

Location Restriction Compliance Demonstration

Lansing Generating Station Surface Impoundments
2320 Power Plant Road
Lansing, Iowa 52151

Prepared for:

Interstate Power and Light Company
Lansing Generating Station
2320 Power Plant Road
Lansing, Iowa 52151

SCS ENGINEERS

25220100.00 | October 29, 2020

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

Table of Contents

Section	Page
P.E. Certification	iii
1.0 Introduction	1
2.0 Location Restrictions	1
3.0 References	2

Figures

Figure 1. Site Location Map

Appendices

Appendix A Wetland Information
Appendix B Fault Location Map
Appendix C Seismic Hazard Map

I:\25220100\Deliverables\Location Restrictions Demonstration\201029_LAN_Location Restriction Demo.docx

[This page left blank intentionally]

P.E. CERTIFICATION

	<p>I, Eric J. Nelson, hereby certify that the location restriction demonstrations prepared for the surface impoundments at the Lansing Generating Station meet the requirements in 40 CFR 257.61(a), 62(a), and 63(a). This certification is based on my review of the October 2020 Location Restriction Compliance Demonstrations for the surface impoundments prepared by SCS Engineers. I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	
	<p>10/29/2020</p>
	<p>(signature) (date)</p>
	<p>Eric J. Nelson (printed or typed name)</p> <p>License number 23136</p> <p>My license renewal date is December 31, 2020.</p> <p>Pages or sheets covered by this seal:</p> <p>All pages except Appendix A.</p>

[This page left blank intentionally]

1.0 INTRODUCTION

On behalf of Interstate Power and Light Company (IPL), SCS Engineers (SCS) has prepared the enclosed Location Restriction Compliance Demonstration for the coal combustion residual (CCR) surface impoundments at the Lansing Generating Station (LAN) as required by 40 CFR 257.61-63. The CCR surface impoundment addressed with this demonstration include:

- LAN Upper Ash Pond

Figure 1 shows the site and surface impoundment locations.

2.0 LOCATION RESTRICTIONS

§257.61 “Wetlands.”

“(a) New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in wetlands, as defined in §232.2 of this chapter, unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that the CCR unit meets the requirements of paragraphs (a)(1) through (5) of this section.”

The existing CCR surface impoundments are not located in wetlands as defined by 40 CFR 232.2. A wetland determination and field review was performed by Natural Resources Consulting, Inc. (NRC) dated March 11, 2008. The field review portion of determination was completed on August 30, 2007. This wetland determination included a review of a previous wetland delineation prepared by NRC in October 2005.

NRC describes the LAN Upper Ash Pond in the review. “A series of sediment ponds are found south of Power Plant Drive (Figure 4). These areas are well defined and have little to no associated wetland fringe (NRC 2008).” NRC shows the settling ponds on their field data map provided as Figure 4 in **Appendix A**. These “settling ponds” in the LAN Upper Ash Pond area do not meet the 40 CFR 232.2 definition and exist within the areas that transport or hold operational wastewaters and stormwater runoff (i.e., the facility waste treatment system as defined by 40 CFR 120.2). A copy of the wetland review is included in **Appendix A**.

§257.62 “Fault areas.”

“(a) New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that an alternative setback distance of less than 60 meters (200 feet) will prevent damage to the structural integrity of the CCR unit.”

Based on a review of the U.S. Geological Survey (USGS) Quaternary faults database and map, as shown in **Appendix B**, the existing CCR surface impoundments are not located within 200 feet of the outermost damage zone of a fault that has had displacement in Holocene time. In 40 CFR 257.53, Holocene is defined as the most recent epoch of the Quaternary period extending from 11,700 years before present, to present. The USGS map shows that no faults are located in Iowa.

§257.63 “Seismic impact zones.”

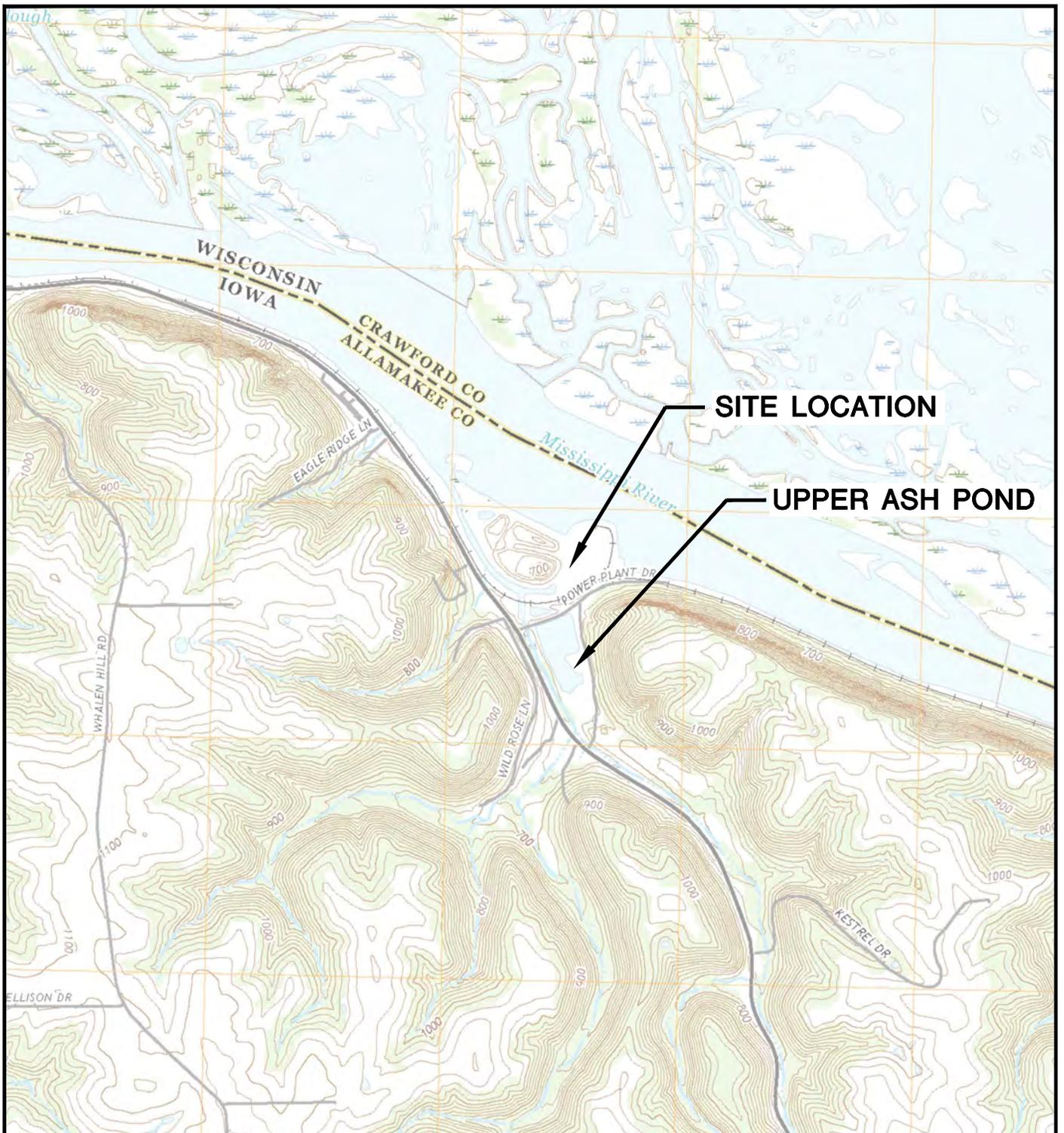
“(a) New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in seismic impact zones unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that all structural components including liners, leachate collection and removal systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.”

The existing CCR surface impoundments are not located in seismic impact zones. In 40 CFR 257.53, a seismic impact zone is defined as an area having a 2 percent or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth’s gravitational pull (g), will exceed 0.10 g in 50 years. Based on a review of the USGS 2014 Seismic Hazard Maps (see **Appendix C**), the maximum expected horizontal acceleration for the vicinity of the Lansing Generating Station is approximately 0.02-0.04 g, below the threshold for a seismic impact zone.

3.0 REFERENCES

- A. Natural Resources Consulting, Inc., 2008, Wetland Office Determination and Field Review, March 11, 2008
- B. USGS Quaternary Faults map website (accessed, 10/21/2020):
<https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf>
- C. Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, E.H., Chen, Rui, Luco, Nicolas, Wheeler, R.L., Williams, R.A., Olsen, A.H., and Rukstales, K.S., 2015, Seismic-hazard maps for the conterminous United States, 2014: U.S. Geological Survey Scientific Investigations Map 3325, 6 sheets, scale 1: 7,000,000, <http://dx.doi.org/10.3133/sim3325>

Figure 1
Site Location Map



LANSING QUADRANGLE
 IOWA-ALLAMAKEE CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	INTERSTATE POWER AND LIGHT 2320 POWER PLANT DRIVE LANSING, IA 52151-9733		SITE	ALLIANT ENERGY LANSING GENERATING STATION LANSING, IOWA		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220100.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	10/21/2020	CHECKED BY:	PEG					
REVISED:	10/21/2020	APPROVED BY:	EJN					

Appendix A
Wetland Information



2300 Swan Lake Blvd., Suite 200 | Independence, IA 50644
Ph: 319.334.3755 | Fax: 319.334.3780 | Cell: 319.327.0411

www.nrc-inc.net

March 11, 2008

Mr. Steve Jackson
Senior Environmental Specialist
Alliant Energy
4902 N. Biltmore Lane
PO Box 77007
Madison, WI 53707-1007

Subject: **Wetland Office Determination and Field Review
Lansing Generating Station, Allamakee County, Iowa
NRC Project No. 007-0152-02**

Dear Mr. Jackson:

Natural Resources Consulting, Inc. (NRC) conducted an office determination and field review for wetlands at the existing Lansing Generating Station near Lansing, Iowa (Allamakee County). Windshield and walking surveys of the area were conducted August 30, 2007 to confirm the findings of the office determination. This report presents the methodology, results, and conclusions of the wetland office determination and field review.

PROJECT LOCATION AND DESCRIPTION

Interstate Power and Light (IPL) is proposing to install emission control equipment on or within close proximity to the existing facility located immediately adjacent to the Mississippi River in Sections 2 and 3, T98N, R3W near Lansing, Iowa (Figure 1).

Land use adjacent to the site is primarily upland and floodplain forest, grassland and residential lots.

PURPOSE OF THE STUDY

The purpose of the study was to complete an office determination of wetlands found within and immediately adjacent to the existing facility. A field visit was made to confirm data obtained as part of the office determination.

METHODS

The initial steps in the wetland determination process included a review of the following documents:

- Allamakee County Soil Survey (Figure 2);
- Natural Resources Conservation Service (NRCS) list of hydric soil for Allamakee County (USDA, 1994);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map (Figure 3)

- Wetland Determination and Delineation Report, Alliant Energy/Iowa Chicago and Eastern Railroad Project, Allamakee County, Iowa; prepared by NRC (October 2005).

These documents provide information on where wetlands have been previously identified or areas that possess a high likelihood of wetlands occurring.

Both an office determination and field visit were conducted to determine potential wetland areas. Windshield and walking surveys were conducted by NRC staff on August 30, 2007 to confirm the findings of the office determination.

Potential wetland areas identified on NWI maps and any other areas identified in the field were investigated. Those areas with a predominance of hydrophytic vegetation or had obvious wetland hydrology indicators were sketched onto aerial photography.

NRC staff conducted a wetland delineation for the Alliant Energy/Iowa Chicago and Eastern Railroad project, which included the existing plant. The final report was prepared in October 2005. Wetland boundaries identified during the 2005 delineation and those approximate wetland boundaries found as part of the current study are shown on Figure 4. No formal wetland determinations/delineations were conducted as part of the current investigation and no soil samples were taken on the day of the fieldwork.

RESULTS

Wetlands

Wetland totals by type are shown in Table 1 below. Potential wetland areas found within the study area are shown on Figure 4. Approximately 2.7 acres of palustrine forested wetland and 0.4 acre of palustrine emergent wetland were identified within the study limits.

Palustrine Forested Wetlands

NWI maps indicate palustrine forested wetland adjacent to Great River Road northwest of the existing plant (Figure 3). A small forested wetland was identified east of the existing plant during a 2005 delineation conducted on October 17, 2005 as part of a separate study by NRC (Figure 4). As part of the current study, a narrow, forested wetland was found on the east side of the property. This wetland begins east of a gravel service road and extends west down a narrow drainageway (Figure 4).

Hydrology indicators present within the forested wetland areas include inundation, saturation within 12 inches of the surface, oxidized rhizospheres and hydrophytic vegetation (FAC-neutral test).

Soil map units within these areas include: Caneek silt loam, channeled, 0-2% slopes (1490) (listed on the local hydric soil list for Allamakee County (USDA, 2007) and Churchtown Loam, 18-25% slopes (862f)(USDA, 2007), a non-hydric soil (USDA, 2007).

Vegetation within the forested wetland areas is dominated by silver maple (*Acer saccharinum*), Eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*), reed canary grass (*Phalaris arundinacea*), porcupine sedge (*Carex hystericina*) and wood nettle (*Laportea canadensis*).

Emergent Wetlands

Two narrow emergent wetlands were delineated during the 2005 study (NRC, 2005) within a ditch adjacent to railroad tracks located immediately south of the existing plant (Figure 4). Hydrology indicators present on the day of the August field visit include inundation, saturation within 12 inches of the surface and hydrophytic vegetation (FAC-neutral test).

Soil map units within these two areas include: Churchtown Loam, 18-25% slopes (862f) and Orthents, loamy (5040)(USDA, 2007), both of which are non-hydric map units (USDA, 2007).

Vegetation in these areas is primarily bluejoint grass (*Calamagrostis canadensis*), narrow-leaved cattail (*Typha angustifolia*) and reed canary grass.

These areas have been created as a result of activities at the plant and would likely be considered isolated.

Ponds and Other Features

Three ponds are identified as palustrine unconsolidated bottom wetlands on NWI maps (Figure 3). A series of sediment ponds are found south of Power Plant Drive (Figure 4). These areas are well defined and have little to no associated wetland fringe. A second sediment pond is found immediately northwest of the coal pile (Figure 4). The third pond is located immediately north of Power Plant Drive and contains some wetland fringe, primarily willow (*Salix sp.*), along the southeast edge of the pond.

A narrow, riprapped drainageway is found immediately east of Great River Road (south of Power Plant Drive) and extends south to the property boundary. Some wetland vegetation, including silver maple and eastern cottonwood, is found adjacent to the drainageway which likely floods during heavy rains.

Table 1
Approximate Wetland Acreage by Type

Wetland Type	Total Acreage
Palustrine Forested	2.7
Palustrine Emergent	0.4
Total	3.1

Other Waters of the U.S.

The existing Lansing Generating Station is located immediately west of the Mississippi River (Figure 1), which has a defined bed, bank and ordinary high water mark and actively sorts silt; therefore, the river meets Waters of the U.S. criteria.

Mr. Steve Jackson
March 11, 2008
NRC Project # 007-0152-02

Lansing Generating Station
Allamakee County, Iowa

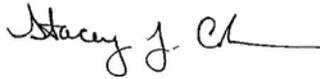
CONCLUSIONS

Based on the office determination and field review, approximately 2.7 acres of palustrine forested wetland and 0.4 acre of palustrine emergent wetland are found within the project limits. Approximate boundaries of these aerially delineated wetlands are shown on Figure 4. A formal wetland delineation, using methods described in the 1987 U.S. Army Corps of Engineers Manual and subsequent guidance documents, should be conducted prior to any construction activities in areas containing wetlands.

If you have any questions, or need additional information, please feel free to contact me at 319-334-3755

Sincerely,

Natural Resources Consulting, Inc.

A handwritten signature in black ink that reads "Stacey J. Carlson". The signature is written in a cursive style with a horizontal line extending to the right.

Stacey J. Carlson
Environmental Scientist



FIGURE 1. PROJECT LOCATION & TOPOGRAPHY
IPL: Lansing Generating Station



Map Area Shown in Red

Location

Sections 2&3 of T 98 North, R 3 West,
 Town of Lansing, Allamakee County, IA

Project Information

NRC Project Number : 007-0152-03
 Modified December 19, 2007



0 1,000 2,000 Feet

Legend

 Approximate Project Location



2841 Stanley Street
 Stevens Point, WI 54481
 phone: 715-344-9480
 fax: 715-344-9481
www.nrc-inc.net

FIGURE 2. NRCS SOIL SURVEY DATA
IPL: Lansing Generating Station



Map Area Shown in Red

Location

Sections 2&3 of T 98 North, R 3 West,
 Town of Lansing, Allamakee County, IA

Project Information

NRC Project Number : 007-0152-03
 Modified January 21, 2008



0 300 600 Feet

Legend

-  Approximate Project Location
-  Rivers
-  Sections
- NRCS Soil Survey Data**
-  Hydic Soils
-  Poss. Hydic Inclusions
-  Non-Hydic Soils




NRC
 Natural Resources Consulting, Inc.

2841 Stanley Street
 Stevens Point, WI 54481
 phone: 715-344-9480
 fax: 715-344-9481
www.nrc-inc.net

FIGURE 3.
NATIONAL WETLANDS INVENTORY DATA
IPL: Lansing Generating Station



Map Area Shown in Red

Location

Sections 2&3 of T 98 North, R 3 West,
 Town of Lansing, Allamakee County, IA

Project Information

NRC Project Number : 007-0152-03
 Modified January 21, 2008



0 300 600 Feet

Legend

-  Approximate Project Location
-  NWI Data
-  Sections
-  Rivers



2841 Stanley Street
 Stevens Point, WI 54481
 phone: 715-344-9480
 fax: 715-344-9481
www.nrc-inc.net



FIGURE 4. FIELD DATA
IPL: Lansing Generating Station



Map Area Shown in Red

Location

Sections 2&3 of T 98 North, R 3 West,
 Town of Lansing, Allamakee County, IA

Project Information

NRC Project Number : 007-0152-03
 Modified January 21, 2008



0 300 600 Feet

Legend

- Approximate Project Location
- Sections
- Wetland
- Settling Ponds
- Pond
- Drainage Ditch
- Waterways

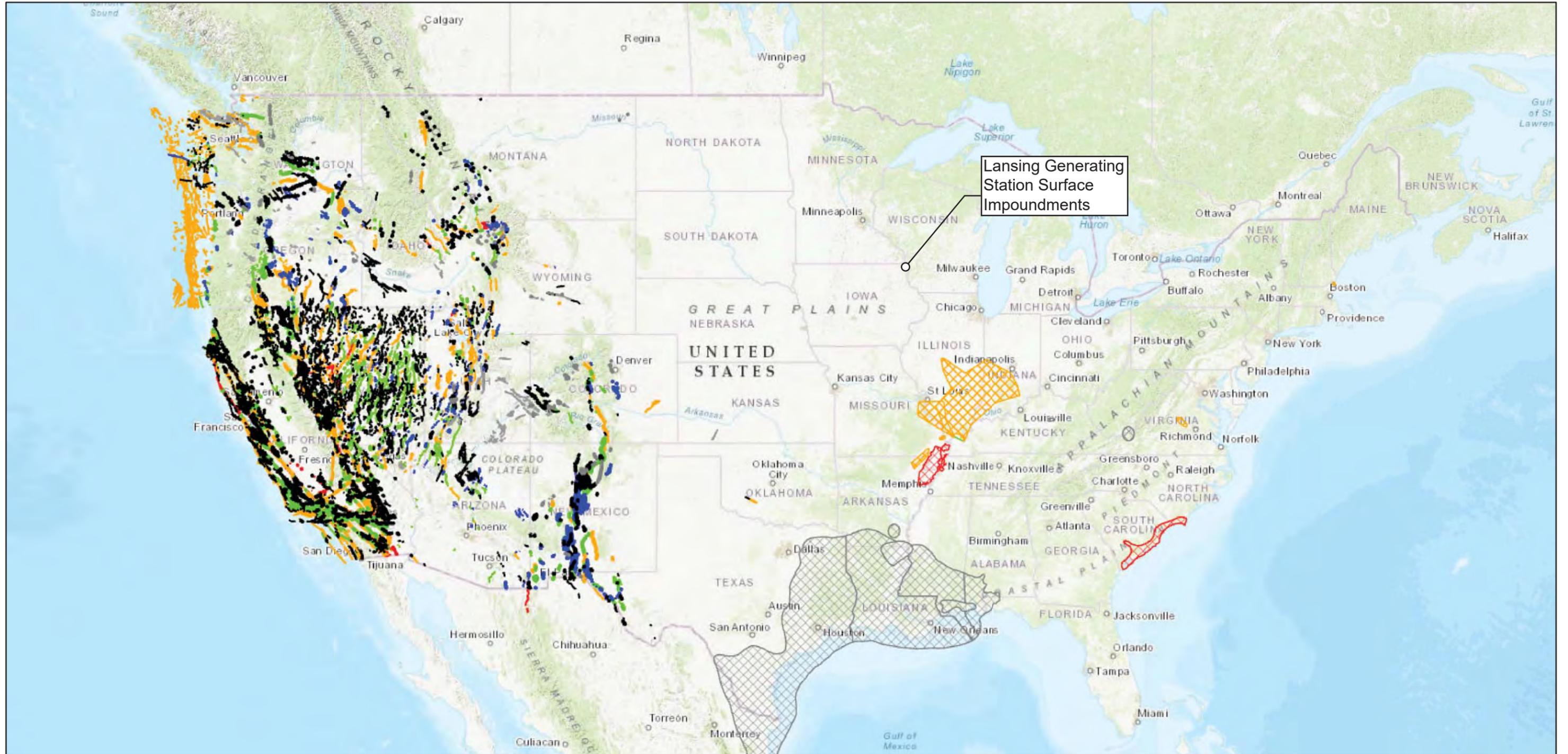
E = Emergent Wetland
F = Forested Wetland



2841 Stanley Street
 Stevens Point, WI 54481
 phone: 715-344-9480
 fax: 715-344-9481
www.nrc-inc.net

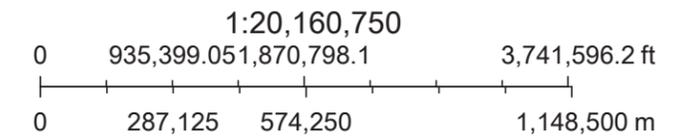
Appendix B
Fault Location Map

U.S. Geological Survey Quaternary Faults



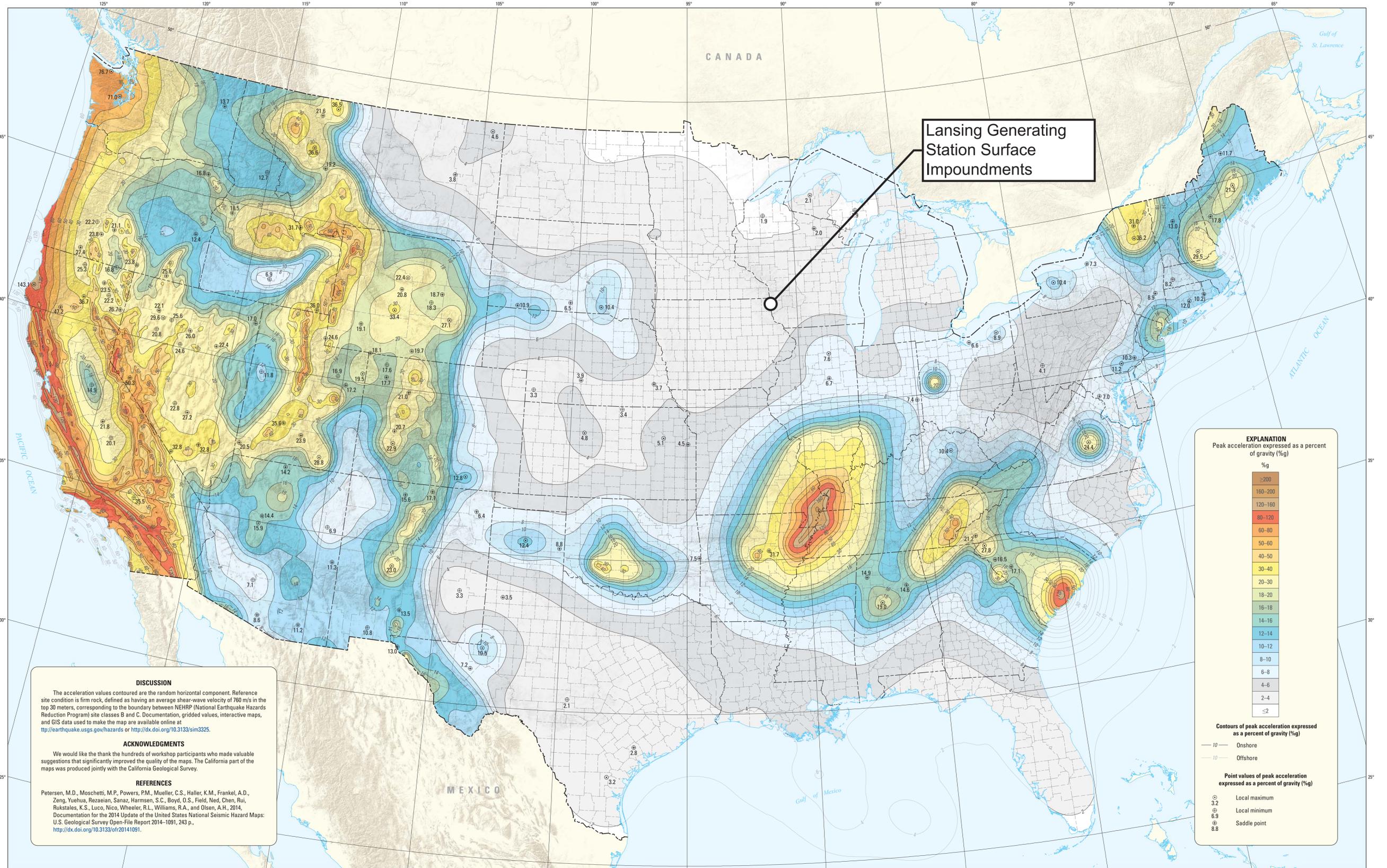
10/21/2020, 11:38:11 AM

- | | | |
|------------------------------|--|---|
| Fault Areas | National Database | — Late Quaternary (< 130,000 years), well constrained location |
| ▨ Class B | — Historic (< 150 years), well constrained location | - - - Late Quaternary (< 130,000 years), moderately constrained location |
| ▨ historic | - - - Historic (< 150 years), moderately constrained location | ⋯ Late Quaternary (< 130,000 years), inferred location |
| ▨ late Quaternary | ⋯ Historic (< 150 years), inferred location | — Middle and late Quaternary (< 750,000 years), well constrained location |
| ▨ latest Quaternary | — Latest Quaternary (<15,000 years), well constrained location | - - - Middle and late Quaternary (< 750,000 years), moderately constrained location |
| ▨ middle and late Quaternary | - - - Latest Quaternary (<15,000 years), moderately constrained location | ⋯ Middle and late Quaternary (< 750,000 years), inferred location |
| | ⋯ Latest Quaternary (<15,000 years), inferred location | |



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Appendix C
Seismic Hazard Map



DISCUSSION
The acceleration values contoured are the random horizontal component. Reference site condition is firm rock, defined as having an average shear-wave velocity of 760 m/s in the top 30 meters, corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction Program) site classes B and C. Documentation, gridded values, interactive maps, and GIS data used to make the map are available online at <http://earthquake.usgs.gov/hazards> or <http://dx.doi.org/10.3133/sim3325>.

ACKNOWLEDGMENTS
We would like to thank the hundreds of workshop participants who made valuable suggestions that significantly improved the quality of the maps. The California part of the maps was produced jointly with the California Geological Survey.

REFERENCES
Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, E.H., Chen, Rui, Rukstales, K.S., Luco, Nicolas, Wheeler, R.L., Williams, R.A., and Olsen, A.H., 2014. Documentation for the 2014 Update of the United States National Seismic Hazard Maps: U.S. Geological Survey Open-File Report 2014-1091, 243 p., <http://dx.doi.org/10.3133/ofr20141091>.

EXPLANATION
Peak acceleration expressed as a percent of gravity (%g)

>200
160-200
120-160
80-120
60-80
50-60
40-50
30-40
20-30
18-20
16-18
14-16
12-14
10-12
8-10
6-8
4-6
2-4
≤2

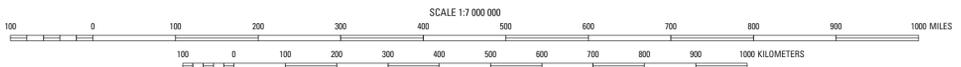
Contours of peak acceleration expressed as a percent of gravity (%g)

- Onshore
- Offshore

Point values of peak acceleration expressed as a percent of gravity (%g)

- ⊙ 3.2 Local maximum
- ⊕ 6.9 Local minimum
- ⊖ 8.8 Saddle point

Shaded relief base from Esri Inc., 2008, Data and Maps
All other base map data from Esri Inc., 1983, Digital Chart of the World
United States County base map from the U.S. Geological Survey National Atlas, available at <http://nationalatlas.gov/>
Projection: Albers equal-area conic
Standard parallels 29.5°N, and 45.5°N, central meridian 95°W



Digital data prepared with ArcGIS 10.1 running under Windows 7

Publishing support provided by:
Denver Publishing Service Center
Edit and digital layout by L.J. Binder
Manuscript approved for publication on April 6, 2015
For more information concerning this publication, contact:
Center Director, USGS Geologic Hazards Science Center
Box 25966, Mail Stop 966
Denver, CO 80225
(303) 273-8579
Or visit the Geologic Hazards Science Center Web site at:
<http://geohazards.cr.usgs.gov/>
Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.
Although this information product, for the most part, is in the public domain, it also contains copyrighted materials as noted in the text. Permission to reproduce copyrighted items must be secured from the copyright owner.
This database, identified as SIM 3325, has been approved for release and publication by the U.S. Geological Survey (USGS). Although this database has been subjected to rigorous review and is substantially complete, the USGS reserves the right to revise the data pursuant to further analysis and review. Furthermore, it is released on condition that neither the USGS nor the U.S. Government may be held liable for any damages resulting from its authorized or unauthorized use.

Seismic-Hazard Maps for the Conterminous United States, 2014

Peak Horizontal Acceleration with 2 Percent Probability of Exceedance in 50 Years

By
Mark D. Petersen,¹ Morgan P. Moschetti,¹ Peter M. Powers,¹ Charles S. Mueller,¹ Kathleen M. Haller,¹ Arthur D. Frankel,¹ Yuehua Zeng,¹ Sanaz Rezaeian,¹ Stephen C. Harmsen,¹ Oliver S. Boyd,¹ Edward H. Field,¹ Rui Chen,² Nicolas Luco,¹ Russell L. Wheeler,¹ Robert A. Williams,¹ Anna H. Olsen,¹ and Kenneth S. Rukstales¹
2015

U.S. Geological Survey
California Geological Survey, Sacramento, Calif.

ISSN 2229-132X (online)
<http://dx.doi.org/10.3133/sim3325>

This and other USGS information products are available at <http://store.usgs.gov/>
U.S. Geological Survey
Box 25966, Denver Federal Center
Denver, CO 80225
To learn about the USGS and its information products visit <http://www.usgs.gov/>
1-800-ASK-USGS
This report is available at <http://pubs.usgs.gov/sim3325/>
Suggested citation: Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, E.H., Chen, Rui, Luco, Nicolas, Wheeler, R.L., Williams, R.A., Olsen, A.H., and Rukstales, K.S., 2015. Seismic-hazard maps for the conterminous United States, 2014. U.S. Geological Survey Scientific Investigations Map 3325, 6 sheets, scale 1:7,000,000, <http://dx.doi.org/10.3133/sim3325>.