JUDITH M. BRANDT
100 City Parkway, Suite 700
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EXPERIENCE:

Senior Remote Sensing Analyst: August 2014-Present.

Southern Nevada Water Authority (SNWA), Information Technology Department, Spatial Technologies Division, Las Vegas, NV.

General duties include support of Conservation, Groundwater Resources, Northern Resources and Environmental Resources Divisions of SNWA in the following ways: Plan and conduct advanced remote sensing analytical work on projects requiring application of remote sensing data acquisition, methodologies and tools; produce data of the highest degree of quality and accuracy; assist hydrologists and biologists in the use of remote sensing data; and analysis to achieve study objectives; integrate remote sensing data with Geographic Information Systems (GIS).

Additionally, duties for SNWA, external agencies and municipalities include working with remote sensing product vendors to ensure delivery of the highest quality products available for the applicable task based on the most current remote sensing industry standards.

Specific Responsibilities and Contributions include the following:

- Lead for the annual Multi-Agency Clark County High Resolution Imagery and LiDAR Acquisition Project.
    - Co-author Technical Specifications.
    - Technical lead member of the vendor selection committee.
    - Vendor point of contact for all phases of the project, from pre-flight survey control approval to final image product acceptance.
    - Responsible for quality assurance for all distributed data products.
    - Responsible for data compliance with specifications provided by the USGS and American Society for Photogrammetry and Remote Sensing (ASPRS) for both imagery and LiDAR.
    - Assure Imagery or LiDAR data is delivered on time and to required specifications.
    - Lead coordination between local municipalities and federal and military agencies on data requirements and logistics of data collection.
    - Lead coordination between the USGS and the vendor regarding LiDAR data compliance and coverage.
    - Update the quality assurance procedure for use with all annual Clark County high resolution multispectral imagery collections from 2014-present.
    - Train SNWA staff in quality procedures and direct staff in execution of QA workflows.
    - Work with imagery vendor to correct problems.
    - Assure on-time delivery of final product to all stakeholders, including Clark County and other local municipalities.
- Creation of Las Vegas Valley urban classification of LiDAR datasets collected in 2016. Preliminary work was presented at the 2017 Nevada Geographic Information Society Conference.

- Contributed and analyzed imagery-derived vegetation data for use in a pricing elasticity study conducted by the SNWA/Las Vegas Valley Water District (LVVWD) Resource Planning Teams in support of Integrated Resource Planning Advisory Committee.
- Currently directing remote sensing staff in creation of Las Vegas Valley tree and turf datasets from high resolution multispectral aerial image data acquired in 2016.

Remote Sensing Analyst: November 2008-August 2014.

SNWA Resources and Facilities Department.

General duties include support of Conservation, Groundwater Resources, Northern Resources and Environmental Resources Divisions of SNWA in the following ways: Plan and conduct remote sensing analytical work on projects requiring application of remote sensing data acquisition, methodologies and tools; produce data of the highest degree of quality and accuracy; assist hydrologists and biologists in the use of remote sensing data and analysis to achieve study objectives; integrate remote sensing data with GIS.

Specific Responsibilities and Contributions include the following:

- Develop a quality assurance procedure for use with all annual Clark County high resolution multispectral imagery collections, from 2012-2014.
    - Train SNWA staff in quality procedures and direct staff in execution of QA workflows.
    - Work with imagery vendor to correct problems.
    - Assure on-time delivery of final product to all stakeholders, including Clark County and other local municipalities.
- Improved the turf, tree and swimming pool classification process from high resolution imagery of the Las Vegas Valley collected in 2008, 2010 and 2012. Compiled a turf and tree area relational database. Accuracy assessments were completed for each dataset. Data was used internally and by the following external entities:
    - For a report published/funded by EPSCoR Nevada, "The effects of climate change on residential municipal water demand in Nevada" (2013).
    - The Cities of Las Vegas and Henderson, NV for tree canopy inventory.
    - SNWA Conservation Division for direct marketing of the WSL program.
    - SNWA Conservation Division to track changes in total turf area in the Las Vegas Valley over time.
    - Graduate and Post-Doctoral studies, and university research by students at the University of Nevada-Las Vegas (UNLV).
- Worked with SNWA range biologist to determine potential corridors for new sheep forage areas in support of SNWA Northern Resources Division. Developed classified vegetation datasets from National Agricultural Imagery Program (NAIP) imagery and SNWA LiDAR-derived elevation data that were integral to this determination. Completed in 2012.
- Developed vegetation classification dataset of Warm Springs Natural Area (WSNA), Clark County, NV using remote sensing software and methodologies based on high resolution digital aerial imagery and medium resolution LiDAR data, completed in June 2010 for WSNA manager. Data products included maps and GIS data.
- Developed vegetation and burned areas classification dataset after the WSNA fire of July 1, 2010, for compilation of changes in vegetation area for SNWA, Bureau of Land Management and US Fish and Wildlife Service. Completed in December 2010.

- Completed classification of Palm Trees within the WSNA using remote sensing technologies with high resolution digital aerial imagery. Determined a count of palm trees thinned by SNWA within the WSNA boundary. Produced map for SNWA use in public meetings, June 2011.
- Developed models incorporating the calculation of atmospheric correction and Modified Normalized Difference Water Index from Landsat 5 imagery. Enabled calculation of water volumes in the Yelland Dry Lake Bed over a period of 26 years. Completed for SNWA Groundwater Resources Division in August 2011.
- Automated processing of Landsat Satellite data derivatives, including removal of manually delineated clouds, creating Normalized Difference Vegetation Index zonal statistics and validating the data. Produced a relational database in support of SNWA's preliminary investigations supporting preparation for Water Rights Hearings in 2009.
- Automated processing of zonal statistics from Parameter-Elevation Regressions on Independent Slopes Model (PRISM) data and climate model data provided by contractors to produce a relational database for SNWA hydrogeologists in Climate Model Report: Impacts of a Changing Climate on Water Resources in the Eastern Great Basin, 2014, prepared by Desert Research Institute for SNWA.

GIS Analyst: June 2005- November 2008.

SNWA Water Resources Department.

Perform a variety of complex professional GIS assignments in developing and maintaining GIS databases and providing analytical support for water research, water acquisition, groundwater modeling, well management, environmental impact analyses, facilities expansion and/or land use requirements throughout the SNWA. Apply GIS theories, principles, software and data to produce custom and standard maps, data displays and other products to meet customer requirements. Design, develop and maintain specialized data sets and layers within the databases to support these functions.

Specific Responsibilities and Contributions include the following:

- Developed a turf and tree classification process from multi-spectral digital aerial high resolution imagery of the Las Vegas Valley collected in 2006. Used several remote sensing software packages and compiled a turf and tree area relational database. This was used by the SNWA Conservation Division to track turf areas within the Las Vegas Valley. An accuracy assessment was performed on the data per Remote Sensing industry standards.
- Worked as lead and consulted with SNWA biologist to design and plan field collection of plant spectra in Spring and Snake Valleys in late May-early June of 2007 using a Cropscan field spectrometer:
    - Scheduled, trained and directed field teams in the project.
    - Responsible for all spectral data, GPS data and photos that were cross-referenced and cataloged to create a spectral library of vegetation in Spring and Snake Valleys in Nevada and Utah.
    - Completed the same for areas in White River, Cave and Pahranagat Valleys in Nevada.
- Created geologic and hydrogeologic plates and cross sections published by SNWA in support of water rights hearings, 2007:
    - Coordinated with internal and external geologists, and provided geologic expertise to develop and edit hard copy geologic cross sections and create digital data.

    - Coordinated with internal and external geologists and provided geologic expertise to merge published and unpublished hard copy and digital map data into a comprehensive, seamless, digital geologic database of eastern Nevada.
- Created numerous maps, GIS datasets and relational databases for hydrologists and biologists for presentations and studies in support of the SNWA Water Rights Hearings in 2006 and 2008.
- Maintained separate well and potential well database for hydrologists in support of SNWA water rights projects in eastern Nevada.

GIS Specialist: August 2003-June 2005.

SNWA Resources Department, Data Resources Division.

Perform a variety of GIS assignments in maintaining GIS databases and providing support for water research, water acquisition, groundwater modeling, well management, environmental impact analyses, facilities expansion and/or land use requirements throughout the SNWA. Apply GIS theories, principles, software and data to produce custom and standard maps, data displays and other products to meet customer requirements. Maintain specialized data sets and layers within the databases to support these functions.

Specific Responsibilities and Contributions include the following:

- Create and maintain geologic geodatabase, metadata, hardcopy maps and hardcopy cross sections for publications:
    - Co-author and produce figures for hydrogeologic reports and presentations used by SNWA in support of water rights hearings (2003).
    - Coordinated with internal and external geologists, and provided geologic expertise to edit geologic maps and cross sections and merge published and unpublished map data into a comprehensive, seamless, digital geologic database of the Tikaboo and Three Lakes Valley hydrographic basins.
- Produced GIS vegetation dataset from satellite imagery to identify phreatophyte distribution.
- Maintained separate well and potential well database for hydrologists in support of SNWA Tikaboo and Three Lakes Valley Water Rights Hearing in 2003.

GIS Intern V: May 2001-August 2003.

SNWA Resources Department.

Perform GIS tasks as needed in support of senior GIS staff as well as hydrologists and environmental biologists.

- Digitize, edit and create all types of geospatial data.
- Produce publication-quality maps.
- Collect and integrate Geographic Positioning System data into a GIS.

Sales Manager: October 1997-February 2001.

McKillican-American, Las Vegas, Nevada.

Sales: 1986 -1997.

Woodworker's Emporium, Las Vegas, Nevada

Geologist: 1981-1986.

Fenix and Scisson, Inc., Mercury, Nevada.

Produced geologic maps and cross sections from collected field data and presented site geology to Containment Evaluation Panel in support of the Defense Nuclear Agency at the Nevada Test Site, Mercury, Nevada.

EDUCATION:

Coursework towards a Certificate of Achievement in Geographic Information Systems, May, 2001- May, 2003, Community College of Southern Nevada.

University of Wisconsin-Madison.
Bachelor of Science, Geology and Geophysics (May 1981)

PUBLICATIONS:

Ekren, E.B., Rowley, P.D., Dixon, G.L., Page, W.R., Kleinhampl, F.J., Ziony J. L., Brandt, J.M., and Patrick B.G., 2012, Geology of the Quinn Canyon Range and vicinity, Nye and Lincoln Counties, Nevada: Southern Nevada Water Authority, Las Vegas, Nevada, Doc. No. HAM-ED-0004.

Brandt J., 2009, Nevada Gets Water Smart, Remote Sensing and GIS Support Conservation Efforts by Locating turf and Water Features in the Las Vegas Valley, March-April, Earth Imaging Journal.

Brandt J. and Bennett, D., October 2009, Urban Vegetation Assessment Using Aerial Imagery for Water Efficiency Planning, EVERYTHINGABOUTWATER, content@eawater.com.

Brandt J., 2008, Locating Turf and Water Features in the Las Vegas Valley, Nevada, Using Remote Sensing Techniques and GIS, proceedings of the PECORA 2008 Remote Sensing Conference in Denver, CO, in November, 2008.

GRAPHIC CONTRIBUTIONS TO PUBLICATIONS:

Produced the digital geologic data and plates for the SNWA publication HAM ED-0001: Geology of White Pine and Lincoln Counties and Adjacent Areas, Nevada and Utah: The Geologic Framework of Regional Groundwater Flow Systems, 2007.

Produced the digital geologic data, plates and figures for Hydrogeology of Tikaboo Valley and Three Lakes Valleys, Clark and Lincoln Counties, Nevada, Supplemental analyses to accompany the report: Water Resources and Ground-Water Modeling in the White River and Meadow Valley Flow Systems, Clark, Lincoln and White Pine Counties, Nevada, Las Vegas Valley Water District, 2003.

ABSTRACTS OF PRESENTATIONS:

Brandt J., 2017, Clark County LiDAR Data 2016 – Exploring the Possibilities, Nevada Geographic Information Society Conference, Abstracts of Technical Presentations.

Brandt J., 2011, Using Remote Sensing and GIS to Detect Change in Turf Area and Tree Canopy in the Urban Areas of the Las Vegas Valley, Nevada, proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS) Conference, Abstracts of Technical Presentations.

Brandt J., 2010, Classifying Vegetation and Swimming Pools in the Las Vegas Valley Using Remote Sensing Techniques and GIS", Nevada Geographic Information Society Conference, Abstracts of Technical Presentations.

Brandt J., 2009, Locating Vegetation in the Las Vegas Valley Using Remote Sensing, Water Smart Innovations Conference, Abstracts of Presentations.

Brandt J., 2008, Using Aerial Imagery Analysis to Benefit Turf Reduction Programs in Las Vegas Valley, Water Smart Innovations Conference in Las Vegas, Nevada, Abstracts of Presentations.

Brandt J., 2008, Using Aerial Imagery Analysis to Benefit Water Conservation Programs in the Las Vegas Valley, Clark County, Nevada, Society for Conservation GIS Conference in Pacific Grove, California, Technical Poster.

AWARDS/RECOGNITION:

Annual Award of Excellence, Water and Environmental Resources Department, SNWA, 2014

Quarterly Award of Excellence, Water and Environmental Resources Department, SNWA 2014

Outstanding Information Technology Student, Certificate of Accomplishment, Community College of Southern Nevada, 2002-2003.

AFFILIATIONS:

American Society of Photogrammetry and Remote Sensing, since 2008

Nevada Geographic Information Society, since 2001

Nevada Water Resources Association, since 2001