HAZUS Results for the Skagit Valley

Combination of All Levee Removals

100 Year Analysis

HAZUS Disclaimer

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information.

Figure 1. Depth grid generated from the combination of all levee failure scenarios. This scenario encompasses all possible levee scenarios and although unlikely characterizes all possible levee failures.

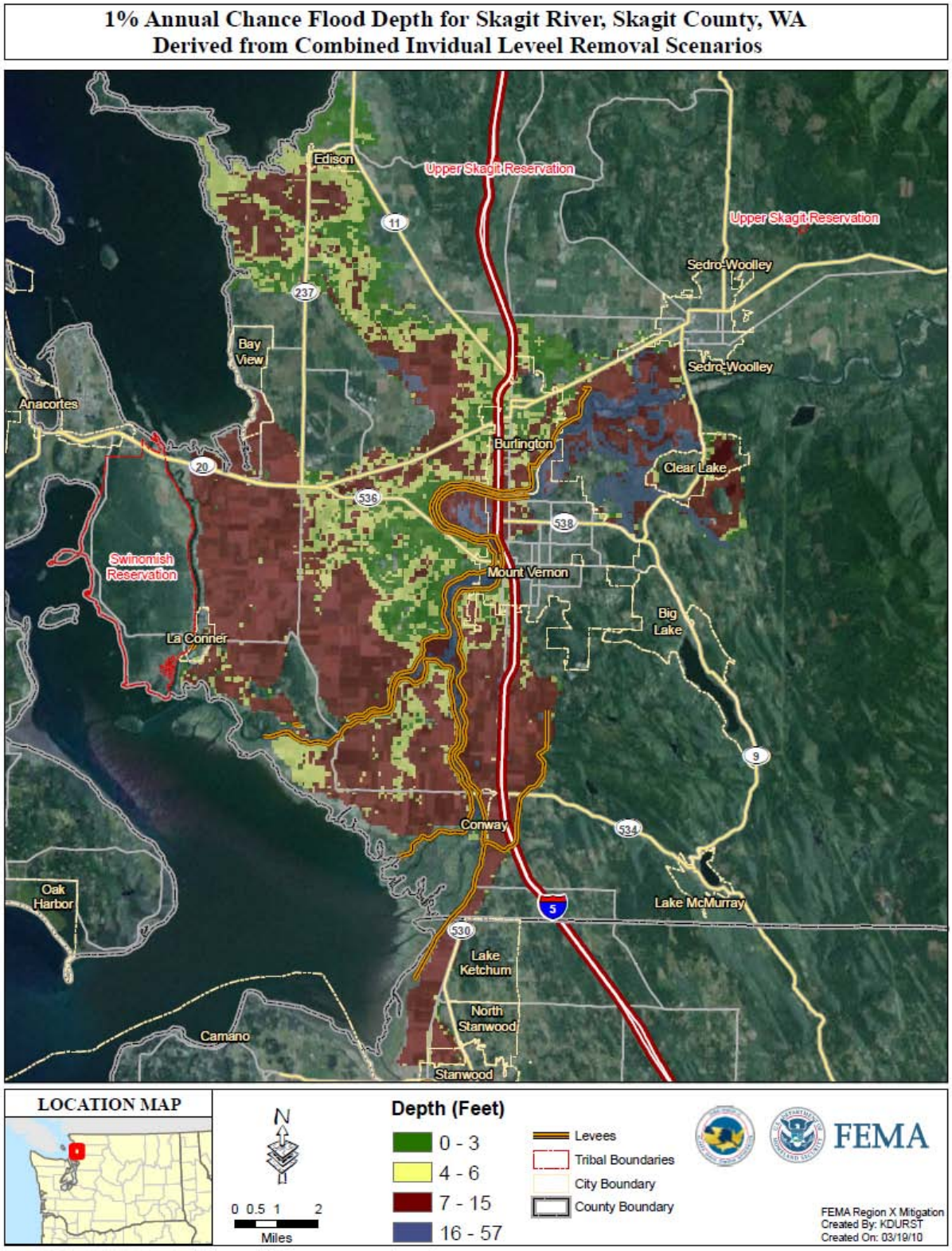

Figure 2. Total Economic Loss for the Skagit Valley. Structural Damage includes building cost, content cost, and inventory cost. Remaining non-structural cost includes business interruption costs, relocation costs etc. Total economic loss is $914 million. Red areas indicate $10-33 million of economic loss for each census block. Census blocks with losses below $100,000 were not shown.

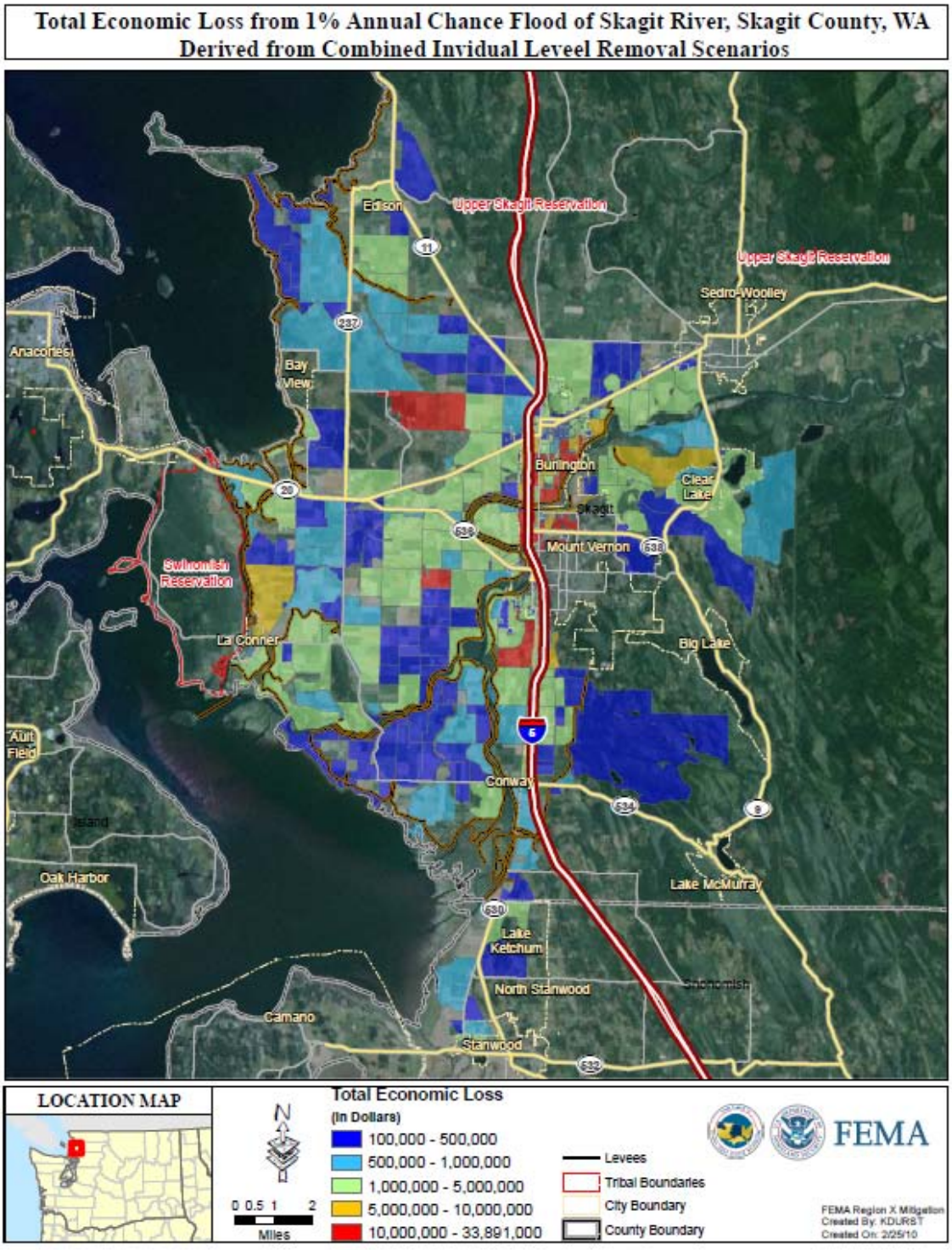

Table 1. Total Economic Loss for Each Building Category, for a 100 Year Flood for the Skagit Valley as shown in Fig. 2.

Loss Category	Residential	Commercial	Industrial	Others	TOTAL
Building Loss					
Building	$199.5M	$107.6M	$25.7M	$23.5M	$356.2M
Content	$128.4M	$261.4M	$55.2M	$76.1M	$521.1M
Inventory	$0	$9.2M	$10.2M	$7.0M	$26.4M
Subtotal	**$327.9M**	**$378.2M**	**$91.0M**	**$106.6M**	**$903.6M**
Business Interruption					
Income	$8K	$1.6M	$10K	$52K	$2.2M
Relocation	$60K	$57K	$10K	$10	$1.2M
Rental Income	$29K	$39K	$0	$0	$68K
Wage	$20K	$1.8M	$10K	$4.5M	$6.6M
Subtotal	**$1.2K**	**$4.4M**	**$30K**	**$5.1M**	**$10.6M**
TOTAL	**$329.1M**	**$382.5M**	**$91.1M**	**$111.6M**	**$914.3M**

*The above totals are estimates generated from HAZUS. A real event may produce different results than presented here.

Figure 3. Number of residential buildings damaged for the Skagit Valley. The results estimate approximately 187 substantially damaged residential buildings and approximately 2,500 residential buildings with at least minor damage.

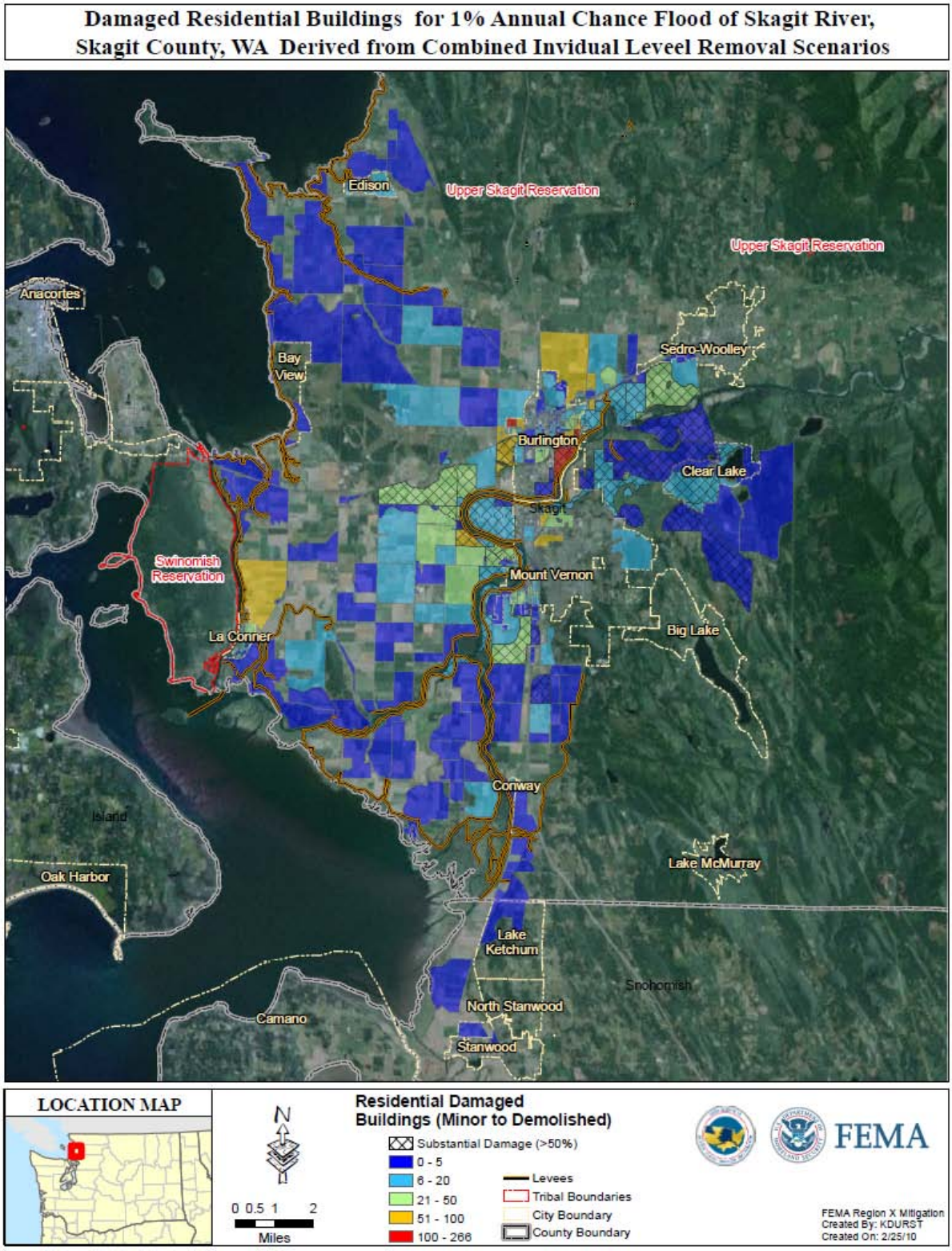

Table 2. Number of Buildings Damaged by Percent of Damage to that Building. Results are for the entire area shown in Figure 3.

	Percent Damage to Building							
Building Type	**None**	**1-10%**	**11-20%**	**21-30%**	**31-40%**	**41-50%**	**Substantial**	**Total**
Education	0	0	0	0	0	0	0	0
Government	1	0	2	0	0	0	0	1
Religion	0	0	3	0	0	0	1	4
Agriculture	12	1	7	4	1	1	2	28
Industrial	1	0	1	0	2	2	3	9
Commercial	10	2	9	18	6	5	16	66
Residential	1929	0	177	1030	441	747	187	4511
Total	**1953**	**3**	**197**	**1052**	**450**	**755**	**209**	**2619**

*The above totals are estimates generated from HAZUS. A real event may produce different results than presented here.

Figure 4. Displaced individuals and short term shelter needs for the Skagit Valley. Census blocks are mapped based on the number of displaced individuals. HAZUS estimated 21,105 individuals would be displaced and of those, 17,429 would need short term shelter.

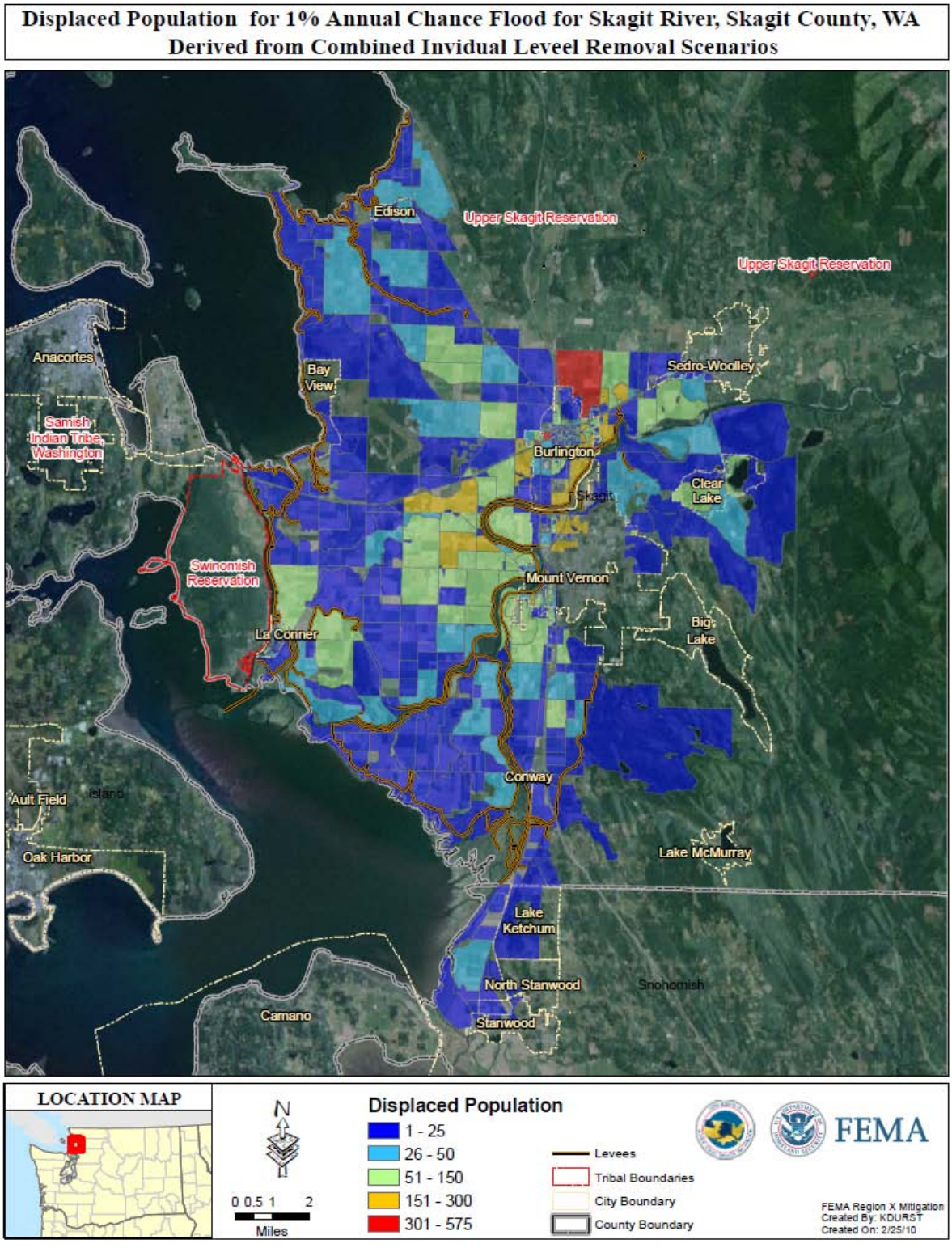

Figure 5. Debris Estimation for the Skagit Valley. Debris in tons, is shown per census block. HAZUS calculates the estimated total debris generated to be 158,924 tons. Debris is generated from building and content debris, not from damage due to roads or utilities.