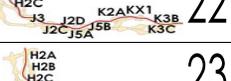
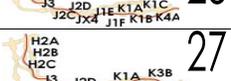
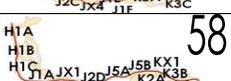
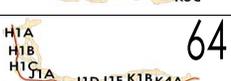
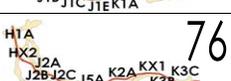


APPENDIX P
MATRIX OF INDIRECT AND CUMULATIVE EFFECTS BY
DSA

Appendix P – Indirect and Cumulative Effects Matrix – DSA Level

Detailed Study Alternative	Accessibility/Travel Time Savings	Change in Rate of Development	Visual-Aesthetic*	Transportation System*	Prime Farmland	Compatibility with Goals*	Public Policy**	Effect to Neighborhoods*	Ambient Noise	Air Quality	Residential Demand*	Commercial Demand	Wetlands, Sensitive Water Features**	Natural Environment Features**	Significant Natural Heritage Areas	Threatened and Endangered Species and their Designated Habitat	Cultural Resources
 4	5 to 10 minutes	Weak to Moderate	Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Very Strong	Weak to Moderate	Weak to Moderate	Weak to Moderate	Weak to Moderate
 5	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Very Strong	Very Strong	Very Strong	Strong	Weak to Moderate	Strong	Weak to Moderate
 9	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Very Strong	Weak to Moderate	Weak to Moderate	Strong	Weak to Moderate
 22	5 to 10 minutes	Weak to Moderate	Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Very Strong	Weak to Moderate	Weak to Moderate	Weak to Moderate	Weak to Moderate
 23	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Strong	Weak to Moderate Increase	None to Very Weak	Very Strong	Very Strong	Very Strong	Strong	Weak to Moderate	Strong	Weak to Moderate
 27	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Weak to Moderate	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Very Strong	Strong	Weak to Moderate	Strong	Weak to Moderate
 58	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Strong	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Very Strong	Strong	Strong	Strong	Strong	Weak to Moderate	Strong
 64	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Very Strong	Strong	Moderate Policy, Occasional Enforcement	Weak to Moderate	Weak to Moderate Increase	None to Very Weak	Very Strong	Very Strong	Strong	Strong	Strong	Strong	Strong
 68	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Very Strong	Strong	Moderate Policy, Occasional Enforcement	Strong	Weak to Moderate Increase	None to Very Weak	Very Strong	Strong	Strong	Strong	Strong	Strong	Strong
 76	5 to 10 minutes	Weak to Moderate	Strong	Very Strong	Strong	Strong	Moderate Policy, Occasional Enforcement	Very Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Strong	Weak to Moderate	Weak to Moderate	Weak to Moderate	Weak to Moderate

Appendix P – Indirect and Cumulative Effects Matrix – DSA Level

Detailed Study Alternative	Accessibility/Travel Time Savings	Change in Rate of Development	Visual-Aesthetic*	Transportation System*	Prime Farmland	Compatibility with Goals*	Public Policy**	Effect to Neighborhoods*	Ambient Noise	Air Quality	Residential Demand*	Commercial Demand	Wetlands, Sensitive Water Features**	Natural Environment Features**	Significant Natural Heritage Areas	Threatened and Endangered Species and their Designated Habitat	Cultural Resources
 77	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Strong	Strong	Moderate Policy, Occasional Enforcement	Weak to Moderate	Weak to Moderate Increase	None to Very Weak	Strong	Very Strong	Strong	Strong	Weak to Moderate	Strong	Weak to Moderate
 81	5 to 10 minutes	Weak to Moderate	Very Strong	Very Strong	Strong	Strong	Moderate Policy, Occasional Enforcement	Strong	Weak to Moderate Increase	None to Very Weak	Strong	Strong	Strong	Strong	Weak to Moderate	Strong	Weak to Moderate
No-Build Alternative <i>(construct other TIP projects but NOT Gaston E-W Connector)</i>	No Change (possibly worse)	No Change (possibly worse)	Weak to Moderate	None to Very Weak	None to Very Weak	Weak to Moderate	Moderate Policy, Occasional Enforcement	None to Very Weak	Weak to Moderate Increase	None to Very Weak	Very Strong	Weak to Moderate	Strong	Weak to Moderate	Weak to Moderate	Weak to Moderate	Weak to Moderate

Appendix P (continued, Definitions)

Variable	Description	Measurement			
Accessibility/Travel Time Savings	The potential effects of the proposed Detailed Study Alternatives in estimated travel time change to nearby public facilities and economic hubs when considered with other likely actions that may induce land development. (e.g., schools, recreational facilities, power stations, etc.) The potential effects of the proposed Detailed Study Alternatives in estimated emergency response times when considered with other likely actions that may induce land development.	5 to 10 minutes	2 to 5 minutes	Less than 2 minutes	No Change
Rate of Development	The anticipated rate of residential, commercial and light industrial development related to the proposed project.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Visual-Aesthetic*	The estimated magnitude to which the proposed Detailed Study Alternatives will affect the community's character when considered with other likely actions that are may induce land use change.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Transportation System*	The potential beneficial effect of the proposed Detailed Study Alternatives will have on the existing transportation system within the ICE Study Area, when considered with other probable actions.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Prime Farmland	The potential effects of the proposed Detailed Study Alternatives on the continued production and viability of farming operations.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Land use-Compatibility with Goals*	The estimated, potential degree to which the proposed Detailed Study Alternatives are consistent with the local plans.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Public Policy**	The estimated, potential degree to which governmental entities adjacent to the proposed Detailed Study Alternatives adhere to and enforce their own policies, particularly those related to managing and regulating new development.	No Public Policy, Weak Enforcement	Weak Policy, Weak Enforcement	Moderate Policy, Occasional Enforcement	Strong Public Policy, Strong Enforcement
Project Proximity to Neighborhoods*	Estimated potential effects of the proposed Detailed Study Alternatives on existing neighborhoods, as measured by proximity. Detailed Study Alternatives with "very strong" effects are adjacent or very close to numerous neighborhoods along their route. Detailed Study Alternatives with "weak to moderate" effects are adjacent or very close to a few neighborhoods.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Ambient Noise	Anticipated level of ambient noise increase related to the proposed action, land use change and induced development.	Very Strong Increase	Strong Increase	Weak to Moderate Increase	None to Very Weak Increase
Air Quality	Measures effect to air quality conformity determinations in the ICE Study Area.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Residential Demand*	The potential cumulative effects on residential unit and land conversion demand of the proposed Detailed Study Alternatives when considered with other actions likely to induce land use change.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Commercial Demand	The potential, anticipated cumulative effects on commercial property and land conversion demand of the proposed Detailed Study Alternatives when considered with other actions likely to induce land use change.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Wetlands, Sensitive Water Features**	The potential effect of the Detailed Study Alternatives on wetland areas, impaired waterways, and water supply watersheds.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Natural Environmental Features**	The potential to affect terrestrial species and habitat through habitat fragmentation.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Significant Natural Heritage Areas	The potential to affect Significant Natural Heritage Areas.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Threatened and Endangered Species and their Designated Habitat	The potential effects of the proposed action on species designated as being Threatened or Endangered.	Very Strong	Strong	Weak to Moderate	None to Very Weak
Cultural Resources	The potential effects of the proposed action on sites that are listed or eligible to be listed in the National Register of Historic Places.	Very Strong	Strong	Weak to Moderate	None to Very Weak

Matrix Source: Indirect and Cumulative Effects Assessment for the Gaston East-West Connector, Louis Berger Group, March 2009.

* Source: Community Impact Assessment and Environmental Justice for Transit Agencies: A Reference. 2002

** Source: NCDOT ICI Guidance, Oregon Guidebook on Indirect Effects