the extent of impacts of a given roadway alternative.

Land use data are available from several sources, including the Michigan Department of Natural Resources through their MIRIS system, which is designed to map Michigan's natural resources. This information is combined with information from Oakland County Planning available in ARCVIEW and information gathered in the field. Data are aggregated into categories such as residential development, industry, commercial/office locations, institutions, parks, wetlands, farmland, quarries and landfills, woodlands, and utility corridors.

In addition to the GIS-based information discussed above, the consultant has addressed project need by using a travel simulation computer model to assign forecast traffic in the year 2025 to a network of major roads in the area, including a facility to represent the proposed M-15.

## 3.1 Evaluation Factors

In August the public was asked to complete the form shown as Figure 3-1. The nine factors were assigned a number so that they were ranked from 1 to 9, with 1 being most important and 9 being least important. Those who wished to participate by mail, email, or fax could do so until September 15. A composite ranking of citizen input as a group was then determined. The consultant also weighted the factors. These data are used to evaluate the illustrative alternatives and reduce the options to those that have a better chance of addressing the needs of the M-15 corridor. This smaller set of alternatives will be screened a second time later in the study with additional data and public input.

*How Important Are These Factors?*

We want to know how important you believe the following factors are when trying to improve the road system in the M-15 Corridor.

To provide us your opinion, please rank the following factors “1” through “9”, with “1” indicating the factor you believe is most important and “9” indicating the factor you believe is least important. Use each number only once. When finished, return your form to a project representative.

Your opinions will be used to evaluate the alternatives. Thank you.

<u><i>Factor</i></u>	<u><i>Rank</i></u>
Displacement of Houses •	_____
Effects on Historic Properties •	_____
Effects on Waterways •	_____
Effects on Farmland •	_____
Effects on Wetlands •	_____
Effects on Parks/Recreation Areas •	_____
Community Cohesion •	_____
Engineering Difficulty •	_____
Traffic Flow •	_____

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Figure 3-1  
First-level Screening  
Evaluation Factors

### 3.1.1 Displacements for Right-of-Way

Estimates of households potentially displaced by a roadway alternative are based on a knowledge of existing right-of-way and an assumption of a future right-of-way dependent on the type of roadway (alternative) being evaluated. Aerial photography is sufficiently detailed to determine the structures that will be taken. Field verifications determined those that are residential units.

### 3.1.2 Historic Sites

The *National Register of Historic Places* is a list of resources that are identified as having significance based on a variety of criteria related to history and its interpretation. These may include objects, property, structures, and the like. They are protected by both Section 106 of the National Historic Preservation Act and Section 4(f) of the Department of Transportation Act of 1966. In this analysis, the number of National Register listed properties and/or districts potentially impacted are counted. Later a field inventory will seek out sites that may be eligible for the Register, but have not yet been listed. Sites of local historic significance will also be plotted. Field surveys will seek undiscovered archaeological resources.

### 3.1.3 Waterways and Waterbodies

Rivers, streams, lakes, ponds and drains are especially sensitive to construction and highway runoff. A count of the number of times an alternative affects (crosses or touches) a waterway is an indicator of impacts to the natural environment. In this analysis, the number of such effects is noted.

### 3.1.4 Farmland

Most of the farmland in the region has been converted to other uses, but frequently a high value may be placed on what remains by both the farm owners and the public at large. Additionally, farmland considered as prime and/or unique, or having statewide or local significance, requires special consideration under the federal Farmland Protection Act. This law does not prohibit use of such farmlands, but does require consideration of alternatives that minimize farmland use. Finally, farmland may be enrolled in Michigan's Act 116 program, which allows deferring property taxes while the land is enrolled and requires payback if the land is removed from the program. Such land will be defined. At this first screening of alternatives the process is focused on calculating the extent of farmland taken (number of acres) by each alternative.

### 3.1.5 Wetlands

Wetlands are protected by state and federal laws because of their important ecological role. If impacts to wetlands are unavoidable, as is likely for a project of the proposed scope of M-15, there must be a demonstration that there is no practicable alternative to the impact. And, the impacts must be mitigated. Mitigation usually involves replacing wetlands at a ratio of greater than one to one. For purposes of this evaluation, National Wetland Inventory maps, produced by the U.S. Fish & Wildlife Service were reviewed and field work conducted to define the wetlands likely to be taken by each alternative.

### 3.1.6 Parks/Recreation Areas

Parks, wildlife refuges and other publicly-owned and used lands are protected by Section 4(f) of the Transportation Act of 1966. This act also protects properties on or eligible for the *National Register*, as noted above. But, it does not extend to private parks (e.g., nature preserves) and recreation areas (e.g., ball fields). Parklands purchased through the Land and Water Conservation Fund, referred to as Section 6(f) lands, require approval by the National Park Service before conversion to other use. For both 4(f) and 6(f) properties, avoidance is the most prudent course of action.

The number of parks/recreation areas likely to be directly impacted is estimated by use of aerial mapping and field work.

### 3.1.7 Community Cohesion

This evaluation measure focuses on how a new or reconstructed road is received by a community. Cohesion is considered to be impacted to some degree if social exchange and/or the services (e.g., fire, school transportation) now provided are likely to be affected by the proposed roadway improvement. Impacts are rated as high, medium or low based on field review and professional judgment. It is noteworthy that a high impact is negative.

### 3.1.8 Engineering Difficulty

Engineering difficulty reflects the magnitude of challenges an alternative may encounter. These relate to the extent of utility interference, the number of water or railroad crossings, the presence of problem soils or wetlands, and the nature of the topography. Engineering difficulty is also rated high, medium or low based on field review and professional judgment. A high impact is negative.

### 3.1.9 Traffic Flow

Traffic projections have been made using SEMCOG's travel model. It covers a seven-county region that includes Oakland County, but not Genesee. The SEMCOG model was "extended" into Genesee County by using the zonal structure and data from the Flint area model. The key information the model was asked to produce is the amount of traffic remaining on M-15. The more traffic left on M-15 the lower the performance of an alternative to widening it.

In August, a land use workshop was conducted to provide additional insight into potential changes in growth patterns. The "extended" model, with its adjusted data, is also used to assess whether shifts in growth combined with non-M-15 improvements can eliminate the need to widen M-15.

## 3.2 Factor Weightings

More than three dozen people weighted the evaluation factors. Nine members of the consultant team also were involved in the process. The latter included four engineers and five planners.

The results indicate both the citizens and the consultant believe the top two factors are displacements of households and impacts to wetlands with virtually identical total weights (citizens 32.57%, consultant 32.59%) (Table 3-1).

Table 3-1  
First-Level Screening  
Evaluation Factors Ranking/Weighting

Evaluation Factor	Citizens	Consultant
Displacements	16.55% (1)	17.53% (1)
Historics	10.06% (6)	10.62% (6)
Waterways	13.45% (3)	11.11% (4/5)
Farmland	11.17% (4)	5.19% (9)
Wetlands	16.02% (2)	15.06% (2)
Parks	7.49% (8)	6.17% (8)
Cohesion	10.41% (5)	11.11% (4/5)
Engineering	4.97% (9)	8.89% (7)
Traffic	9.88% (7)	14.32% (3)
	100.00%	100.00%

Source: The Corradino Group

At the other end of the scale, the citizens ranked traffic, parks and engineering seventh, eighth and ninth, respectively. The consultant also had parks in the eighth position but with lesser weight than the citizens (citizens 7.49%, consultant 6.17%) and had engineering seventh rather than ninth but with a higher weight than the citizens (citizens 4.97%, consultant 8.89%). The big differences are that the consultant believes handling traffic is the third most important factor assigning a weight of 14.32 percent compared to the citizens' 9.88 percent; and, the consultant scored farmland impacts last compared to fourth for the citizens group.