

To

Larry Barta, WisDOT SW Region

From

Connie White, HNTB Corporation



Date

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Subject

US 12 Fort Atkinson EIS
Concept J Preliminary Environmental
Analysis and Alternatives Analysis

WisDOT Project Number

3575-09-01

**Technical
Memorandum**

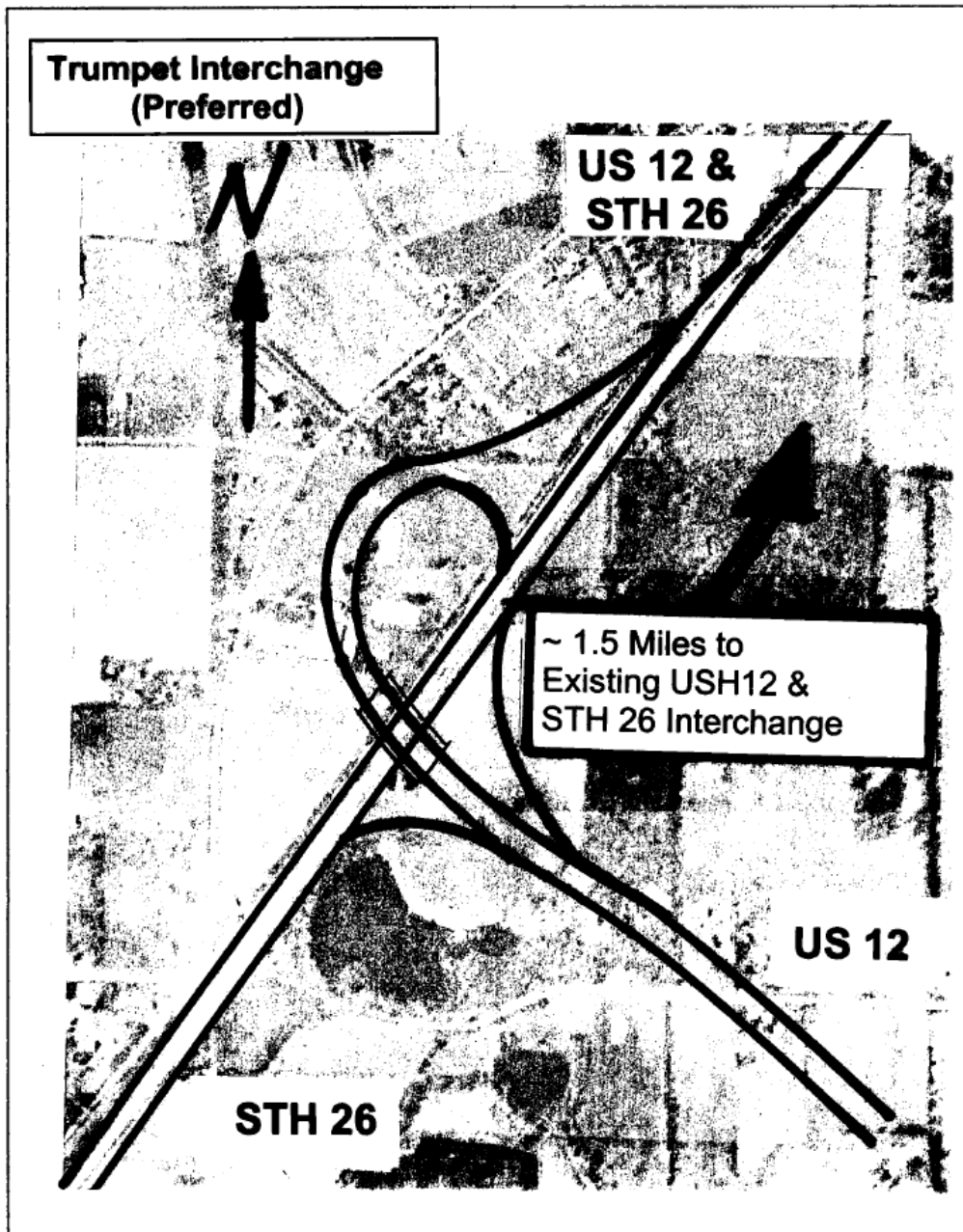
WisDOT requested that HNTB Corporation analyze the VE Study Concept J and compare it to the other southern bypass alternatives, Alternatives 7 and 7a, to better understand the potential impacts and to weigh the differences. The intent of this analysis is to document WisDOT’s determination to not further pursue Concept J.

Description of Concept J

Concept J was recommended for analysis by the project’s Value Engineering study team as a possible alternative for the Fort Atkinson bypass. See Figure 1. Concept J is based on the Alternative 7a alignment, but proposes a different location and design of the US 12 bypass interchange at WIS 26. Concept J follows the alignment of Alternative 7a from the US 12 Bypass of Whitewater westerly to a point where it diverges on a more southerly alignment near the existing intersection of Creamery Road and McMillen Road. From there it continues west toward a proposed trumpet interchange located approximately one mile south of the existing WIS 26 and Business 26 interchange. See Figure 2.

The VE study team determined that Concept J held a number of advantages, one being that through traffic to and from Business 26 (Janesville Avenue) could be maintained on a more direct route rather than being routed through a separate diamond interchange at Commerce Parkway as is proposed in Alternatives 7 and 7a. Another Concept J advantage cited was lower right-of-way costs because the interchange would require less right-of-way than the interchanges proposed in Alternatives 7 and 7a. The VE study team acknowledged that they did not have adequate time or resources to verify real estate information. Indeed, subsequent analysis indicates that the location of the interchange would be over a platted residential subdivision.

Figure 1: Value Planning Concept J



Source: Robinson, Stafford & Rude, Inc. Value Planning Study Report US 12 WIS 26 North Fort Atkinson Interchange/Whitewater Bypass Final Report. March 2007.

Preliminary Impact Analysis

A comparison of the bypass alternatives was made applying the same initial screening criteria to Concept J as was applied to each of the alternatives in the DEIS. Given that the VE study team did not have sufficient time to lay out their proposed Concept J interchange, the probable footprint was estimated as shown in Figure 1. Subsequently, HNTB developed a preliminary design for the Concept J interchange and mainline using WisDOT design standards. The corridor width used for this impact analysis equaled the corridor width used for the bypass alternatives in the Draft Environmental Impact Statement (DEIS). This 400 foot wide corridor is shown in

Figure 2. Table 1 summarizes the potential impacts within the study corridor and is formatted similar to the “Impacts Summary Chart” that is found in the DEIS. Natural resource impacts of Alternatives 7 and 7a were updated using newer aerial photographs than were available for the DEIS, providing a fair comparison of all three bypass alternatives.

Figure 2: US 12 Fort Atkinson Bypass Alternatives

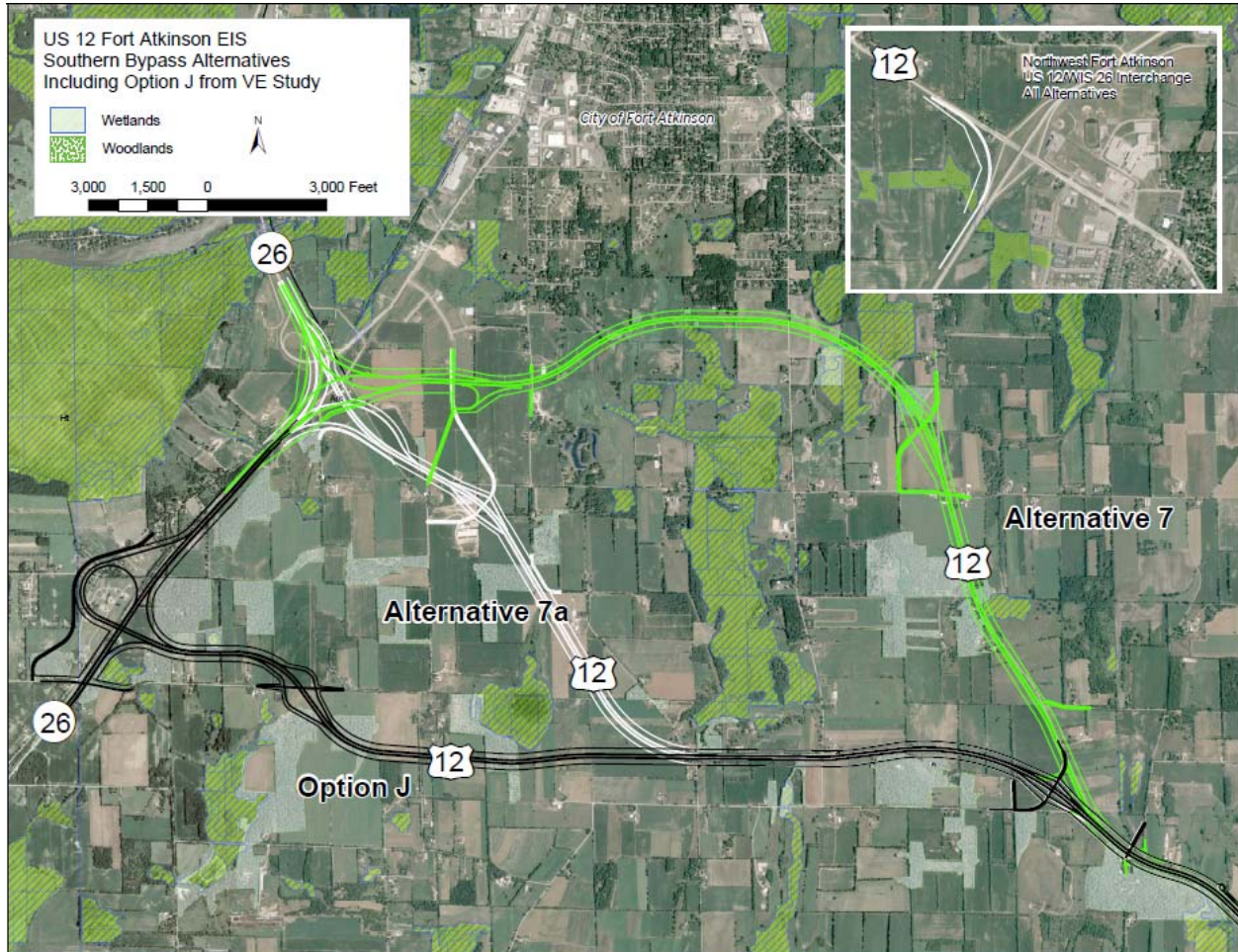


Table 1: Summary of Impacts of Bypass Alternatives

	Alternative 7	Alternative 7a	Concept J
Residential in study corridor	32	25	81
Businesses in study corridor	1	1	1
Wetlands in study corridor (acres)	14.5	1.5	2
Wetlands in alignment path (acres)	4	1.5	2
Woodlands in study corridor (acres)	29	20	49
Woodlands in alignment path (acres)	6.5	3.5	11.5
Allen Creek crossings	1	1	1
Farm Unit Relocations	1	2	0

Design Issues

As stated earlier, the VE study’s interchange and alignment drawing was cursorily prepared due to time limitations. So, for this analysis, HNTB sketched a preliminary design that more closely follows standard engineering requirements. This enabled a fair comparison of Concept J’s right of way requirements against the other bypass alternatives.

The proposed Concept J US 12/WIS 26 interchange loops were drawn with a 45 mph design speed and the ramps have a 55 mph design speed. In addition, the study did not have sufficient time to analyze local road access impacts. The primary impact is that the jug-handle interchange being built in a few years as part of the WIS 26 4-lane expansion is incompatible with the Alternative J/WIS 26 interchange. Moving the Concept J trumpet interchange far enough north to avoid that jug-handle was not an option. This would have reduced the spacing between the Concept J trumpet and the existing WIS 26/Business 26 trumpet interchange to under 1/2-mile. To address this, a new service interchange was added to Concept J at Pond Road a mile or so east of WIS 26. This interchange was not accounted for in the VE Study.

The one-mile spacing between Concept J’s proposed trumpet interchange at US 12 and WIS 26 and the existing WIS 26 and Business 26 interchange is a minimum standard distance, however, traffic safety and operations would likely become a concern as traffic volumes increase in the future. By year 2035, merge and weave conflicts could be expected. Additional auxiliary lanes would help alleviate this problem, but would require additional investment in the WIS 26/Bus. 26 interchange.

Also, the Pond Road service interchange on the Concept J alignment has less than desirable design features. The skewed angle of the Pond Road crossing at the interchange with US 12 is greater than the desirable maximum. Two horizontal curves had to be added on the US 12 mainline alignment to create this skew. Ramp merges and diverges occur within these curves. The Pond Road interchange is also too close to the system interchange to the west. Placement of this interchange an adequate distance from the trumpet interchange will not be possible without impacting additional wetlands. When added together, they compromise the safety of the Concept J.

Residential

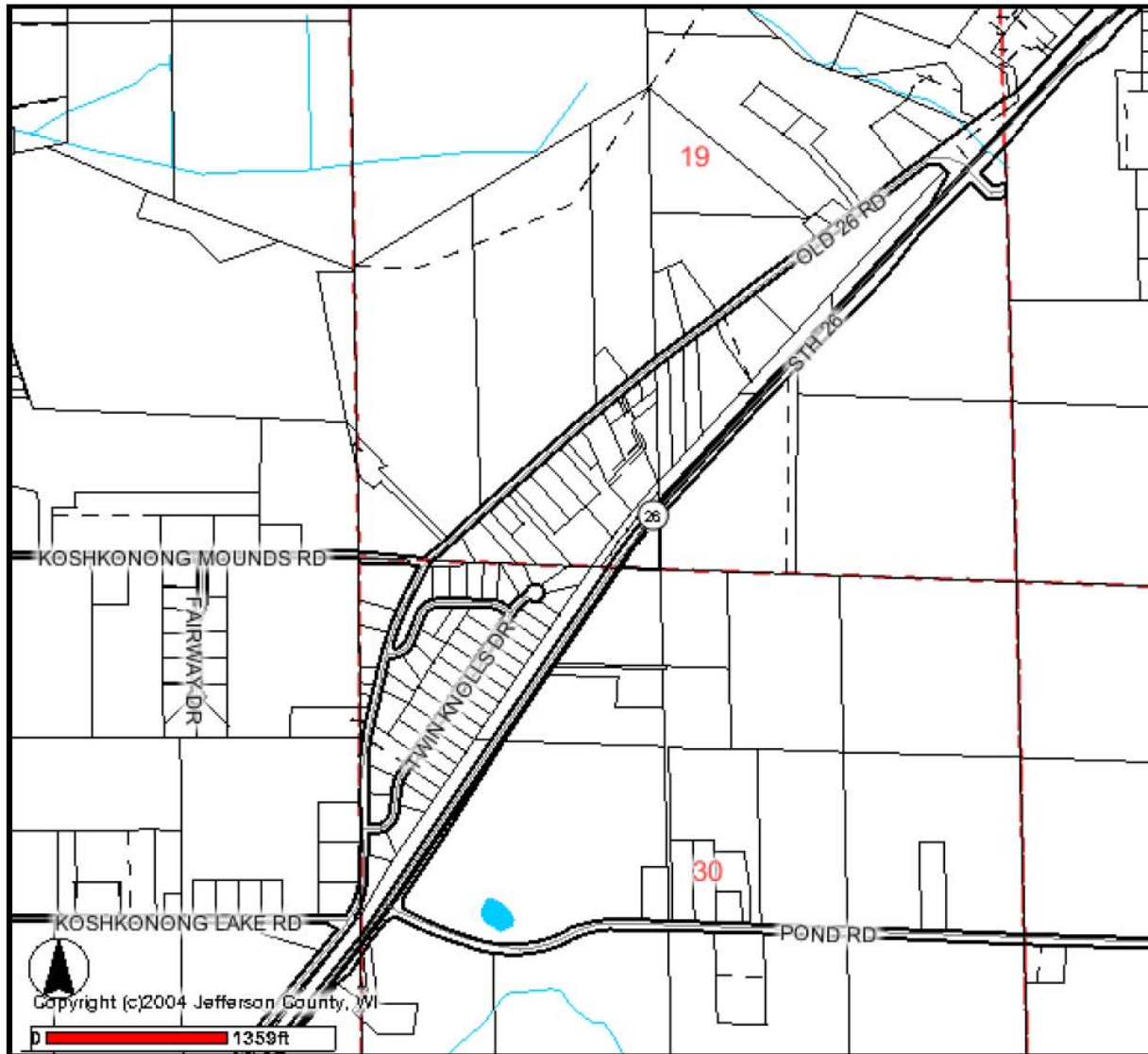
HNTB tallied the number of residential units that are within the 400 foot wide study corridor. The WIS26/US 12 interchange of Concept J is located on top of a relatively recent residential

subdivision. Multiple homes have been constructed in the footprint of the Concept J interchange and there are still a number of vacant lots available for future construction. Preliminary analysis indicates that 81 units are currently in the Concept J study corridor, of which about 20 are currently vacant lots within the subdivision on WIS 26. See Figure 3. The 81 units that would be affected by Concept J would be far greater than Alternative 7, which would affect 32 units, and Alternative 7a, which would affect 25 units.

Acquisition and relocation of the large number of homes within the Concept J interchange footprint as well as residences along the mainline would be significantly more costly than originally anticipated by the VE Study team. To get an idea of the value of this property, HNTB analyzed the “estimated fair market values” provided online at Jefferson County’s GIS website on 12/20/07. From these numbers one can estimate that the current value of the residential lots within the interchange area is about \$7.46 million. Considering the average value of the lots currently built on is over \$215,000, the value of the lots when they are built out could top \$12 million, in today’s dollars.

If Alternatives 7 and 7a are redesigned to accommodate through movements onto and from Business 26, it is not expected that the number of residential relocations required near the existing WIS 26/Bus. 26 interchange will be substantially different because the footprint is not expected to expand appreciably.

Figure 3: Subdivision at the trumpet interchange of Concept J



Source: Jefferson County Geographic Information System. Accessed Online at <http://lrs.co.jefferson.wi.us/jcgis> on 3/24/08 3:55:54 PM

Businesses

All three bypass alternatives affect one business, Saxe's Restaurant on existing US 12 at Twinkling Star Road. Therefore, the number and type of business operations would not be a deciding factor in comparing the bypass alternatives.

Agriculture

All three bypass alternatives will impact agricultural lands, taking a similar amount of right of way. The difference in impacts would be manner in which the alignments cut across contiguously owned and farmed properties. Concept J passes through the greatest number of farm operations, potentially creating 13 farm severances, while Alternative 7 creates six and Alternative 7a creates seven. Concept J would affect 12 farms while 7 and 7a each would affect 20 farms.

Natural Environment

If Concept J was constructed, it is estimated that it would pass through approximately two acres of wetlands and 11.5 acres of woodlands. In comparison to Alternatives 7 and 7a, Concept J has much greater woodland impacts and wetland impacts are comparable to Alternative 7a.

For purposes of estimating woodland acreage, the DEIS relied upon Jefferson County's woodland zoning designation. For this analysis, instead of using woodland zoning, 2006 aerial photographs were used to visually identify wooded areas. This resulted in a greater number of identified woodlands than using the zoning maps. This new method resulted in 10 more acres of woodland in the Alternative 7 study corridor for a total of 29 acres and 1 acre less in the Alternative 7a study corridor for a total of 20 acres. Concept J is significantly higher with 49 acres within the study corridor.

Another concern in the bypass study area is the presence of the Blanding's Turtle. Additional study is planned for the Final EIS which is hoped to help WisDOT anticipate where turtle migration routes exist. Blanding's turtles are known to migrate from wetlands to uplands to lay their eggs and make the reverse trek to return to the wetlands as females return and as young turtles migrate to the wetlands. An inspection of the locations of wetlands in relation to roadways does not currently favor one bypass option over another and there is no reason at this time to suspect that Concept J would create fewer impacts to turtle migration. Potentially, mitigation measures such as turtle crossings could be needed for any of the bypass options.

Indirect Land Use Effects

Concern has been voiced by the agencies that a bypass could become the new boundary for land development. The concern is that additional land development would negatively impact the hydrology of the wetlands and water resources present in the study area. Existing adopted plans do not indicate a desire for urban development to the south of Fort Atkinson on lands between the city limits and the bypass alignments. Regardless of land use plans, new interchanges can be an impetus for new land development; however, the mainline highway on new alignment is not likely to spur new land development because the adjacent lands would not have any direct access to the new highway.

Alternatives 7 and 7a include two new interchanges, one at US 12 and another service interchange at Commerce Parkway. As presented in the DEIS, the US 12/WIS 26 interchange design for Alternatives 7 and 7a had eliminated the inbound Janesville Avenue (Business 26) movement and replaced it with the new interchange at Commerce Parkway that would re-route Business 26 through the City's business park. The intent of this design was to avoid the construction of a multi-level interchange. WisDOT is currently considering eliminating the Commerce Parkway interchange from Alternatives 7 and 7a in favor of a new design at the WIS 26/Business 26 interchange that will allow movement to and from Business 26 (Janesville Avenue). This would leave Alternatives 7 and 7a with only one new interchange at US 12, a location that currently has highway access on US 12.

Concept J would add three new interchanges at US 12, Pond Road and WIS 26. If new interchanges increase development pressure, Concept J would create the greatest pressure since it is creating a new interchange, opening US 12 highway access to areas south on WIS 26.

Additional study of the indirect effects associated with the bypass alternatives will be completed for the Final EIS.

Findings and Recommendations

- The Concept J interchange together with the WIS 26/Business 26 interchange a mile to the north may operate well in the short term; however enough traffic is forecast that unacceptable merge and weave conditions are likely by year 2035. The addition of auxiliary lanes at the interchange to the north will likely be necessary at that time. The intent of Concept J was that it would be less costly because no changes would be necessary to the existing interchange at WIS 26/Business 26; however this may not be the case in the long term.
- Concept J's impacts to residential properties would create considerably greater real estate relocation and acquisition costs than the other bypass alternatives. Impacts to the surrounding residential neighborhood along WIS 26 and the large reduction in property value that would result would also be significant negative results of Concept J.
- Concept J passes through more woodlands than do the other bypass alternatives and more wetlands than Alternative 7a (See Table 1 on page 4). USACE has indicated that WisDOT should select an alternative that takes fewer wetlands, given that alternative meets purpose and need and does not have undue or excessive other environmental impacts.
- The potential for impacts to turtle crossings has not yet been studied. However, available information leads to the conclusion that Concept J does not eliminate the possibility of needing to mitigate impacts to turtle migration routes. Given this fact, and given the other findings noted here, it is not recommended that additional turtle study needs to be done in order to eliminate Concept J from further detailed study.
- Absent local land use and other community development controls, and dependent upon its relative location, a new interchange can encourage new land development. Concept J has an additional interchange in closer proximity to Fort Atkinson, making it appear to have a greater chance of creating land development pressure. Agencies have expressed concern about secondary impacts to natural resources that often result from added development. Local communities may or may not see new development as a negative effect; however existing adopted plans do not show a desire for urban development further to the south of Fort Atkinson.
- In order to accommodate local road access, an additional interchange will be necessary east of the proposed trumpet interchange that was not accounted for in the VE Study. Placement of this interchange an adequate distance from the trumpet interchange will impact additional wetlands, and the geometrics of the US 12 and Pond Road alignments will result in the use of some less than desirable design features.
- The advantage of Concept J's accommodation of traffic to and from Business 26 without an added interchange is an important consideration. However, Alternatives 7 and 7a could be redesigned to address this concern. Although this would require redesigning and reconstructing the existing interchange and would require additional right of way, it is still not expected that as many residential relocations will result as with Concept J. HNTB

estimates that at the most, an additional 13 homes are within a ½ mile radius of the existing interchange and so could be impacted by expansion.

- Based on the findings herein, it is recommended that Concept J does not meet the needs and requirements of this section of US 12, as previously documented by WisDOT in the Draft Environmental Impact Statement. The analysis and supportive evidence for elimination of this alternative from further study is in keeping with or greater than the level of analysis and evidence that served as the basis for elimination of other alternatives considered and dismissed earlier in the Environmental Impact Study process.