



3.1 OVERVIEW AND PRIORITIZATION OF HAZARDS

UPDATE SUMMARY

The 2013 update continued to build and expand upon the previous SHMP's risk assessment. Major improvements, enhancements, and updates to note include:

- Incorporation of a statewide local jurisdiction facility database for improved vulnerability and loss estimations
- Incorporation of a unified homeland infrastructure geospatial data inventory for improved vulnerability and loss estimations
- Statewide Level 2 Hazus analysis for flood and earthquake utilizing the latest 2.1 software version
- Incorporation of 2010 census data for updated vulnerability and loss estimations
- Development of a single geodatabase to assist in the management and dissemination of all geospatial hazard analysis and maps utilized as part of the SHMP update
- Improved hazard extent and magnitude information for use in the vulnerability and loss estimations
- Improved profiling of all hazards, including documentation of the interrelationships between hazards and the addition of four (4) human-caused hazards to align the SHMP with the newly created State THIRA document
- Development of a database that details all past hazard events and that will allow for improved event tracking for future risk assessments and analysis
- Continued analysis of risk assessment information from all 47 local hazard mitigation plans
- Continued consequence analysis of hypothetical events for the three hazards that have the most impact on Idaho: floods, earthquakes, and wildfires
- Comparative assessments of analysis conducted as part of both the 2013 and 2010 plans

The 2010 update built on the 2007 SHMP's risk assessment. Specifically, the 2010 update included:

- More extensive profiling of all hazards including the use of standardized subsections and updating of previous events/data through 2010
- Analysis and roll-up risk assessment information (damage/loss information, hazard prioritization) from 47 local mitigation plans (44 counties, three tribes)
- Inclusion of HAZUS-MH4 analysis of floods and earthquakes including:
 - HAZUS MH-4 flood runs and all standard reports for the 10-, 4-, 1-, and 0.2-percent events (corresponding to the 10-, 25-, 100-, and 500-year recurrence intervals, respectively)
 - Scenario modeling of hypothetical events – two for floods and three for earthquakes



CHAPTER 3 HAZARDS IN IDAHO

- Detailed consequence analysis of hypothetical events for the three hazards that have the most impact on Idaho: floods, earthquakes, and wildfires
- Development of a CDMS-compatible database shell for State facilities to be used in subsequent updates and preliminary risk assessment of State facilities/infrastructure for flood, earthquake, and wildfire (some preliminary data shown in the 2010 SHMP, other data created as a dataset for future update and use)
- Addition of hazard extent and magnitude information for reference and use during local hazard mitigation plan writing and updates

OVERVIEW

The State of Idaho is prone to many natural and manmade hazards. Idaho has experienced thousands of hazard events, resulting in millions of dollars in losses and casualties, and 33 major Federal disaster and emergency declarations. Table 3.1.A on the following page identifies the major Federal disaster declarations in Idaho since 1950. (The events listed in bold type have occurred since the 2010 SHMP Update.)

An overview of the Federal Declaration Process is provided below:¹

The Stafford Act (§401) requires that: "All requests for a declaration by the President that a major disaster exists shall be made by the Governor of the affected State."

The Governor's request is made through the regional FEMA office. State and Federal officials conduct a preliminary damage assessment (PDA) to estimate the extent of the disaster and its impact on individuals and public facilities. This information is included in the Governor's request to show that the disaster is of such severity and magnitude that effective response is beyond the capabilities of the State and the local governments and that Federal assistance is necessary. Normally, the PDA is completed prior to the submission of the Governor's request. However, when an obviously severe or catastrophic event occurs, the Governor's request may be submitted prior to the PDA. Nonetheless, the Governor must still make the request.

As part of the request, the Governor must take appropriate action under State law and direct execution of the State's emergency plan. The Governor shall furnish information on the nature and amount of State and local resources that have been or will be committed to alleviating the results of the disaster, provide an estimate of the amount and severity of damage and the impact on the private and public sector, and provide an estimate of the type and amount of assistance needed under the Stafford Act. In addition, the Governor will need to certify that, for the current disaster, State and local government obligations and expenditures (of which State commitments must be a significant proportion) will comply with all applicable cost-sharing requirements.

¹ <http://www.fema.gov/declaration-process>



CHAPTER 3 HAZARDS IN IDAHO

Based on the Governor's request, the President may declare that a major disaster or emergency exists, thus activating an array of Federal programs to assist in the response and recovery effort. Not all programs, however, are activated for every disaster. The determination of which programs are activated is based on the needs found during damage assessment and any subsequent information that may be discovered. Some declarations will provide only individual assistance or only public assistance. Hazard mitigation opportunities are assessed in most situations.

TABLE 3.1.A: Major Federal Disaster and Emergency Declarations

Date	Disaster Types	Disaster No.	Notes	Counties Affected
9/18/2012	Karney Fire	5019	Fire Management Assistance Declaration	
8/3/2012	Trinity Ridge Fire	5006	Fire Management Assistance Declaration	Lemhi
3/31/2011	Flooding / Landslides / Mudslides	1987		Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribe, Shoshone
8/26/2010	Hurd Fire	2853	Fire Management Assistance Declaration	Valley
7/27/2010	Severe Storms / Flooding	1927	Active event	Adams, Gem, Idaho, Lewis, Payette, Valley, Washington
7/31/2008	Flooding	1781		Kootenai, Shoshone
8/30/2007	Cascade Fire Complex	2726	Fire Management Assistance Declaration	Valley
8/30/2007	East Zone Fire Complex	2725	Fire Management Assistance Declaration	Valley
8/29/2007	Castle Rock Fire	2724	Fire Management Assistance Declaration	Blaine
2/27/2006	Severe Storms / Flooding	1630		Owyhee
9/13/2005	Hurricane Katrina Evacuation	3244	Emergency Declaration	All 44 counties
7/6/2005	Heavy Rains / Flooding	1592		Nez Perce
9/1/2000	Wildfires	1341		Ada, Bannock, Bingham, Blaine, Clearwater, Custer, Elmore, Idaho, Jerome, Lemhi, Lewis, Lincoln, Power, Valley
6/13/1997	Flooding	1177		Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone
1/4/1997	Severe	1154		Adams, Benewah, Boise,



CHAPTER 3 HAZARDS IN IDAHO

TABLE 3.1.A: Major Federal Disaster and Emergency Declarations

Date	Disaster Types	Disaster No.	Notes	Counties Affected
	Storms/Flooding			Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
2/11/1996	Storms/Flooding	1102		Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Payette, Shoshone
2/16/1984	Flooding (Ice Jams)	697		
1/18/1983	Earthquake	694		
5/22/1980	Volcanic Eruption (Mt. St. Helens)	624		
8/8/1979	20-Mile Fire	2038		
8/20/1977	Wilson Creek Fire	2029		
5/5/1977	Drought	3040	Emergency Declaration	
6/6/1976	Dam Collapse (Teton Dam)	505		
1/25/1974	Severe Storms/Flooding (Snowmelt)	415		
3/2/1972	Severe Storms/Flooding	324		
8/30/1967	Forest Fires	231		
12/31/1964	Heavy Rains/Flooding	186		
2/14/1963	Flooding	143		
2/14/1962	Flooding	120		
6/26/1961	Flooding	116		
7/22/1960	Wildfires	105		
5/27/1957	Flooding	76		
4/21/1956	Flooding	55		

Source: FEMA website (August 2010) http://www.fema.gov/news/disasters_state.fema?id=16

Based on the data in Table 3.1.A, floods were a component of seventeen disasters (52 percent); wildfires were a component of eleven disasters (33 percent); severe storms were a component of eight disasters (24 percent); and landslides, mudslides, drought, earthquake, volcano, dam collapse, and evacuation were a component of one disaster (3 percent).



CHAPTER 3 HAZARDS IN IDAHO

Since the 2010 SHMP, there have been 3 major Federal disaster and emergency declarations. Two were the results of wildfires and one was due to flooding and the resulting land/mud slides. Between the 2007 and 2010 updates, there were six disaster declarations: four for wildfires and two for floods (including severe storms).

It should be noted that prior to 2000, twelve of the twenty overall disaster declarations were due to flooding (60%) and only four of the twenty were caused by wildfires (20%). Since 2000, five of the thirteen overall disaster declarations were due to flooding (38%), while seven were caused by wildfires (54%).

Idaho's disaster declaration data is consistent with the FEMA Region in which Idaho is located. In FEMA Region X, the top four hazards in terms of the source of disaster declarations are floods, severe storms, fires, and earthquakes (see Figure 3.1.B below). Nationally, Idaho ranks 41st out of the 50 states for the number of major disaster declarations, it has had the 3rd fewest emergency declarations, and 20th for fire management assistance declarations. Since the 2010 SHMP, the above rankings remained consistent with the exception of fire management assistance declaration. Currently ranked 20th, three years prior Idaho was ranked 43rd.

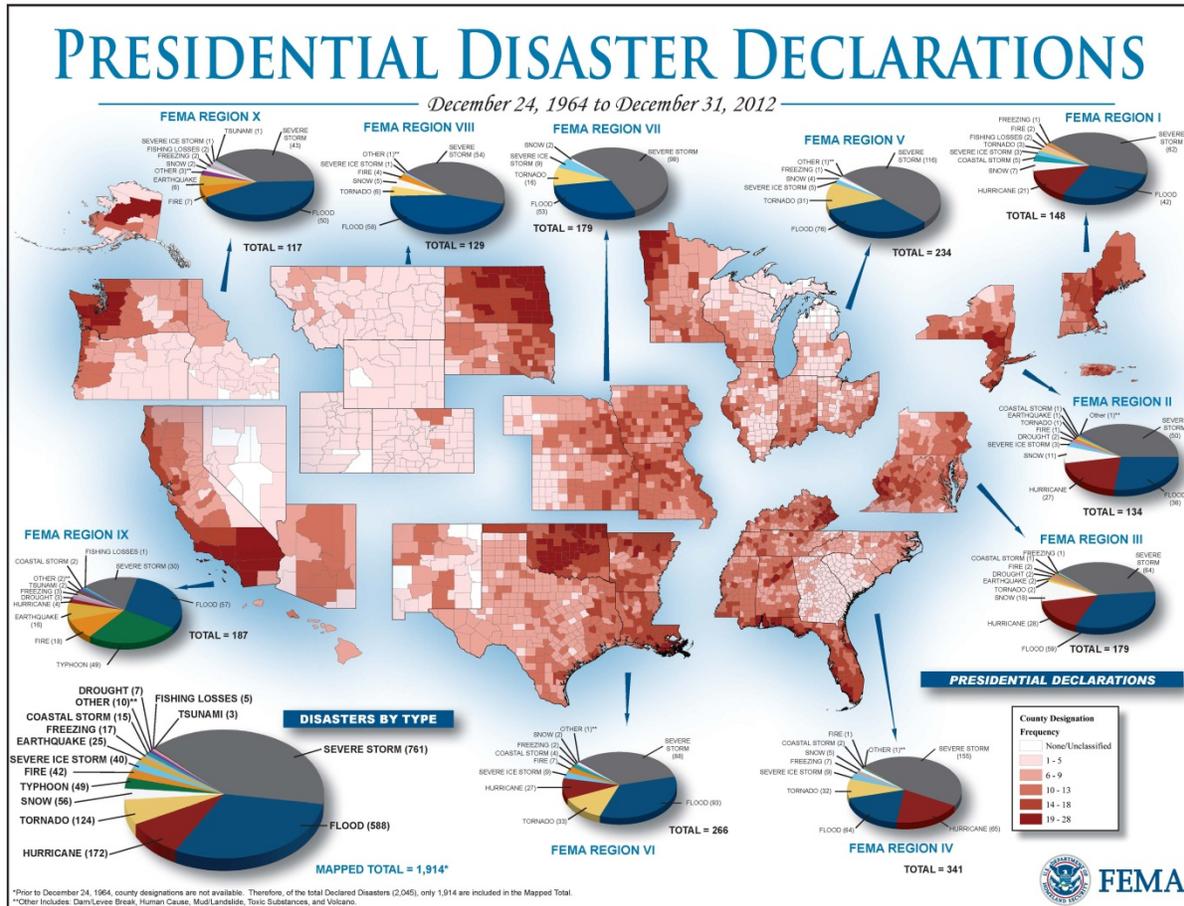


Figure 3.1.B: National Map of Presidential Disaster Declarations

Map 3.1.E, at the end of this section, shows the breakdown of Federal declarations across the State. Federal disaster declarations tend to occur more frequently in northern Idaho versus the rest of the State. Map 3.1.F, also at the end of this section, shows the breakdown of State disaster declarations across the state since 1956. This map shows that the Central and Southeast regions of the state experience somewhat fewer State declarations, as compared to a higher number of declarations in the North Central and Southwestern regions.

Table 3.1.C (below) shows the three most significant hazards for each of the 47 local hazard mitigation plans that were reviewed as part of the 2010 and 2013 plan updates. One assessment that is now possible as part of the 2013 update is to compare how these local jurisdiction’s viewpoints have changed over the past three years. Note that local plans are only updated every 5 years, so some of the 2013 data remained constant since 2010 (25 of 47 jurisdictions had newly approved updated plans).

The main point that stands out in the table below is that the top 4 hazards in 2013, as identified by the local jurisdictions, remained so and in the same order as they were in 2010. Wildfire and Severe Storms



CHAPTER 3 HAZARDS IN IDAHO

were added a few additional jurisdictions, while flood and hazardous materials lost a few. In 2013 earthquake how moved up from the 7th highest to the 5th. This probably reflects the State’s increased education and messaging to the locals pertaining to the seismic risk that the State faces. A final comment to point out is that wind/tornado dropped from 8 jurisdictions regarding that as a ‘top 3’ hazard to only 3 jurisdictions. The hope is that recent improved State and local risk assessments may have corrected this possible misconception.

TABLE 3.1.C: Local Hazard Mitigation Plan Roll-Up, Jurisdictions Ranking Hazards as Major

Hazard	Number Ranked as Major (2013)	Number Ranked as Major (2010)
Wildfire	43	41
Severe Summer / Winter Storm	38	35
Flood	24	26
Hazardous Materials	14	15
Earthquake	8	5
Landslide	6	6
Dam / Levee / Canal Failure	4	3
Wind / Tornado	3	8
Drought	1	1
Avalanche	0	0
Lightning	0	0
Volcano	0	0

The 2013 SHMP profiles 11 natural and 5 technological and human-caused hazards including: floods, earthquakes, wildfires, landslides, dam/levee/canal failure, avalanches, drought, lightning, severe storms, winds/tornadoes, volcanic eruptions, hazardous materials, radiological, pandemic, cyber disruption, and civil disturbances. From a statewide perspective, the three most significant are:

- Floods
- Earthquakes
- Wildfires

These three hazards were determined based on a number of contributing factors, the main one being that a major event caused by any one of those hazards would have the ability to inflict major damages (>\$1B) and a significant loss of life. The natural hazards were similarly identified in the 2007 plan and 2010 update. The 2013 plan reaffirms this conclusion based on: the types of recent major disaster declarations, an assessment of the types of historical disaster declarations, the results of the vulnerability and loss assessments, and the hazards identified as significant in local plans. As a result, the vulnerability analysis in the 2013 SHMP has additional risk assessment and vulnerability information for these three hazards.



CHAPTER 3 HAZARDS IN IDAHO

While some of this data indicate that severe storms occur frequently and are an element of many disaster declarations, they are not being considered as a significant hazard because of their impact in terms of consequences – severe storms are almost always associated with another type of hazard that is the real culprit in terms of impacts (i.e., flooding, tornadoes, or lightning). On the other hand, earthquakes have occurred relatively infrequently in the past (one declaration). Due to the widespread areas where earthquakes could occur and the potential impacts, however, earthquakes are being considered as significant. Based on the number of local plans identifying landslides as significant, that hazard was considered as possible significant State hazards. However, due to the localized and relatively low impact of landslides, these were not considered as a significant statewide hazard. Hazardous materials were also identified in a number of local plans, but this hazard was not considered as a significant statewide hazard because it is man-made.

Chapter 3 covers six separate requirements of the Code of Federal Regulations (CFR) in 44 CFR 201.4: identifying hazards, profiling hazard events, assessing vulnerability by jurisdiction, estimating potential losses by jurisdiction, assessing the vulnerability of State facilities, and estimating potential losses of State facilities. These requirements are integrated into each profiled hazard.

Some of the data in Chapter 3 is summarized by the State Bureau of Homeland Security (BHS) region. There are six BHS regions in Idaho, as shown at the end of this section in Map 3.1.D. By summarizing data in this way, State mitigation actions or strategies can be developed and applied regionally. Similarly this will allow BHS field coordinators to better assist regions with their specific needs.

Risk Assessment Summary 2013

The 2013 update continued to build and expand upon the previous SHMP's risk assessment. Improvements, enhancements, and updates are summarized below, including a number of newly available data sets that were incorporated, where possible, into the vulnerability and loss assessments. A summary of these various data sources included:

- The Idaho Counties Risk Management Program (ICRMP) provided a database of all local jurisdictional structures that they insure. The address and lat/long information contained in this database allowed for the geocoding of roughly 8,500 structures, which could then be geospatially analyzed as part of the risk assessment process. The structure data included useful attributes used in the analysis including: structure values, contents values, fire protection classification, etc. In addition, the Idaho Department of Water Resources (IDWR) provided an enhanced sub-set of these ICRMP structures that contained improved locational accuracy. Regional maps providing an overview of these facilities can be found at the very end of this section, Maps 3.1.G-3.1.L.
- Idaho's Department of Water Resources (IDWR) also provided a Hazus-compliant Comprehensive Data Management System (CDMS) geodatabase that contained improved statewide structure and infrastructure data. This data was used in place of the Federal Emergency Management Agency's (FEMA) Hazus Level 1 data. Data enhancements that



CHAPTER 3 HAZARDS IN IDAHO

allowed for improved vulnerability and loss estimations included both spatial and attribute updates. Facility and infrastructure data included: essential facilities, high potential loss facilities, rail, transportation, and utilities.

- Through the Department of Homeland Security (DHS), the Homeland Security Infrastructure Program (HSIP) Freedom dataset was obtained for use of the 2013 Plan update. This geospatial data is developed and compiled by the National Geospatial-Intelligence Agency. Facility and infrastructure data pertained to the following facility and infrastructure types: education, emergency services, energy, government, law enforcement, levees, public health, and transportation.
- FEMA provided additional Hazus-compliant data sets that were utilized in Hazus. The updates included demographic and building stock updates, based upon the latest 2010 Census figures. At the present time, this information is available at the Census tract level.
- Numerous other hazard-specific data sets were compiled from a variety of sources to allow for improved assessments. Sources for this geospatial data included: FEMA, Idaho's Department of Lands (IDL), the United States Geological Survey (USGS), the Idaho Geological Survey (IGS), and the National Renewable Energy Laboratory (NREL).

The 2013 update also improved upon the previous statewide Hazus analysis for the hazards of flood and earthquake. Utilizing the various data inputs documented above enabled Level 2 analysis to be conducted. 44 updated Level 2 flood runs were performed for each county in Idaho, utilizing the latest version 2.1 of Hazus. 3 statewide Level 2 earthquake runs were also performed in 2.1.

In addition, the 2013 Plan update process re-evaluated a number of exercises and analysis that was performed in 2010. This included the local hazard mitigation plan data 'roll up' and a revisited consequence analysis assessment. Comparative assessments of analysis conducted as part of both the 2013 and 2010 plans was also conducted by leveraging past and current data and analysis.

Risk Assessment Summary 2010

When the 2010 Plan was updated, the inventory of State facilities was still incomplete. Only a small portion of State facilities data was available and very little background data pertaining to those facilities existed in a useable format. This data did though allow for some geospatial analysis, which incorporated new inputs such as hazard extent and magnitude information where available. As part of the 2010 update, a database structure was developed that contains key fields compatible with the HAZUS CDMS database, so that appropriate information can be collected for each facility. In the meantime, the existing dataset was used to assist in describing impacts to State facilities (buildings and infrastructure).

One of the largest components of the 2010 Plan update involved statewide HAZUS-MH 4 analysis for both floods and earthquake. For flood, this entailed performing Level 1 analysis for all 44 counties in Idaho. In addition, some pilot Level 2 flood analysis was performed to examine the benefits provided by improved local data. Additional details include:



CHAPTER 3 HAZARDS IN IDAHO

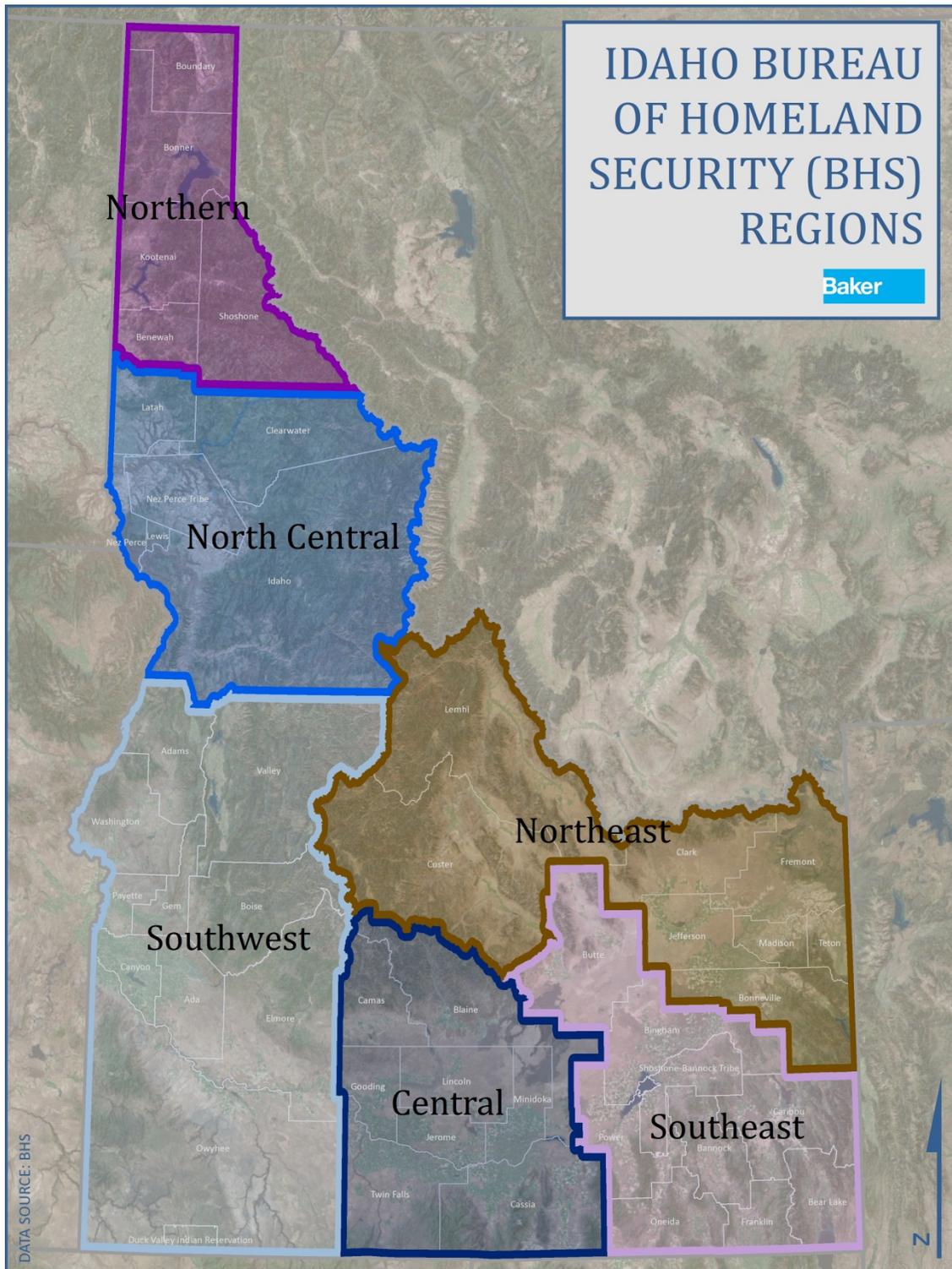
- HAZUS MH-4 flood runs and all standard reports for the 10-, 4-, 1-, and 0.2-percent events (corresponding to the 10-, 25-, 100-, and 500-year recurrence intervals, respectively)
- Scenario modeling of hypothetical events – two for floods and three for earthquakes

Another large component of the 2010 Plan update involved the analysis of all 47 local (county and tribal) mitigation plans currently approved by FEMA. To enable an accurate and timely analysis of all these plans, a database was designed to store specific plan details, information, and data sets. Once this master “roll up” database was created, all plans were reviewed and the relevant information was entered. Examples of the roll-up data include each local plan's: three major hazards, counts and types of mitigation actions, loss estimates for hazard events, and vulnerability assessments. These data allowed for a comparative analysis of all local plans and enabled further analysis and data extraction for incorporation into various sections of the 2010 State plan. Table 3-2, above, is one example of how the roll-up data were used.

More extensive and standardized profiling of all hazards was also a major focus of the 2010 update. This was coupled with updates to all previous events and data for improved risk assessments. In addition, a detailed consequence analysis of hypothetical events was performed for the three hazards that have the most impact on Idaho: floods, earthquakes, and wildfires.



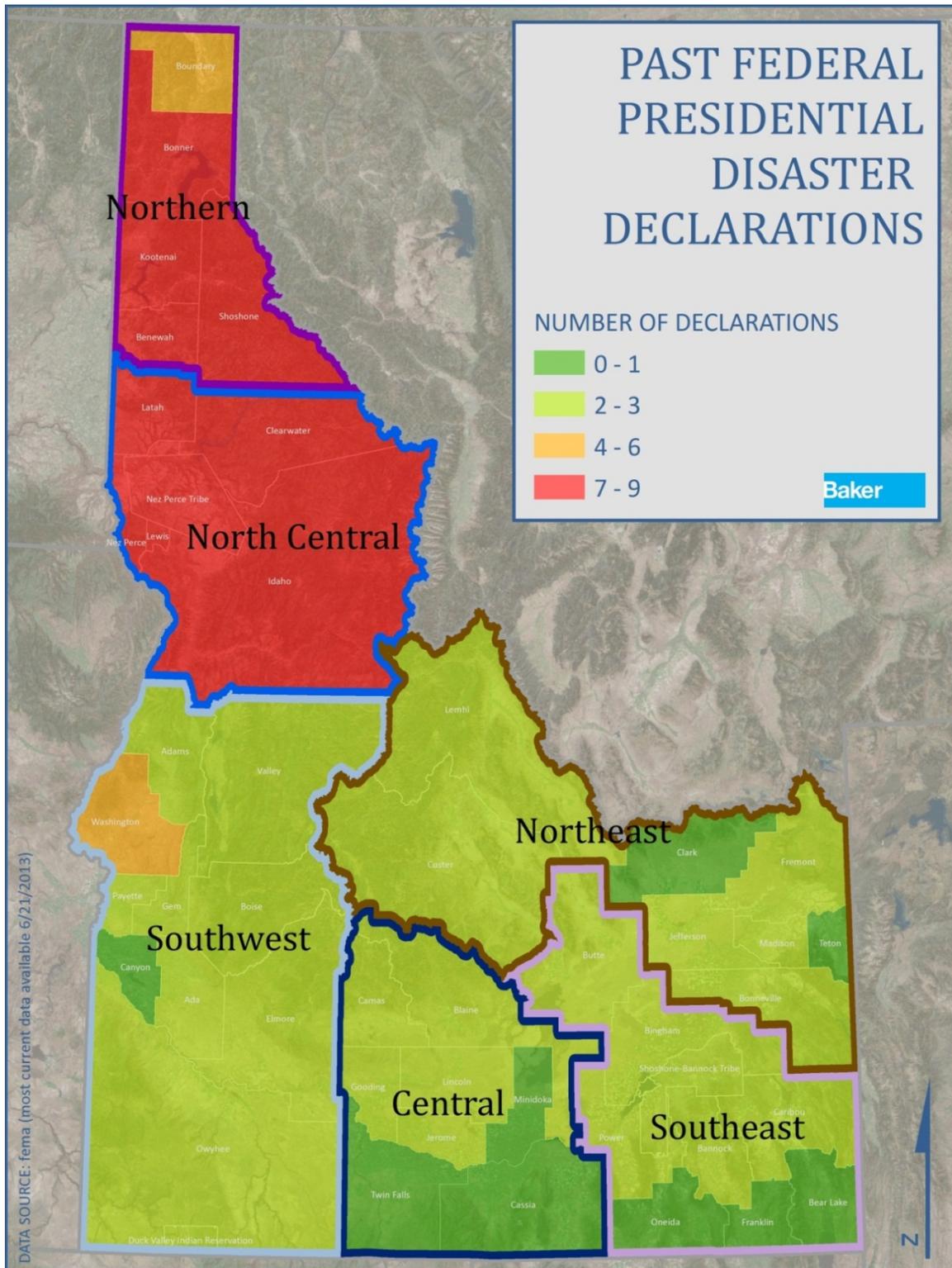
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.D: Idaho State Hazard Mitigation Regions



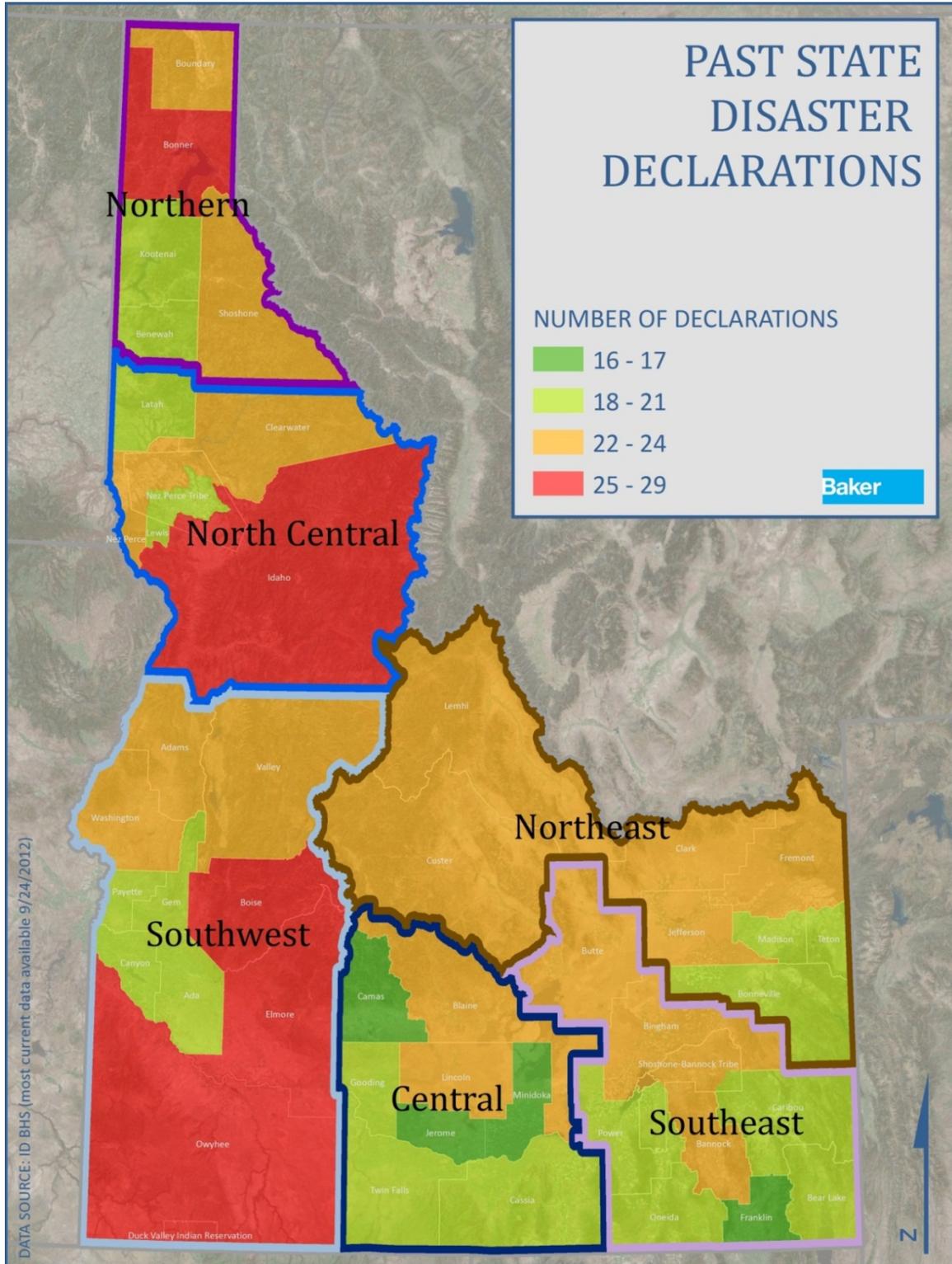
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.E: Idaho Presidential Disaster Declarations



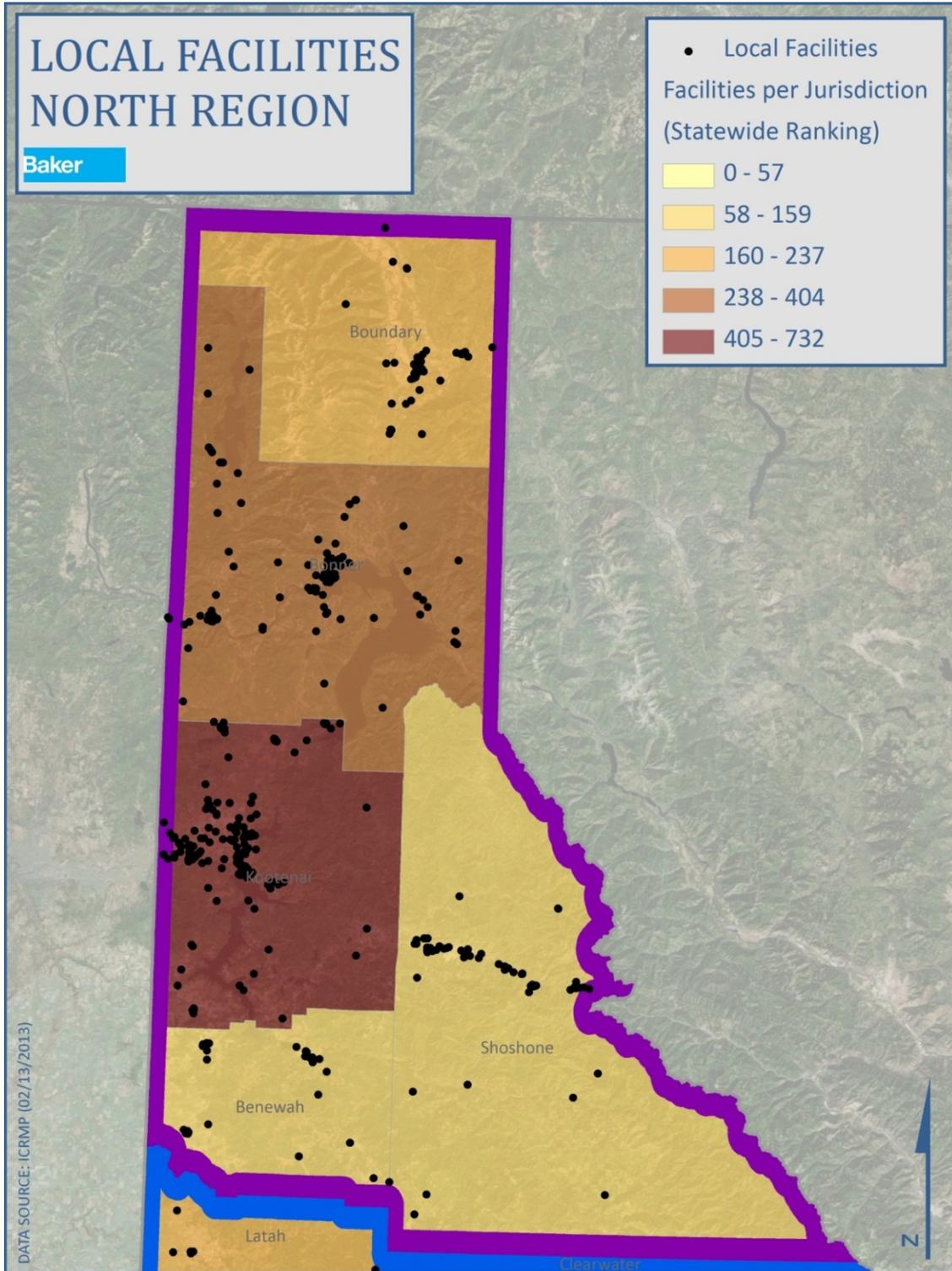
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.F: Idaho State Disaster Declarations



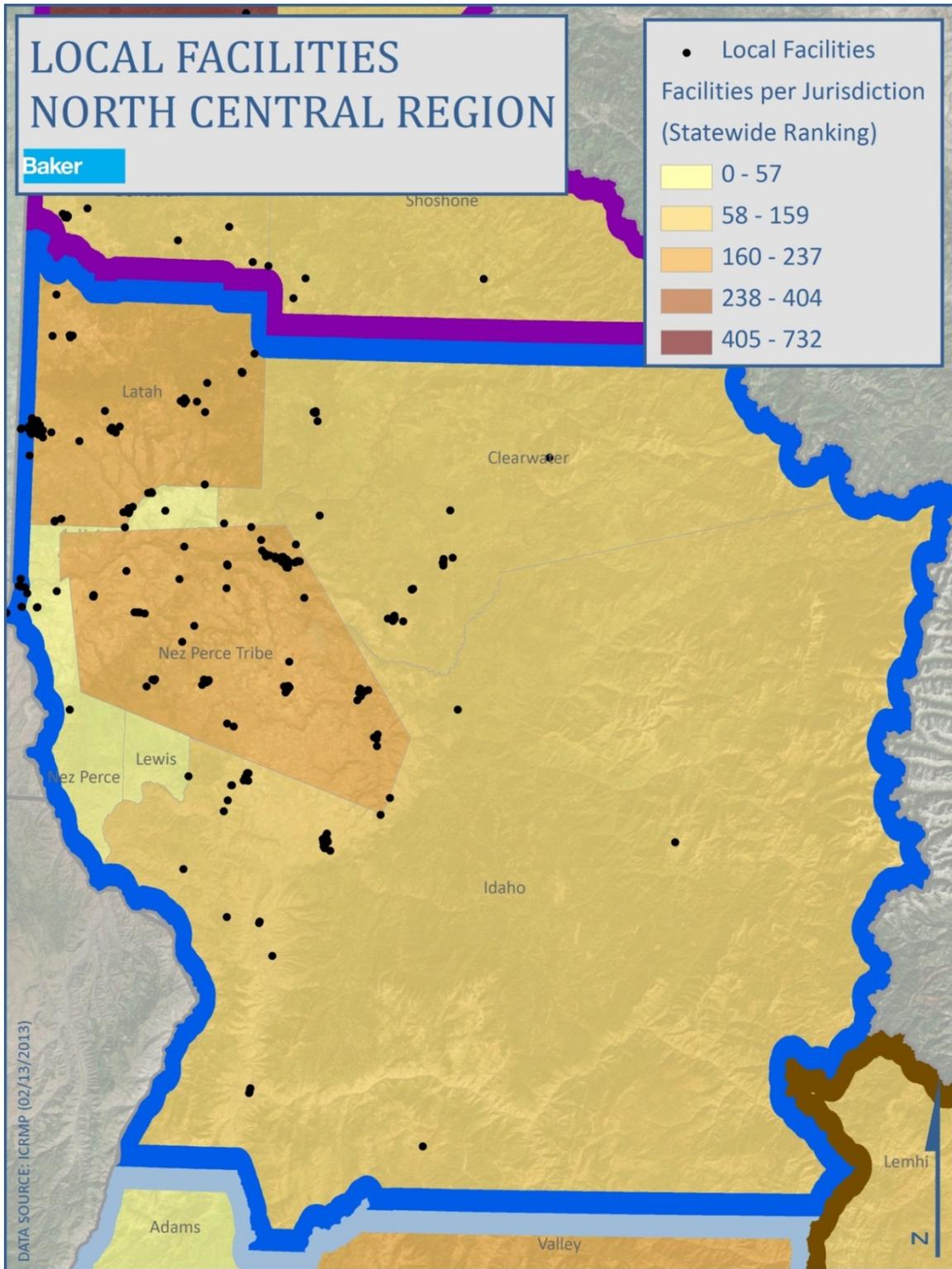
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.G: North Region Local Facilities



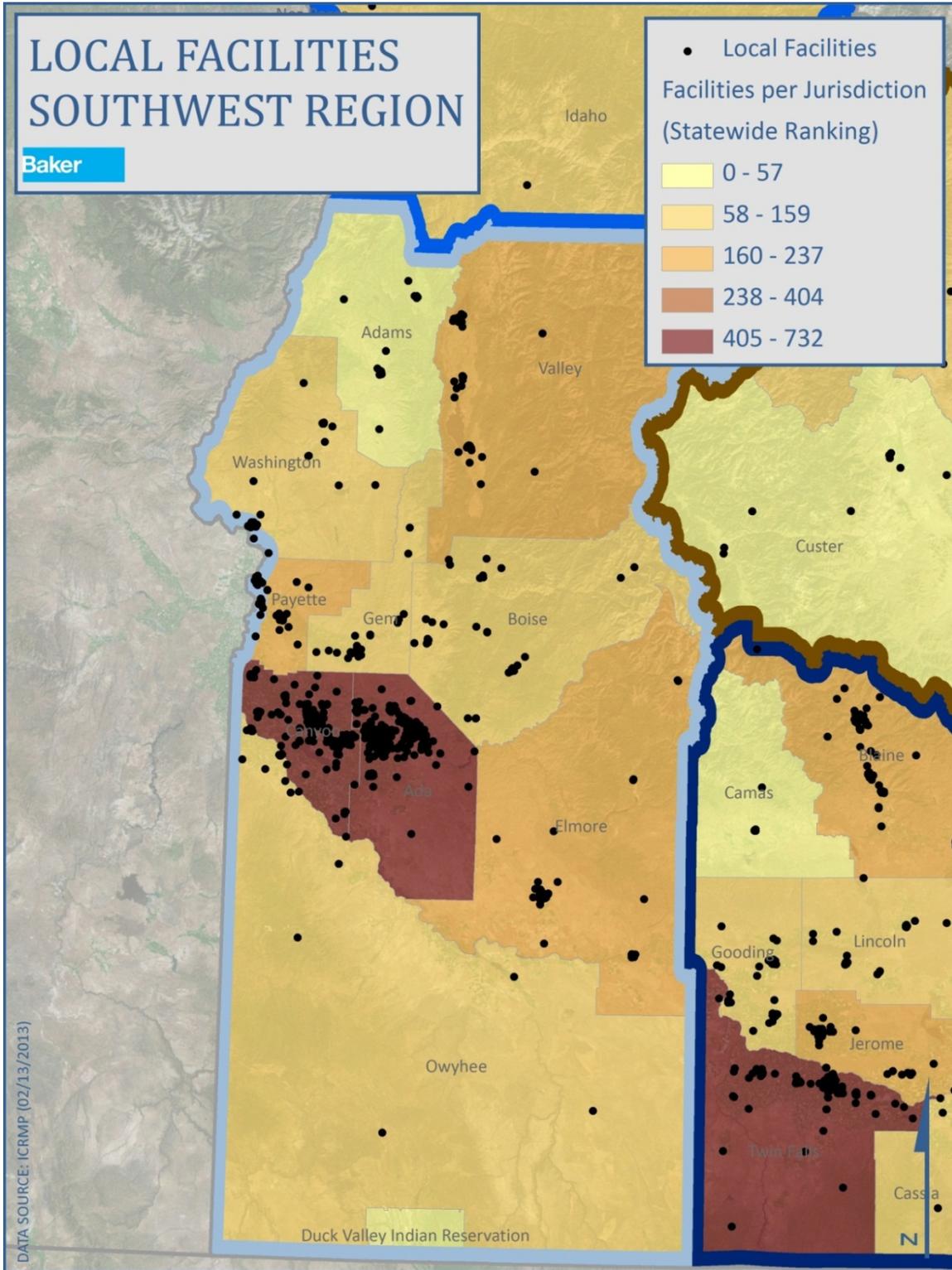
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.H: North Central Region Local Facilities



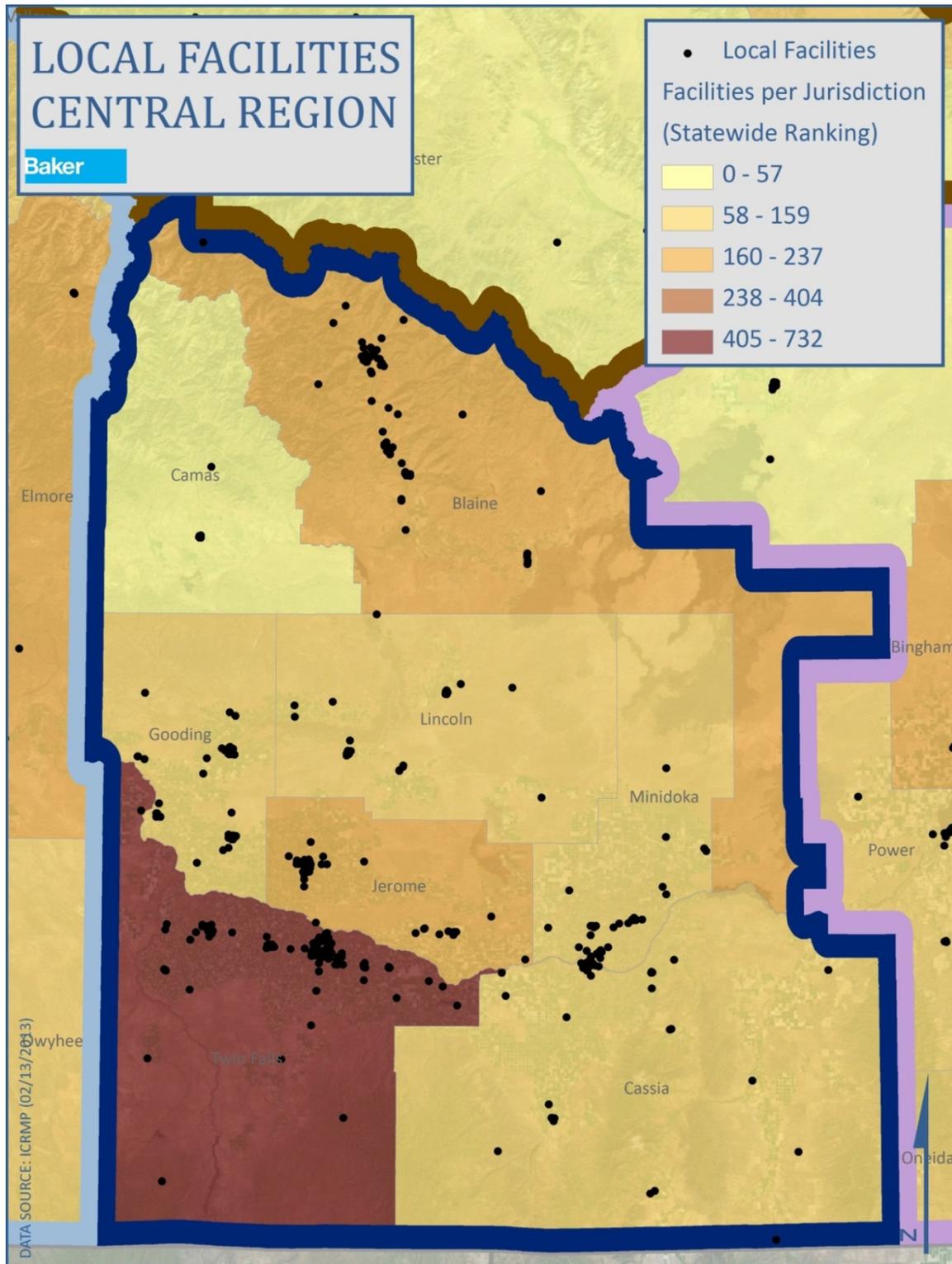
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.I: Southwest Region Local Facilities



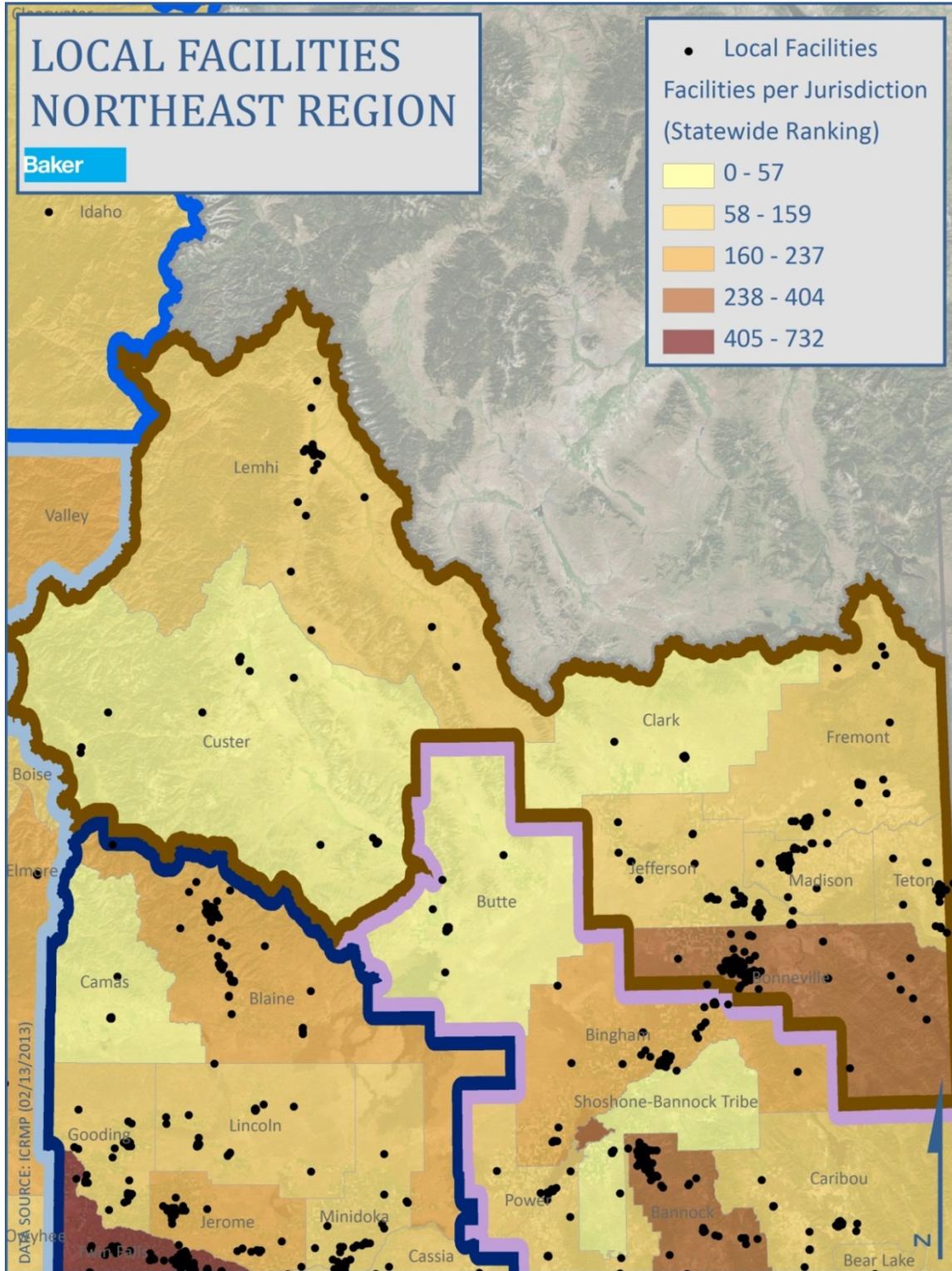
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.J: Central Region Local Facilities



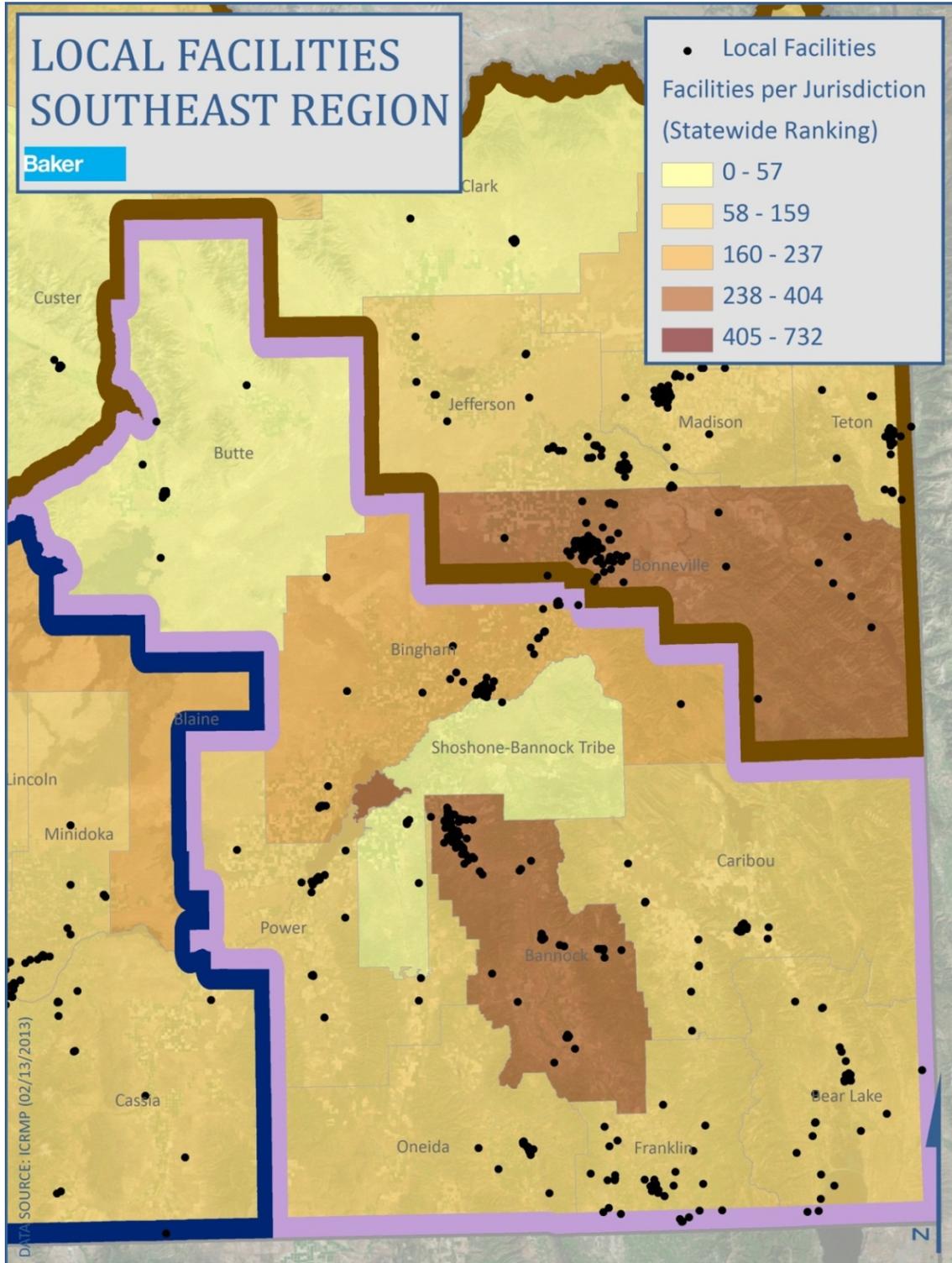
CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.K: Northeast Region Local Facilities



CHAPTER 3 HAZARDS IN IDAHO



Map 3.1.L: Southeast Region Local Facilities



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