*Statewide Approach to Multi-Hazard Risk Assessments for West Virginia*

**Work Tasks, Goals, Deliverables**

The deliverables are organized the same as the work tasks and corresponding goals. A total of 15 deliverables align with the work tasks or goals: 6 flood risk assessment, 5 landslide risk assessment, and 4 data development.

**Table 1.** Deliverables organized by three major work tasks

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| Major Work Tasks | Designation Letter | # Deliverables |
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| Flood Risk Assessments | F | 6 |
| Landslide Risk Assessments | L | 5 |
| Data Development | D | 4 |

 **Table 2.** Deliverables of WV Statewide Multi-Hazard Risk Assessments

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| DELIVERABLES (2018-2021)HMGP Grant: Multi-Hazard Risk Assessment |
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| **FLOOD RISK ASSESSMENT** |
| **TASK F1: [Site-specific flood risk assessments]**Reviewing implementation of ArcGIS Python Script Alternative to the Hazus-MH Model for User-Defined Facilities. Implementation by State of Oregon, Oregon Department of Geology and Mineral Industries. Information exchange meeting occurred with the Oregon Geological Survey (John Bauer) and FEMA Region X Risk Analyst (Cynthia McCoy).https://www.oregongeology.org/pubs/ofr/p-O-18-04.htm |
| **TASK F2: [Statewide geodatabase of site-specific flood risk structures]** Created preliminary data model for Flood Risk Assessment Geographic Information System (FRAGIS), a detailed geodatabase of site-specific flood structures (called “User-Defined Facilities” in Hazus modeling software.  Verifying primary buildings and exposure values for structures located in the 100-year regulatory and non-regulatory floodplains in six counties: Fayette, Hancock, Jefferson, Mercer, Mineral, and Preston  |
| **TASK F3: [3D flood risk visualizations]** Created sample 3D community flood risk visualization movie that can be published on WV Flood Tool  |
| **TASK F4: [Assemble statewide composite flood risk products]** Published preliminary counts of buildings (bSF) and areas (aSFHA) in Special Flood Hazard Areas for 287 communities (232 municipalities and 55 county unincorporated areas). It is estimated that over 100,000 structures in Special Flood Hazard Area for West Virginia. Both the bSF and aSFHA are important statistics for communities participating in FEMA’s CRS program. |
| **TASK F5: [Update State Hazard Mitigation Plan]** Contributed preliminary flood risk assessment information for 2018 State Hazard Mitigation Plan update |
| **TASK F6: [Publish flood risk data and products to WV Flood Tool]**The GIS Technical Center updated the currentness and accuracy of the FEMA Community Boundary Layer has been updated and more accurate. The updated community layers was created from U.S. Census incorporated boundaries, 1:24,000-USGS topo map county boundaries, and local boundary sources. The community boundary layers consists of 295 records: 55 counties, 232 municipalities (8 municipalities are geographically split over two counties). The community boundary layer is important for linking users of the Flood Tool to the correct community profile/hazard risk data. This critical boundary layer will be published to the Data Clearinghouse with metadata. |
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| **LANDSLIDE RISK ASSESSMENT** |
| **TASK L1: [Landslide Inventory]**Developing landslide historical inventory from eight sources of published reports and maps from 1973 to present. The Center has compiled or digitized more than 76,000 landslide features. |
| **TASK L2: [Landslide Method Development]** Knowledge experts employed at West Virginia University were identified and hired to include Dr. Steve Kite (geomorphologist), Dr. James Thompson (soil scientist), Dr. Aaron Maxwell (Aaron Maxwell), and Dr. Maneesh Sharma (Geologist/GIS).A statistical model is being developed to evaluate various spatial inputs that have a high correlation to mapped landslide incidents: geology, soils, topography (slope, aspect, etc.), proximity to roads and streams. An information exchange meeting occurred with the Oregon Geological Survey regarding landslides in the fall 2018. |
| **TASK L3: [County Level Landslide Map Generation]**Presently a pilot landslide susceptibility map is being created for Monongalia County using a machine learning technique called Maximum Entropy Modeling. Professor Aaron Maxwell is conducting the modeling.  |
| **TASK L4: [Web Application]** The following information will be published on the WV Landslide Tool (www.mapwv.gov/landslide): Historical Landslide Incidence, Mapped Landslides, Landslide Susceptibility Model, Landslide Model Inputs, and Reference Layers.  |
| **TASK L5: [Update State Plan]** Contributed preliminary landslide risk assessment information for 2018 State Hazard Mitigation Plan update. This project will update the Landslide Hazard section for the 2023 HMP update.  |
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| **DATA DEVELOPMENT AND EXCHANGE OF RISK INFORMATION** |
| **TASK D1: [Statewide Building Inventory]**Information is being compiled for a structure-level inventory of all building and facilities exposed to multi-hazards. Data resources for site-specific building information and identification include the site address, parcels, assessment records, leaf-off imagery, building footprints, insurance and business databases, critical facilities, etc. This task provides the building exposure information for multi-hazard assessments.  |
| **TASK D2: [Fill in GIS Data Gaps of Key Reference Layers]** The development of GIS map reference layers, specifically parcels, addresses, and aerial imagery, is necessary to fulfill the requirements of county and state hazard risk assessments and products. Completed Data Development RFPs/Contract:* Published RFP and selected Atlas Geographic Data Inc. for digital data gaps of parcels and addresses
* Published RFP for acquisition of leaf-off imagery for targeted counties.
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| **TASK D3: [Report Data Gaps of Reference Layers]**Jefferson County: Misaligned parcels reported to county assessor mapper. Technical consultation meeting being coordinated between the county and GIS Professional Services company Atlas Geographic Inc. to facilitate resolving issues.Preston County: A scoping meeting is begin set up with Preston County to correct addressing issues for the town of Rowlesburg. More than 38% of the town is located in the Special Flood Hazard area. Hardy County: Hardy County has not mapped addresses for past two years and may need technical assistance from contracted GIS Professional Services company.Other communities in contact to improve addressing, parcel, and imagery layers: city of Elkins, counties of Braxton, Calhoun, Clay, Logan, Morgan, and Roane.  |
| **TASK D4: [Exchange Risk Assessment Information]** More coordination needed with FEMA, State, Local agencies and contractors to exchange relevant data for hazard risk assessments. USACE interested in collaborating on flood risk assessments as part of Silver Jackets program. Need to schedule a meeting with ISO/CRS Specialist and State NFIP Office for state-based CRS credits. |