Flood-Inundation Maps and Wetland Restoration Suitability Index for the Blue River and Selected Tributaries, Kansas City, Missouri, and Vicinity, 2012



Flood-inundation depth grids for the Blue River at Stadium Drive in Kansas City, Missouri.

Summary

This dataset was created to support the development of flood-inundation maps for the Blue River and selected tributaries in Kansas City, Missouri and vicinity.

Description

Digital flood-inundation maps for a 39.7-mile reach of the Blue River and selected tributaries (Brush Creek, Indian Creek, and Dyke Branch) at Kansas City, Missouri, and vicinity, were created by the U.S. Geological Survey (USGS) in cooperation with the City of Kansas City, Missouri. The flood-inundation maps, accessed through the USGS Flood-Inundation Mapping Science Web site at http://water.usgs.gov/osw/flood_inundation/, depict estimates of the spatial extent and depth of flooding corresponding to selected water levels (stages) at 15 reference streamgages and associated stream reaches in the Blue River Basin. Near-real-time stage data from the streamgages may be obtained from the USGS National Water Information System at http://waterdata.usqs.gov/ or the National Weather Service (NWS) Advanced Hydrologic Prediction Service (AHPS) at http://water.weather.gov/ahps/, which also forecasts flood hydrographs at selected sites. Flood profiles were computed for each of 15 reaches by means of one-dimensional or two-dimensional hydraulic models. The models were calibrated by using the current stage-discharge relations at 10 USGS streamgages and documented highwater marks from the flood of June 14, 2010. Hydraulic models were then used to compute water-surface profiles for flood stages at 1-foot intervals referenced to the streamgage datum and ranging from the National Weather Service Action stage, or near bankfull discharge, through the stage corresponding to, or exceeding, the estimated 0.2-percent annual exceedance probability flood (500-year recurrence interval flood). The simulated water-surface profiles were then combined with a geographic information system (GIS) terrain model (derived from light detection and ranging (lidar) data having a vertical accuracy of less than 0.6 foot and nominal horizontal post spacing of 2.46 to 3.28 feet) to delineate the area flooded at each 1-foot increment of stage. The availability of these flood-inundation maps, along with Internet information regarding current stage from the USGS streamgages and forecasted highflow stages from the NWS, will provide emergency management personnel and residents with information for flood response activities such as evacuations and road closures, as well as for post flood recovery efforts.

The accompanying shape file containing inundation extent polygons for stages 26 through 50 ft correlate with the range in the 28, 1-ft increment depth grids (GRIDID 1 through 28) such that GRIDID 1 correlates with stage 26, and GRIDID 2 correlates with stage 27, etc.

Credits

There are no credits for this item.

Use limitations

None. This dataset is provided by USGS as a public service. Users of this geospatial database and geologic information derived there from should acknowledge the U.S. Geological Survey as the source of the data.

Extent

West	-94.558556	East	-94.493614
North	39.080706	South	39.034225

Scale Range

Maximum (zoomed in) 1:5,000 Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ►

Topics and Keywords ►

* CONTENT TYPE	Downloadable Data
PLACE KEYWORDS	Missouri, Jackson County, Blue River Basin, Indian Creek, Kansas City
THEME KEYWORDS	Flooding, Flood-inundation mapping, Blue River Basin, Indian Creek
THEME KEYWORDS	Flood, Flood-inundation mapping, Blue River

Hide Topics and Keywords

Citation ►

TITLE Flood-Inundation Maps and Wetland Restoration Suitability Index for the Blue River and Selected Tributaries, Kansas City, Missouri, and Vicinity, 2012 PUBLICATION DATE 2014-11-26 00:12:00

PRESENTATION FORMATS digital map

Hide Citation **A**

Citation Contacts ►

RESPONSIBLE PARTY ORGANIZATION'S NAME David Heimann, U.S. Geological Survey, Hydrologist CONTACT'S ROLE originator

Hide Citation Contacts

Resource Details ►

DATASET LANGUAGES English (UNITED STATES) DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format STATUS completed SPATIAL REPRESENTATION TYPE * grid

* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.2.1.3497

ARCGIS ITEM PROPERTIES

- * NAME mostad_28.flt
- * LOCATION file://H:\Submitted_FIM_libraries\Stadium\MOStadium\mostad_28.flt * ACCESS PROTOCOL Local Area Network

Hide Resource Details

Extents ►

EXTENT

DESCRIPTION

Flood-inundation project began in October 2012 and completed in November 2014

TEMPORAL EXTENT

BEGINNING DATE 2012-10-01 00:12:00 ENDING DATE 2014-11-26 00:12:00

EXTENT

GEOGRAPHIC EXTENT BOUNDING RECTANGLE WEST LONGITUDE -94.503927 EAST LONGITUDE -94.45471 SOUTH LATITUDE 39.09201 NORTH LATITUDE 39.125997

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

- * WEST LONGITUDE -94.558556
- * EAST LONGITUDE -94.493614
- * NORTH LATITUDE 39.080706
- * SOUTH LATITUDE 39.034225
- * EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM

- * WEST LONGITUDE 2772086.172618
- * EAST LONGITUDE 2790521.172618
- * SOUTH LATITUDE 1044126.416565
- * NORTH LATITUDE 1061049.416565
- * EXTENT CONTAINS THE RESOURCE Yes

Hide Extents

Resource Points of Contact ►

POINT OF CONTACT INDIVIDUAL'S NAME David Heimann ORGANIZATION'S NAME U.S. Geological Survey CONTACT'S POSITION Hydrologist CONTACT'S ROLE point of contact

CONTACT INFORMATION PHONE VOICE 816-554-3489 x 206 ADDRESS TYPE postal DELIVERY POINT 401 NW Capital Drive CITY Lee's Summit ADMINISTRATIVE AREA Missouri POSTAL CODE 64029 E-MAIL ADDRESS dheimann@usgs.gov

Hide Contact information **A**

Hide Resource Points of Contact ▲

Resource Maintenance ►

RESOURCE MAINTENANCE UPDATE FREQUENCY not planned

Hide Resource Maintenance

Resource Constraints ►

LEGAL CONSTRAINTS

LIMITATIONS OF USE

None. This dataset is provided by USGS as a public service. Users of this geospatial database and geologic information derived there from should acknowledge the U.S. Geological Survey as the source of the data.

OTHER CONSTRAINTS

Disclaimer for Flood-Inundation Maps; Inundated areas shown should not be used for navigation, regulatory, permitting, or other legal purposes. The USGS provides these maps as-is for a quick reference, emergency planning tool but assumes no legal liability or responsibility resulting from the use of this information. Uncertainties and Limitations Regarding Use of Flood-Inundation Maps; Although the flood-inundation maps represent the boundaries of inundated areas with a distinct line, some uncertainty is associated with these maps. The flood boundaries shown were estimated based on water stages (watersurface elevations) and streamflows at USGS reference streamgages. Water-surface elevations along the stream reaches were estimated by steady-state hydraulic modeling, assuming unobstructed flow, and using discharges and hydrologic conditions anticipated at the USGS streamgage. The hydraulic model reflects the land-cover characteristics and any bridge, dam, levee, or other hydraulic structures existing as of June 2010. Unique meteorological factors (timing and distribution of precipitation) may cause actual discharges along the modeled reach to vary from those assumed during a flood and lead to deviations in the water-surface elevations and inundation boundaries shown. Additional areas may be flooded due to unanticipated conditions such as changes in the streambed elevation or roughness, backwater into tributaries along a main-stem river, or backwater from localized debris or ice jams. The accuracy of the floodwater extent portrayed on these maps will vary with the accuracy of the topographic data used to simulate the land surface. Additional uncertainties and limitations pertinent to this study are described elsewhere in USGS report SIR 2014-5180. If this series of flood-inundation maps will be used in conjunction with NWS river forecasts, the user should be aware of additional

uncertainties that may be inherent or factored into NWS forecast procedures. The NWS uses forecast models to estimate the quantity and timing of water flowing through selected stream reaches in the United States. These forecast models (1) estimate the amount of runoff generated by precipitation and snowmelt, (2) simulate the movement of floodwater as it proceeds downstream, and (3) predict the flow and stage (and water-surface elevation) for the stream at a given location (AHPS forecast point) throughout the forecast period (every 6 hours and 3 to 5 days out in many locations). For more information on AHPS forecasts, please see

http://water.weather.gov/ahps/pcpn_and_river_forecasting.pdf.

CONSTRAINTS

LIMITATIONS OF USE

None. This dataset is provided by USGS as a public service. Users of this geospatial database and geologic information derived there from should acknowledge the U.S. Geological Survey as the source of the data.

Hide Resource Constraints

Spatial Reference

ARCGIS COORDINATE SYSTEM

- * TYPE Projected
- * GEOGRAPHIC COORDINATE REFERENCE GCS_North_American_1983
- * PROJECTION NAD83_Missouri_West
- * COORDINATE REFERENCE DETAILS PROJECTED COORDINATE SYSTEM

```
X ORIGIN -15658800
Y ORIGIN -45949000
XY SCALE 137249632.08009261
Z ORIGIN -100000
Z SCALE 10000
M ORIGIN -100000
M SCALE 10000
XY TOLERANCE 0.0032808333333333331
Z TOLERANCE 0.001
M TOLERANCE 0.001
HIGH PRECISION true
WELL-KNOWN TEXT PROJCS["NAD83_Missouri_West", GEOGCS
["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID
["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT
["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER
["false_easting",2788708.333333334],PARAMETER["false_northing",0.0],PARAMETER
["central_meridian",-94.5],PARAMETER["scale_factor",0.999941177],PARAMETER
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REFERENCE SYSTEM IDENTIFIER * VALUE 0

Hide Spatial Reference

Spatial Data Properties

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GEORECTIFIED GRID 
* NUMBER OF DIMENSIONS 2
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AXIS DIMENSIONS PROPERTIES

```
DIMENSION TYPE row (y-axis)
    * DIMENSION SIZE 5641
    * RESOLUTION 3.000000 Foot US
  AXIS DIMENSIONS PROPERTIES
    DIMENSION TYPE column (x-axis)
    * DIMENSION SIZE 6145
    * RESOLUTION 3.000000 Foot US
  * CELL GEOMETRY area
  * POINT IN PIXEL center
  * TRANSFORMATION PARAMETERS ARE AVAILABLE Yes
  * CHECK POINTS ARE AVAILABLE NO
  CORNER POINTS
    * POINT 2772086.172618 1044126.416565
    * POINT 2772086.172618 1061049.416565
    * POINT 2790521.172618 1061049.416565
    * POINT 2790521.172618 1044126.416565
  * CENTER POINT 2781303.672618 1052587.916565
 Hide Georectified Grid A
ARCGIS RASTER PROPERTIES
  GENERAL INFORMATION
    * PIXEL DEPTH 32
    * COMPRESSION TYPE None
    * NUMBER OF BANDS 1
    * RASTER FORMAT FLT
    * SOURCE TYPE continuous
    * PIXEL TYPE floating point
    * NO DATA VALUE -9999
    * HAS COLORMAP NO
    * HAS PYRAMIDS NO
 Hide ArcGIS Raster Properties
Hide Spatial Data Properties
```

Spatial Data Content >

IMAGE DESCRIPTION * TYPE OF INFORMATION image

BAND INFORMATION

- * DESCRIPTION Band_1
- * NUMBER OF BITS PER VALUE 32

Hide Spatial Data Content

Data Quality 🕨

SCOPE OF QUALITY INFORMATION RESOURCE LEVEL attribute

Hide Scope of quality information ▲

DATA QUALITY REPORT - QUANTITATIVE ATTRIBUTE ACCURACY DIMENSION horizontal

MEASURE DESCRIPTION

Horizontal position accuracy is based on the accuracy of lidar data, survey data (accurate to the datum of the survey) and the accuracy of the one-dimensional or two-dimensional hydraulic model used to develop the water surface profiles.

Hide Data quality report - Quantitative attribute accuracy

```
DATA QUALITY REPORT - QUANTITATIVE ATTRIBUTE ACCURACY 
DIMENSION vertical
```

MEASURE DESCRIPTION

Vertical position accuracy is based on the accuracy of lidar data, survey data (accurate to the datum of the survey) and the accuracy of the one-dimensional or two-dimensional hydraulic model used to develop the water surface profiles.

Hide Data quality report - Quantitative attribute accuracy

Hide Data Quality

Lineage 🕨

```
PROCESS STEP
```

WHEN THE PROCESS OCCURRED 2014-11-26

DESCRIPTION

This dataset was created to support the development of flood-inundation maps for a reach of the Blue River at Kansas City, Missouri.

```
PROCESS CONTACT
INDIVIDUAL'S NAME David Heimann
ORGANIZATION'S NAME U.S. Geological Survey
CONTACT'S POSITION Hydrologist
CONTACT'S ROLE processor
```

CONTACT INFORMATION ADDRESS E-MAIL ADDRESS dheimann@usgs.gov

Hide Contact information

Hide Process step

SOURCE DATA

DESCRIPTION

Heimann, D. C., Weilert, T.E., Kelly, B.P., and Studley, S.E., 2014, Flood-inundation maps and Wetland Restoration Suitability Index for the Blue River and selected tributaries, Kansas City, Missouri, and vicinity, 2012: U.S. Geological Survey Scientific Investigations Report 2014-5180, xx p. Online_Linkage: http://pubs.er.usgs.gov/publication/sir20145180

SOURCE MEDIUM NAME online link *Hide Source data* ▲

Hide Lineage

Distribution ►

DISTRIBUTOR CONTACT INFORMATION ORGANIZATION'S NAME U.S. Geological Survey CONTACT'S ROLE distributor

> CONTACT INFORMATION PHONE VOICE 1-888-ASK-USGS

ADDRESS

TYPE physical DELIVERY POINT USGS Information Services Box 25286 CITY Denver ADMINISTRATIVE AREA Colorado POSTAL CODE 80225

Hide Contact information **A**

Hide Distributor

DISTRIBUTION FORMAT * NAME Raster Dataset

Hide Distribution **A**

Fields **>**

```
DETAILS FOR OBJECT MOStadium 

* TYPE Feature Class

* ROW COUNT 28

FIELD FID 

* ALIAS FID

* DATA TYPE OID

* WIDTH 4

* PRECISION 0
```

```
* SCALE 0
```

- * FIELD DESCRIPTION Internal feature number.
- * DESCRIPTION SOURCE Esri
- * DESCRIPTION OF VALUES Sequential unique whole numbers that are automatically generated.

Hide Field FID 🔺

FIELD Shape ►

- * ALIAS Shape
- * DATA TYPE Geometry
- * WIDTH 0
- * PRECISION 0
- * SCALE 0
- * FIELD DESCRIPTION Feature geometry.
- * DESCRIPTION SOURCE ESRI
- * DESCRIPTION OF VALUES Coordinates defining the features.

Hide Field Shape ▲

FIELD OBJECTID ► * ALIAS OBJECTID

- * DATA TYPE Integer
- * WIDTH 9
- * PRECISION 9
- * SCALE 0

Hide Field OBJECTID ▲

FIELD Shape_Leng ► * ALIAS Shape_Leng * DATA TYPE Double * WIDTH 19 * PRECISION 0 * SCALE 0 Hide Field Shape_Leng ▲ FIELD Shape_Area ►

- * ALIAS Shape_Area
- * DATA TYPE Double * WIDTH 19

- * PRECISION 0
- * SCALE 0
- * FIELD DESCRIPTION Area of feature in internal units squared.
- * DESCRIPTION SOURCE Esri
- * DESCRIPTION OF VALUES Positive real numbers that are automatically generated.

Hide Field Shape_Area

FIELD STAGE ►

- * ALIAS STAGE
- * DATA TYPE Double
- * WIDTH 19
- * PRECISION 0
- * SCALE 0
- FIELD DESCRIPTION

USGS river stage associated with the inundation area, in feet.

DESCRIPTION SOURCE USGS streamgage

Hide Field STAGE ▲

FIELD ELEV ►

- * ALIAS ELEV
- * DATA TYPE Double
- * WIDTH 19
- * PRECISION 0
- * SCALE 0
- FIELD DESCRIPTION

NAVD88 water-surface elevation that correlates with the USGS river stage, in feet.

DESCRIPTION SOURCE USGS streamgage datum

Hide Field ELEV ▲

FIELD USGSID * ALIAS USGSID * DATA TYPE String * WIDTH 20 * PRECISION 0 * SCALE 0 FIELD DESCRIPTION USGS station ID number DESCRIPTION SOURCE USGS streamgage

Hide Field USGSID ▲

FIELD GRIDID ►
 * ALIAS GRIDID
 * DATA TYPE SmallInteger
 * WIDTH 4
 * PRECISION 4
 * SCALE 0
FIELD DESCRIPTION
 sequential number with GRID 1 corresponding to first stage , GRID 2 to second stage,
 etc
DESCRIPTION SOURCE
 USGS
Hide Field GRIDID ▲

Hide Details for object MOStadium ▲

Hide Fields 🔺

Metadata Details **>**

METADATA LANGUAGE English (UNITED STATES) METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset SCOPE NAME * dataset

* LAST UPDATE 2014-12-08

ARCGIS METADATA PROPERTIES METADATA FORMAT ArcGIS 1.0 METADATA STYLE FGDC CSDGM Metadata STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2014-11-22 12:06:17 LAST MODIFIED IN ARCGIS FOR THE ITEM 2014-12-08 09:57:42

AUTOMATIC UPDATES HAVE BEEN PERFORMED Yes LAST UPDATE 2014-12-08 09:57:42

Hide Metadata Details 🔺

Metadata Contacts <

METADATA CONTACT INDIVIDUAL'S NAME David Heimann ORGANIZATION'S NAME U.S. Geological Survey CONTACT'S POSITION Hydrologist CONTACT'S ROLE point of contact

CONTACT INFORMATION PHONE

VOICE 816-554-3489 x 206

ADDRESS TYPE postal DELIVERY POINT 401 NW Capital Drive CITY Lee's Summit ADMINISTRATIVE AREA Missouri POSTAL CODE 64029 E-MAIL ADDRESS dheimann@usgs.gov

Hide Contact information **A**

Hide Metadata Contacts 🔺

Metadata Maintenance

MAINTENANCE UPDATE FREQUENCY not planned

Hide Metadata Maintenance 🔺

FGDC Metadata (read-only) ▼