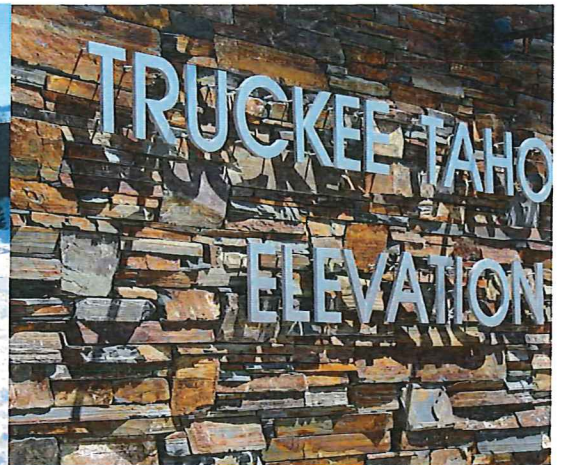


Mead & Hunt

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Proposal for
Professional Consulting Services
GEOGRAPHIC INFORMATION SYSTEM
for the
TRUCKEE TAHOE AIRPORT





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January 2, 2018

Hardy S. Bullock
Director of Aviation & Community Services
Truckee Tahoe Airport District
10356 Truckee Airport Road
Truckee, CA 96161

Subject: Geographic Information System Consulting Services for the Truckee Tahoe Airport

Dear Mr. Bullock,

The Mead & Hunt team is excited for the opportunity to provide Geographic Information System (GIS) Consulting Services for the Truckee Tahoe Airport District (TTAD) and Truckee Tahoe Airport (TRK).

Mead & Hunt wants to make your decision simple. You are already familiar with our planners and architects, and we know your Airport. This selection provides an opportunity to introduce some other members of our staff. We can provide the services necessary in-house to fully assist you with your upcoming GIS projects.

We know the Airport and TTAD: Mead & Hunt has been involved in planning projects at TRK for nearly a decade, including the current Master Plan with Airport Layout Plan, Executive Hangar Study, Demand Drivers, and various community outreach initiatives. We're working with you now on the Airports GIS Survey and the Hangar 2 Replacement projects.

Mead & Hunt understands the challenges of operating a mountain airport from aeronautical, environmental and community perception perspectives. Our knowledge comes from years of interacting with your stakeholders and understanding their concerns. We understand and applaud your efforts at maintaining a close community connection "by more than a runway". Incorporating your community values into this program will be accomplished with the right communication skills, focus, and knowledge of your community's needs and sensitivities. We recognize TTAD strives to implement strategies and facilities that minimize impacts of aircraft operations on your neighbors, while providing a safe and efficient facility for the flying public.

We know GIS projects: Mead & Hunt uses full-time GIS staff working alongside aviation planners and engineers with GIS expertise to see that planning drawings can be efficiently converted to GIS deliverables. Mead & Hunt has significant experience providing deliverables to clients with existing GIS standards, including FAA Airports GIS projects at over 50 airports, many of those in California.

We are local: Your projects will be staffed by our Sacramento and Santa Rosa offices, with support from our Madison, Wisconsin headquarters. There is always someone here who can answer your questions or attend meetings at short notice.

The pricing schedule within our proposal is based on our understanding of your needs, and the structure of your request. Mead & Hunt wants to be your full-service GIS consultant. Your project manager for these services is Ryan Meyer, GISP. Ryan is our National Practice Leader for GIS. Along with Brad Musinski as your client liaison, Ryan will be supported by a strong multidiscipline team with the qualifications and experience needed to keep your program moving efficiently.

Respectfully submitted,

Mead & Hunt, Inc.

Jon J. Faucher
Vice President

Ryan Meyer, GISP
Project Manager



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A. ABOUT MEAD & HUNT CORPORATE PROFILE



Mead & Hunt, Inc. is an employee-owned firm with more than 600 engineers, planners, architects and support staff in 32 offices nationwide. Founded in 1900, Mead & Hunt is staffed by professionals who not only represent a nationally-ranked aviation services firm, but are also passionate about the industry we serve.

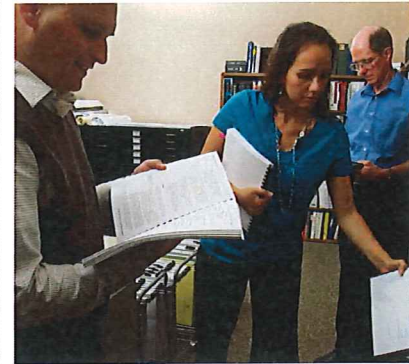
Growing. Mead & Hunt is one of the fastest growing architectural, engineering and planning firms in the nation. For several consecutive years, Engineering News Record has ranked Mead & Hunt as a top 200 A/E design firm (13th in 2016) and a “Top 25 in Airports” firm. In addition, we have received the prestigious American Association of Airport Executives’ (AAAE) Corporate Cup of Excellence award.

Local. While Mead & Hunt is a nationwide firm offering a wide range of aviation planning and engineering services, we are also a firm committed to Northern California. Work performed for TRK will be conducted by staff you are already familiar with, as well as some new faces. For this engagement, we are also adding our national GIS expert to the team – Ryan Meyer, GISP, will serve as your project manager. Major tasks will be completed in three offices: Madison, Wisconsin and Sacramento and Santa Rosa, California. Our offices encourage client visits to maximize project efficiency and allow for immediate feedback. We focus on listening to and understanding your needs; together, we determine the best possible solution.

If a single phrase can be used to describe our approach to aviation consulting services it would be “Building Relationships.” Mead & Hunt has always believed that we can best support our clients by developing and sustaining enduring relationships. We base this on personal service, responsiveness and our demonstrated ability to help our clients solve their problems and achieve their goals.

We continue to add skills to our toolbox so we can expertly serve all of our clients’ needs, making Mead & Hunt your one-stop shop for aviation consulting services, including services outside the aviation spectrum that TTAD may be interested in to support Airport projects: transportation services, architecture and historical resources.

Mead & Hunt’s Brad Musinski, will serve as client liaison and quality control. Marieke Armstrong from our Sacramento office will provide GIS technical analysis. She has extensive mapping and GIS experience in California. With Ryan, Brad, Mitch and their chosen team, TTAD will receive well-coordinated, responsive support.



WHAT WE DO BEST

- Airports
- Aviation and public architecture
- Transportation
- Water resources
- Infrastructure and municipal engineering
- Military facilities
- Historical and cultural resource studies
- Food and industrial facilities
- Construction inspection
- Telecommunications,



Mead & Hunt’s aviation experience includes work for more than 100 general aviation (GA) airports in California and many more throughout the US, as evidenced by the red symbols shown on the map above.

B. FAMILIARITY AND PROXIMITY OFFICE LOCATIONS

Mead & Hunt is committed to our California clients. Work performed for TRK will be conducted in our Sacramento and Santa Rosa offices by staff you are already familiar with. Our Project Manager, Ryan Meyer, will oversee the work from our Madison, Wisconsin headquarters.

Marieke Armstrong, Jon Faucher and Mitch Hooper are ready and willing to attend Board meetings on short notice from our Northern Bay Area offices. Ryan Meyer and Brad Musinski are also willing to attend meetings with little advance notice and at no additional cost to TRK. The Mead & Hunt team is available to attend board or public meetings at a moments notice from our nearby offices. This will provide a greater roster of staff available to visit your Airport.

The staff you see in this proposal are also the staff who will be responsible for performing the efforts necessary to complete your projects. We can also augment our aviation-specific expertise with local talent that can provide positive value to your community.

Reference Documents

Your proposal request listed several documents relevant to this project. Mead & Hunt has been directly responsible for or significantly contributed to several of these documents, as well as others. They include:

- Current Airport Layout Plan and Exhibit A
- 2014 Airport Master Plan
- Truckee Tahoe Airport Comprehensive Land Use Plan
- Truckee Tahoe Airport 2016 Airspace Design Review

Office Locations and Percent of Availability

Name	Role	Office Location	Percent Availability
Brad Musinski	Client Liaison/Quality Control	Chicago, IL	25%
Jon Faucher	Principal	Santa Rosa, CA	10%
Ryan Meyer	Project Manager	Madison, WI	35%
Mitch Hooper	Quality Assurance	Santa Rosa, CA	25%
Marieke Armstrong	GIS Analyst	Sacramento, CA	30%
Brauna Hartzell	Senior GIS Analyst	Madison, WI	25%



B – FAMILIARITY AND PROXIMITY

POINTS OF CONTACT

Brad Musinski, Quality Control
Client Liaison
Direct: 707.284.8675
bradley.musinski@meadhunt.com

Ryan Meyer, Project Manager
Mobile: 608.280.1900
Direct: 608.443.0475
ryan.meyer@meadhunt.com

OFFICES FOR PROJECT PERFORMANCE

180 Promenade Circle, Suite 240
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2440 Deming Way
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Office: 608.273.6380

C. EXECUTIVE SUMMARY

WHY MEAD & HUNT?

There are many compelling reasons Districts such as yours prefer Mead & Hunt as their aviation consultant. We strive to provide our clients with outstanding products and personal service—a philosophy that forms the basis of a long-term relationship.

Section A. Dedication, history and background.

Mead & Hunt has been in business since 1900, serving airports since 1942. A testament to our firm's commitment to the industry is that many of the airports we served back then are still our clients today. Mead & Hunt's ongoing success is due to our dedication, hard work, and the innovative solutions that culminate in many award-winning projects. Our track record of successful airport projects illustrates our focus on our clients' goals and priorities when delivering state-of-the-art solutions – on-time and within budget.

Section B. Office locations of project staff. Mead & Hunt is a full-service aviation consultant, providing sound planning, engineering, architecture, environmental, and project administration services in-house. We employ more than 600 professionals and support staff, of which more than 225 are dedicated solely to the aviation industry. We will utilize two of our California offices, Sacramento and Santa Rosa for this assignment. Our corporate headquarters in Madison, Wisconsin will also lend primary staff to our team.

Section C. A brief overview of who we are, our capabilities and what we are providing in this submittal.

Section D. Prepared for the task. Here you will find out Technical Approach, Relevant Project Experience and References.

Today's airport industry is challenging, with many different issues influencing how you run your facility. Mead & Hunt excels in assisting airports sort through current challenges to make decisions that result in a facility that is flexible and meets your needs. Our team has extensive experience providing a variety of consulting services, including engineering, planning, environmental, architecture, and construction administration. We have



Mead & Hunt will take a collaborative approach to your GIS project by combining our knowledge of TRK and your community with our national experience, utilizing expertise from three different offices.

the interest, experience, and capabilities to lead your Geographic Information System design and implementation for the next four years and beyond.

Mead & Hunt provides sound planning services in-house. Our staff are knowledgeable about Federal Aviation Administration (FAA) regulations, policies, and procedures. These in-house capabilities give you expedient, integrated service by a well-established team.

Section E. Experienced. This section provides an Organizational Chart and Resumes for Key Staff.

Whether it is working on grant applications, project programming, eligibility issues, planning and environmental projects, or design issues, we know which FAA personnel with whom to talk and we have an excellent track record of representing our clients in these matters. Mead & Hunt staff members understand the relevant FAA guidelines and policies and routinely work with the FAA on establishing these guidelines and advisory circulars, such as the recent *Airport Land Use Compatibility AC*, for which we were sole-sourced.

Section F. Full-service capabilities in-house. We have outlined additional capabilities relevant to your program.

Section G. A pricing schedule is included as the last item in this submittal.

D. QUALIFICATIONS AND RECENT EXPERIENCE

APPROACH AND UNDERSTANDING

Because of our history and experience with the Truckee Tahoe Airport District (TTAD), Mead & Hunt has a vested interest in continuing to be a part of the team that helps the Airport grow in a way that compliments the community. **We consider TRK a premier client and are eager to continue to assist in the development of your top-notch, general aviation (GA) airport.**

As a full-service aviation consulting firm, Mead & Hunt has some distinct advantages that can benefit TTAD. We know that details count. Gathering field data and applying design standards while maintaining quality throughout the process is Mead & Hunt's approach to GIS — an approach that serves our clients well.

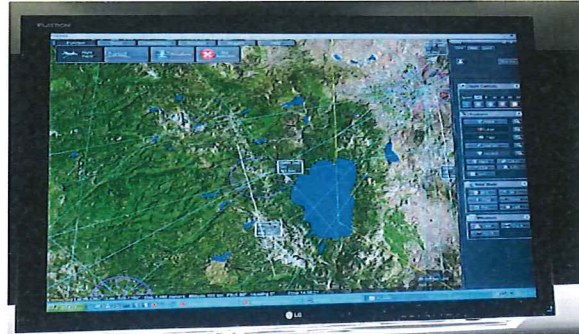
In addition, creating a “team-like environment” has proven successful in completing projects professionally and on-time. Mead & Hunt's goal is to continue building a strong, productive and interactive working relationship with TRK. Our aviation planning experience at airports in California reaches back more than 40 years, and 75 years in the rest of the country. **When we undertake a project, we take ownership from beginning to end.**

TECHNICAL APPROACH

Mead & Hunt will work with TRK to continue its investment in GIS as a tool with multiple benefits for the Airport, its users and the public. The knowledge and work experience at the Airport will allow Mead & Hunt to successfully see the big picture. A focused GIS visit is proposed to inventory your data, maps, applications, hardware and software. An understanding of the entire GIS environment for the Airport will allow for successful execution of individual task orders.

Initial GIS Visit

This initial visit will help us to learn the existing GIS and CAD environment focusing on mapping data to maintain applications in use by the Airport; maps expected to be current at all times. The deliverable of the initial GIS visit will be the **TTAD GIS Implementation Plan**. We propose this as a “living document” that contains the information needed to understand, manage, maintain and update GIS at the Airport.



The required sections of the TTAD GIS Implementation Plan will be:

- **Data Inventory**
 - GIS layers, CAD drawings and linked files will be documented along with expected update frequency, sharing policy and accuracy requirements.
- **Maintenance Checklists**
 - Checklists will be defined in the Implementation Plan and will be used for maintenance activities to guarantee consistent data.
- **Map List**
 - The lists of maps that TTAD will maintain will be gathered.
 - Expected update frequency and last updated date will also be tracked.
- **Application Inventory**
 - The lists of applications that TTAD will maintain will be gathered.
 - Expected update frequency and last updated date will also be tracked.
- **Hardware**
 - Hardware related to GIS that TTAD owns will be gathered.
 - Expected life cycle and acquisition date will also be tracked.
 - The GIS Implementation Plan is not intended to be a hardware asset tracking tool, rather a reference of the hardware related to GIS activates.
- **ArcGIS Online management plan**
 - Access and basic administration practices will be documented so the TTAD has the information readily accessible.

▪ **User Lists**

- A current list of users and associated access levels will be maintained.

▪ **Request Forms**

- New data, maps and applications that are to be added can be documented to communicate the needs of the Airport.

SCOPE OF SERVICES

A. Individual Task Orders

Mead & Hunt is experienced working with the TTAD and understands the need to process task orders individually and execute to the needs of the Airport.

B. System Maintenance

Data and maps that are current are needed for effective use of the GIS and needed for return on the investment in GIS. Mead & Hunt will update the GIS, maps, CAD, associated files and ArcGIS Online. Checklists in the TTAD GIS Implementation Plan developed in the Initial Visit phase of the project will be utilized and delivered with the individualized task orders of the contract.

C. Develop Web Based applications

Mead & Hunt proposes to focus on ESRI ArcGIS Online for hosting maps and applications. ArcGIS Online can be used to host maps, data and applications. ESRI produces a suite of tools and configurable applications that can meet the needs of many GIS functions including editing, field inventory and map retrieval. The development and maintenance costs of custom web based applications is not recommended; the use of the ArcGIS Online tools can meet the needs applications while controlling the cost.

D1. Map Requests within 48 hours

Mead & Hunt has a regular worksharing meeting for its AGIS staff that includes GIS Analysts and Aviation Planners from 6 offices. Work can be transferred to other GIS staff to allow focus on the needs of Truckee Tahoe Airport District. It is understood that existing maps will need to be updated and custom maps will need to be generated under these task orders.



D2. Respond to Onsite Needs

In addition to the work that can be done from the Mead & Hunt offices, needs at the airport will arise that will be best resolved with a visit to the airport. Marieke Armstrong is located in Mead & Hunt's Sacramento office and is available to respond to onsite needs in a very short timeframe. Marieke is experienced with GPS field collection, GIS data management and map creation. She is experienced with FAA AGIS data along with two-dimensional and three-dimensional analysis of airport Part 77 airspace and ALUCP. Additionally, Marieke prepares California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documents. Marieke's broad experience and proximity to TRK make her an ideal asset to assist the Airport with GIS questions that require a site visit or in-person training.

The TTAD GIS Implementation Plan proposed above will outline the forms and procedures needed for the following tasks outlined in the Request for Proposal:

E. Maintain Hardware Infrastructure

F. GIS Annual Maintenance and Improvement Plan

G. Maintain List of Credentialed Users

H. Web Based Map Library

Meetings and Coordination

Communication is key to the success of any project. Our design team will meet with TTAD early and often to provide assurances that the project is on schedule and meeting the goals you have set. We will establish lines of communication and points of contact to be used throughout the process.

Quality Assurance/Quality Control

Mead & Hunt's program is quality/improvement-based and integrated into our corporate, client, project and financial management procedures. The guidelines published in the Professional Engineers in Private Practice Handbook of the National Society of Professional Engineers (NSPE) and the Architect's Handbook of Professional Practice of the American Institute of Architects (AIA) have also been incorporated into our firm's policies and practices. We have developed systems and procedures that provide both our new and numerous repeat clients with a quality project and outcome.

Providing Services within Budgets and Timelines

Mead & Hunt has an excellent track record of accomplishing work on-time and within budget, which can be confirmed by contacting our references.

We historically keep projects within 5 percent of the initial budget, with most projects completed below the initial budget. Our team will provide an accurate and up-to-date financial accounting throughout the projects' duration. Our interests are your interests. Our integrity, reputation and the trust of our clients are paramount to our firm's long-term success. We have been in business for more than a century and attribute this professional longevity to our ethical and straightforward business practices.

Mead & Hunt forecasts project workloads using a time-frame that identifies staff availability for several months in advance. We consider these labor projections before pursuing additional work or making further staff commitments to our clients. The Mead & Hunt team has the depth and experience to meet any of the project schedules and deadlines that may present themselves during your projects. Mead & Hunt has assisted clients with projects that required a quick turnaround in order



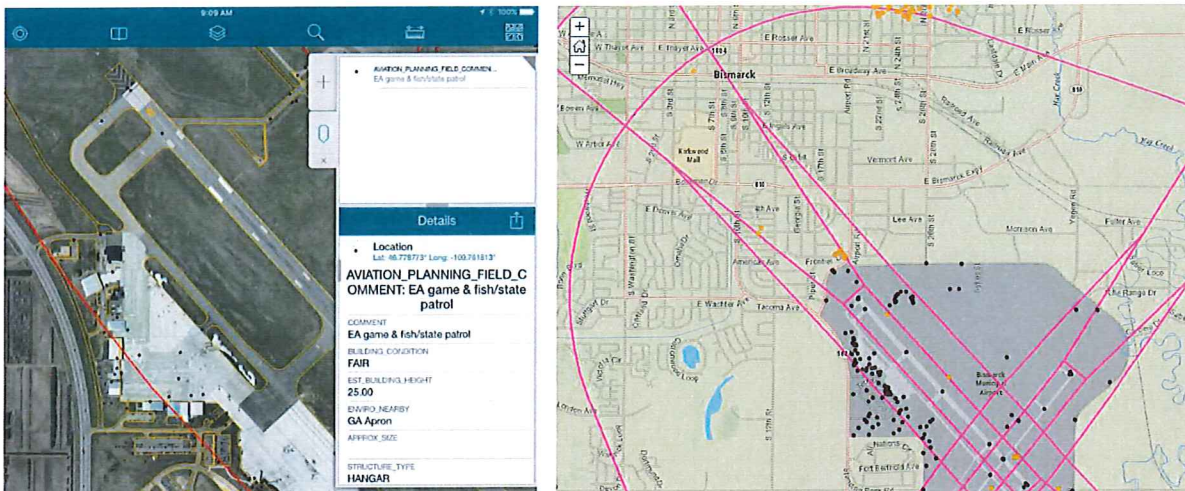
to meet funding deadlines and approvals. We have an excellent knowledge of the City's process and will use this knowledge to work effectively with Airport staff.

Final Thoughts

The Mead & Hunt team believes in a high level of client service, which begins with an organized method of project management. With our past experience on airport projects large and small, we are able to first define your project scope, then develop a realistic schedule, define the budget and design to this budget, deliver technically proficient and biddable drawings and specifications, and work with the contractor to implement construction following through completion and beyond. We are there when you call.

Our goal is to continue serving TTAD well into the future. We are truly excited to be considered for this solicitation, and look forward to building upon our strong working relationship with you. We have assembled the right team to help you solve the unique challenges your GIS presents. We know you expect the very best from your consultants and the best is what you will get from Mead & Hunt.

RECENT EXPERIENCE



AIRPORT MASTER PLAN BISMARCK AIRPORT, NORTH DAKOTA

Mead & Hunt is currently preparing an airport master plan update for the Bismarck Municipal Airport in Bismarck, North Dakota. Since 2010, the airport has experienced significant growth in aircraft operations and passenger enplanements. This is due primarily to activities associated with oil and gas production in the Bakken oil region. Bismarck also serves as the epicenter for state government activities. The focus of this master plan is to provide the City of Bismarck with a sound, long-range planning document that presents the anticipated level of aircraft activity and development needs for the 20-year planning period. In addition to the FAA Airports GIS data collection performed for the Master Plan, Mead & Hunt is using GIS in multiple and innovative ways to collect, analyze and communicate information for the master planning process.

Collector for ArcGIS was used on tablets to inventory the airfield and the facilities. Assessment information and photos were collected in the field by multiple teams and available for analysis in the office and sharing with the airport throughout the project.

ArcGIS Online was used to share data with the Airport. Mead & Hunt posted the FAA Airports GIS data collected to let airport staff take the data on tablets in the field to assist during tree clearing.

ArcGIS Online Crowdsourcer Reporter and Crowdsourcer Manager were used for Master Plan public comments. The public was able to use the website or their cell phones to submit comments, view, respond to or “like” other comments, and display the Airport’s response to every comment (adjacent).

ArcGIS Online is being used for Airport Zoning tools. The City of Bismarck owns the Airport and will host City and Airport Zoning together on an interactive map that will allow the public and developers to view and analyze the height restrictions associated with the Airport.

Project Data

- Dates of Service: 2015 - 2017
- Mead & Hunt fees: \$949,000

Key Staff

- Ryan Meyer, GISP
- Marieke Armstrong
- Bart Gover



RECENT EXPERIENCE

The screenshot displays the SAFCA (The Sacramento Area Flood Control Agency) web application. The header includes the SAFCA logo and navigation links like 'Admin Tools', 'Change Password', 'Map', 'Search', and 'Reports'. The main content area is titled 'Parcel Information related to 'Tree' encroachment at '74306.93988361/SAC''. It contains several input fields for property details:

APN: 225-0200-027	Property Type: Res/ Spa F	Levee Side: Water
Address: 3131 Garden Hwy	Land Use:	Levee Mile: 0
County: Sacramento County	Reach: 15	River Mile: 0

Below this is the 'Owner Information' section with fields for Owner (Ward Richard E/ Jaqueline P), Mailing Address (3131 Garden Hwy Sacramento Ca 95833), Ownership Class, and Ownership Agency. There is also a checkbox for 'Owner Changed'.

At the bottom, a 'Related Parcel List' table is partially visible with columns for APN, Address, Owner, and Type.

GEOGRAPHIC INFORMATION SYSTEM (GIS)-BASED UTILITIES INVENTORY, SACRAMENTO AREA FLOOD CONTROL AGENCY (SAFCA) – SACRAMENTO, CALIFORNIA

Mead & Hunt used ArcGIS for creating a utilities database for the 40 miles of levees encompassing the Natomas basin in Sacramento & Sutter counties in California. Mead & Hunt designed and built an ArcSDE GIS database for the management of SAFCA Natomas Levee Improvement Program (NLIP) levee encroachments including trees. Field-collected data, Global Positioning System (GPS), permits, photographs and spreadsheets were incorporated into the GIS data. A web site was designed to allow for review and updating of encroachment management. The web site tracks location of trees, other encroachments, permits, and parcels through tabular and map-based screens; custom dynamic-reports allow users to access to the most current information in a readable format. Mead & Hunt designed an expansion to an existing ArcGIS Server Web site to create a separate secure Web site for levee encroachment management.

GIS and Technology Services

- Geodatabase design
- ArcGIS Server web site design
- Web reports using SQL Server Reporting Services
- Data acquisition
- Data processing
- GPS field collection
- Incorporation of existing data text

Project Data

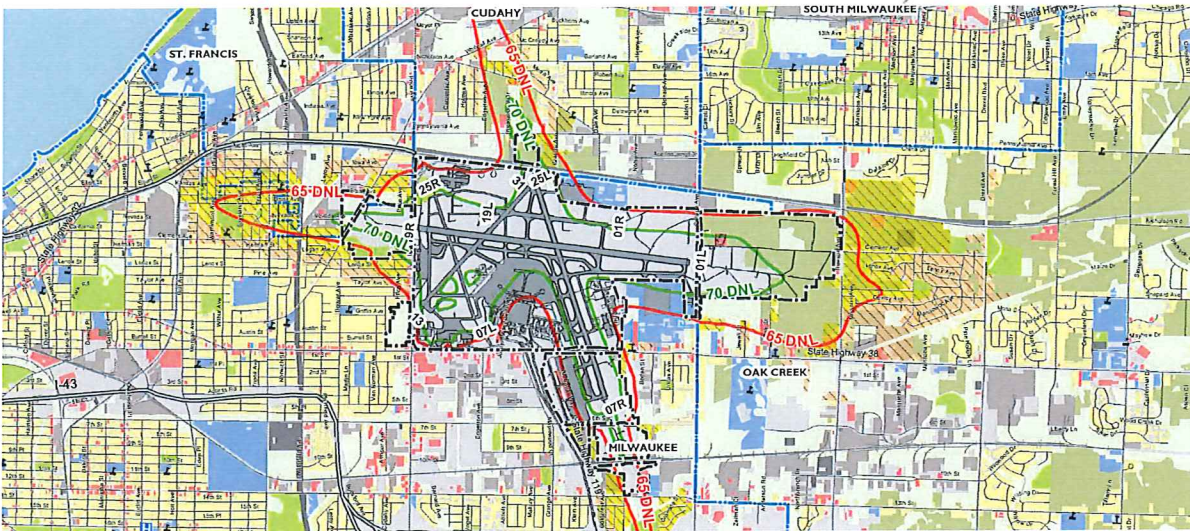
- Dates of Service: 2011 - 2013
- Mead & Hunt fees: \$360,000

Key Staff

- Ryan Meyer, GISP
- Marieke Armstrong

"Mead & Hunt has a long history of providing investigation and design services to SAFCA on a number of our flood risk reduction programs and projects. This team is currently working under contract to SAFCA on the Natomas Levee Improvement Program and has consistently provided quality services on our prior projects, including the North Area Local Project."

John Bassett
Director of Engineering



AIRPORTS GIS INTEGRATION WITH EXISTING ENTERPRISE GIS, GENERAL MITCHELL INTERNATIONAL AIRPORT (MKE) MILWAUKEE, WISCONSIN

As part of a multi-year RSA improvement project involving planning, design and construction, Mead & Hunt updated all of MKE's data to the FAA Airports GIS standard as described in AC 150/5300-18B. MKE had an existing, robust GIS. To meet the accuracy requirements and incorporate the RSA work, all of the data needed to be acquired and attributed. The existing GIS information was transferred to the new FAA-compliant standard. The existing GIS was all linked to an asset management and work order system at the airport. Data check out and replication was designed to allow edits and updates with no down-time in the data and the applications it supports.

The airport maintains and relies upon its Enterprise GIS for asset management, work-order tracking, planning and engineering projects. The investment and reliance on this system meant that the airport could not simply deploy new GIS data collected to the FAA standards. Mead & Hunt designed a process to integrate new survey data with existing data. Database design modifications allowed the airport to continue managing its GIS data and relationships to additional systems, while being able to export data that meets FAA standards.

FAA data standards do not meet all of the needs of MKE, database and additional layers and attributes are managed. The format for submitting FAA data is specific Shape File format that differs from the MKE Geodatabase. Mead & Hunt created tools with Python scripting that transforms the data from MKE to FAA format standards for delivery. This eliminated the need to manage two versions of the same data for the airport and made the process of submitting data to the FAA faster, more reliable and repeatable.

Project Data

- Dates of Service: 2012 - 2014
- Role: Prime Consultant

Key Staff

- **Ryan Meyer, GISP**
- Laura Morland, PE
- **Brauna Hartzell, GISP**



GIS INVENTORY AND SURVEY, BEACHFRONT EROSION CONTROL STRUCTURES, SC DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL (SC DHEC) – STATEWIDE, SOUTH CAROLINA

Mead & Hunt was responsible for survey, QA/QC management, data processing and assembling the deliverables for this comprehensive inventory of South Carolina beachfront. Nearly 790 beachfront erosion control structures within a designated jurisdictional area, seaward of the DHEC setback line, were inventoried.

The project required close coordination with SC DHEC, Ocean and Coastal Resource Management (OCRM) and local municipalities within project limits. Mead & Hunt's first step in the GIS process involved working hand in hand with SC DHEC's project staff to utilize existing SC DHEC base maps, symbology and line-styles that have been previously defined by SC DHEC's GIS standards. This was done to seamlessly incorporate the State's coastal erosion control structures geodatabase into the existing geospatial information.

ArcGIS Online was used to share project status with the client in near real time. Collector for ArcGIS was used in the field to manage and track field assignments and progress.

Data was collected with Mead & Hunt's Mobile Mapping Inventory System which provides cost savings over the traditional data collection approach due to the reduction of labor and time necessary to accumulate the field data. The geodatabase supports and enhances the point data information, allowing users to organize, inventory and more accurately maintain the State's coastal erosion control structures. Users not only have point photos of each parcel, they are able to access high definition geospatial video of each vertical erosion control device.

Along the coast, field surveys of monuments were performed using GPS equipment and conventional methods to survey and inventory the 16 beaches and 790 erosion control devices required by SC DHEC.

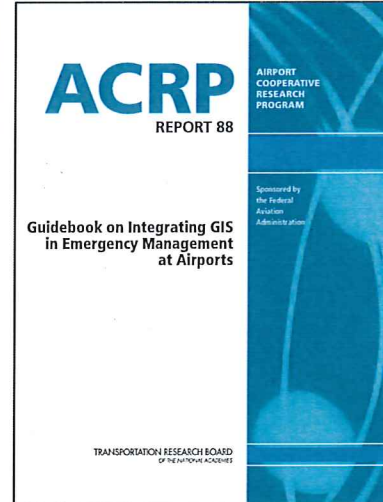
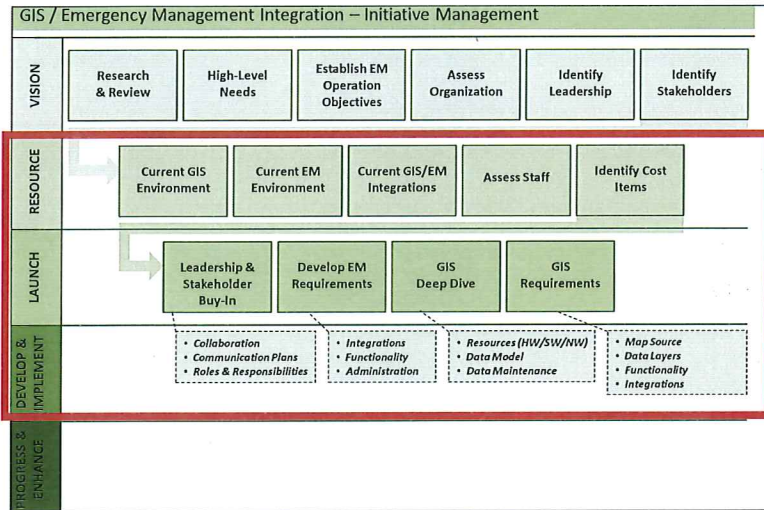


Project Data

- Dates of Service: 2014 - 2016
- Role: Survey, GIS inventory, geospatial data management, QA/QC management, data processing

Key Staff

- Ryan Meyer, GISP
- Brauna Hartzell, GISP



ACRP REPORT 88: GUIDEBOOK ON INTEGRATING GIS IN EMERGENCY MANAGEMENT AT AIRPORTS – TRANSPORTATION RESEARCH BOARD, AIRPORT COOPERATIVE RESEARCH PROGRAM

Mead & Hunt was a researcher and coauthor for the Transportation Research Board (TRB) Airport Cooperative Research Program (ACRP) Report 88: *Guidebook on Integrating GIS in Emergency Management at Airports*. Mead & Hunt provided GIS and airport operations expertise to the team. The report is a guide to help an airport through the processes of initiating a GIS at an airport that is integrated with Emergency Management functions.

The report discusses GIS and emergency management and provides a road map for airports to move from their current state of GIS implementation (even if they do not yet have any form of GIS) to the point of integrating into emergency management and coordinating with partners.

A series of tools and worksheets are part of the guidebook. These help an airport through each step of initiating, vision, resources, development, launch and ongoing enhancement of GIS. A model plan is also available as a resource with the guidebook.

Deliverables associated with the project included a project report and a CD-ROM that includes case studies and lessons learned from implementation, a PowerPoint presentation discussing the benefits of integrating GIS with emergency management and tools to guide users through the integration process.

Project Data

- Dates of Service: 2012 - 2013
- Role: Coauthor and researcher

Key Staff

- Ryan Meyer, GISP



GIS CONVERSION

TOWN OF LEDGEVIEW – BROWN COUNTY, WISCONSIN

Mead & Hunt has been supporting GIS efforts for the Village of Ledgeview for the past thirteen years in conjunction with municipal engineering and planning services. Since helping the Village develop its GIS program, Mead & Hunt has worked with the Village meeting the needs of map production, analysis and data creation. Assistance has also been given as the technology has changed; we have worked with the Village to maximize the return on their GIS investment. Licensing was switched to a primarily web-based model, custom tools for offline field laptops were replaced with ArcGIS online applications for tablets using live connection to the internet and Village servers. Mead & Hunt partnered with ZoningHub in deploying a user-friendly interactive zoning maps for Ledgeview residents, businesses, developers and Municipal staff. Website users can select any parcel and receive information about that parcel's zoning, permitted land uses and dimensional standards. The site also allows residents and developers to complete zoning and planning application online, including: conditional use permits, code amendments and site plan reviews.

Our Services included:

- GIS Data creation, Database design, GIS maintenance and coordination with county GIS agency
- As-built and Lateral Card Field Retrieval Apps
- Map books
- Map requests
- ArcGIS Online applications
- Stormwater utility creation mapping impervious areas
- Sign inventory
- Lidar collection
- Flood modelling and mapping
- Zoning map updates
- GIS hardware and software recommendations



Project Data

- Dates of Service: 2004 - 2017
- Mead & Hunt fees: \$129,095

Key Staff

- **Ryan Meyer, GISP**
- Scott Brosteau

Website

(<http://townofledgeview.insight-codeviewer.com/home.aspx>)

They have been a great partner, collaborating with us on every project and process and delivering high quality projects every time. Mead & Hunt is a firm we can rely on.

– Sarah Burdette, Administrator
Town of Ledgeview

AIRPORT OVERLAY ZONING DISTRICT (AOZD) UPDATE AND GIS TOOL CREATION – LA CROSSE REGIONAL AIRPORT, WISCONSIN

An airport zoning ordinance was established in 2010 for the La Crosse Regional Airport in an effort to comply with FAA grant assurances and protect the airport and the community from incompatible land uses that could hinder airport operations and impact the safety and quality of life for surrounding residents. Wisconsin State Statutes (Sections 114.135/114.136) authorize owners of public airports to adopt and implement land use zoning within a 3-mile boundary of airport property. The Airport Overlay Zoning District Ordinance for the City of La Crosse Wisconsin (the AOZD) is based on two key components:

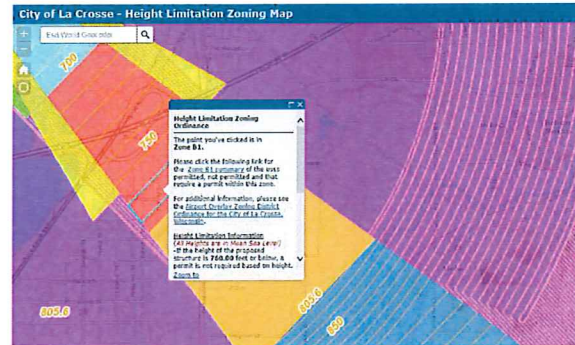
1. The type of land use intended to be developed, and
2. The height of the use

The AOZD contains several land use tables that specify which types of land uses are permitted, not permitted, or require a permit within the AOZD, along with a Height Limitations Zoning Map that illustrates development heights allowed based on location using a grid pattern.

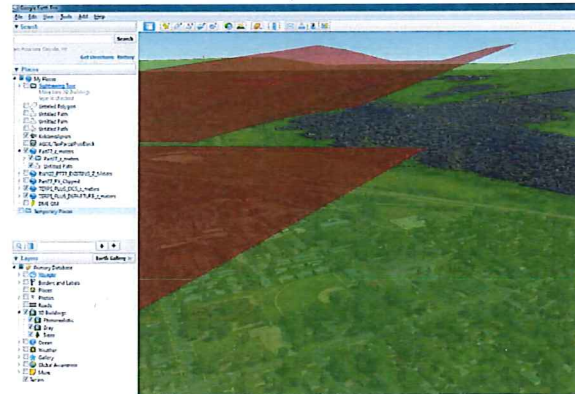
AOZD Updates

After more than six years since the initial adoption and implementation of the AOZD, a need to update the AOZD and Height Limitations Zoning Map was identified to provide more precise allowable heights and a reduction in the number of variances required for minor height issues. As such, the Airport and the City updated to the AOZD with enhanced height mapping techniques to provide more detailed buildable heights based on FAA Part 77 regulations. The Height Limitations Zoning Map changed from a grid pattern to a contour map that provides more precise height restrictions, which may result in reduced variance requests for minor height penetrations. The updates to the AOZD included changed language to allow airport review of proposed development that penetrates the height restrictions by 10 feet or less, instead of requiring variances for all height penetrations.

ArcGIS Online Public Web Site



Terrain Penetration and Airspace shown in 3D

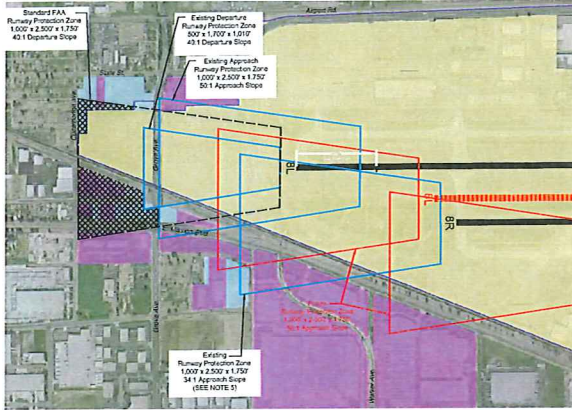


GIS Tool

https://gis.cityoflacrosse.org/maps/lacrosse_HLZO/

In conjunction with the AOZD updates, the consultant worked with the City to develop a GIS-based tool hosted by the City and made available to the public for use in determining height and land use restrictions applicable to their property. Additional functionality is provided for Airport and City use only which provides height restrictions based upon a number of surfaces, including TERPS, to check for incompatibilities for proposed uses that penetrate the Part 77 height restrictions provided for on the Height Limitations Zoning Map. This functionality is especially useful when proposed uses require review through the permitting process for height penetrations (of 10 feet or less) and when evaluating and considering variances for height penetrations of more than 10 feet. KML versions of the data that work with Google Earth were produced to allow for visualization and presentation by the airport. Utilizing Google Earth allows the Airport to combine the data with other data sources for improved visualization and communication.

GIS TOOLS

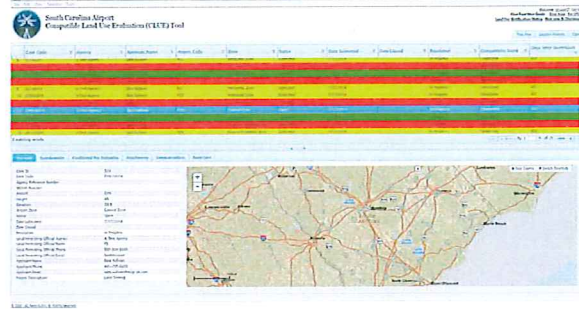


Ontario International Airport Land Use Compatibility GIS Tool

Operated by an independent Airport Authority, Ontario International Airport (ONT) is one of the primary air carrier airports serving the greater Los Angeles area. The airport lies within the City of Ontario, but its impacts extend to several other nearby cities. Under contract to the City of Ontario and working closely with the other affected jurisdictions, Mead & Hunt first prepared an airport land use compatibility plan (ALUCP) for the airport. Then, as a continuing part of the same project, we developed an interactive, GIS-based tool (ALUC Tool) that functions in conjunction with the ALUCP.

The ALUC Tool works online and is available to planners in each of the affected local jurisdictions. The user begins by entering specific information about a development proposal such as: location, parcel size, proposed building size and height, proposed type of use, anticipated number of occupants, etc. A User Guide helps users through this data entry process. Then, relying on information stored in the GIS database about the compatibility criteria, topography, and other site-specific conditions, the Tool immediately provides a basic analysis of the proposal with respect to the noise, safety, and airspace protection criteria in the ALUCP. For most projects, this analysis is sufficient to make a compatibility determination.

The Ontario International Airport Land Use Compatibility Plan received the Focused Issue Planning Award from the California American Planning Association (APA), Inland Empire Section.



South Carolina Airport Compatible Land Use Evaluation (CLUE) Tool

In 2012, the South Carolina Aeronautics Commission (SCAC) initiated a project in response to the passage of the Airport Land Use Notification and Review provisions included as part of Title 55 of the South Carolina Code, enacted in July 2012. As a part of Title 55, the SCAC must provide adequate guidance to local airports and municipalities to facilitate an airport land use notification, evaluation and comment process. Mead & Hunt, as a member of a team led by Woolpert, worked with SCAC in Phase I of this project to evaluate their interim draft policy for Airport Land Use Notification and Review. Mead & Hunt also facilitated an in-depth dialogue regarding the workflow and transfer of information between SCAC and local municipalities that is critical for evaluating future land uses proposed in airport safety and land use zones. Mead & Hunt also analyzed the proposed land use notification and review criteria for this evaluation process.

During Phase II, Mead & Hunt assisted the project team in the development and testing of the GIS program (and user guides) that made the airport land use notification, evaluation and comment process completely electronic. This GIS platform was developed based on the analysis and dialogue of proposed workflows, land use notification and review criteria established in Phase I. The GIS program provides “one-stop-shopping” for all users including SCAC staff, airports, local government permitting agencies, local and regional planning staff, property owners and other interested parties. This tool streamlines the coordination between multiple agencies required to implement the Title 55 review process.

The CLUE Tool was awarded the Most Innovative State Program Award in 2014 from NASAO.

TRUCKEE TAHOE AIRPORT PLANNING PROJECTS

The success of your projects relies heavily on an aviation consultant with a visionary, yet sound, technical approach. Our approach begins with the end in mind in order to balance TTAD's long-term vision with the needs of its tenants, stakeholders, officials and surrounding community.

Your present program will serve as the roadmap for future development, establish a plan that your community will stand behind, and demonstrate the long-term commitment to provide first-class facilities for your airport's users – all while maintaining a focus on cost and benefit. The following five projects for TRK were prepared by Mead & Hunt within the past three years and show a diverse planning background and intimate knowledge of your Airport and its goals and issues.

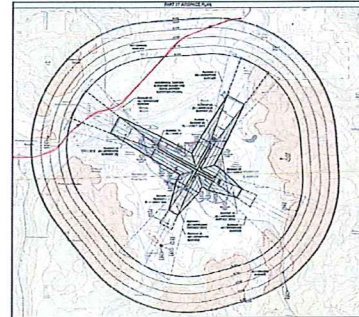
Airport Master Plan. Completed in 2015, this Plan focused on noise mitigation, demand forecasting and extending the crosswind runway to accommodate more aircraft traffic. Extensive noise analysis was performed to discover which runway use and flight tracks reduced noise exposure to homes. As the plan elements came together, we identified the consensus items and demonstrated how the plan could satisfy the major objectives of this noise-sensitive community. This project also involved a district-wide community involvement program.

Airspace Outreach. In 2016, TTAD hosted six meetings designed to allow Airport staff to listen to the specific concerns of six nearby neighborhoods. The meetings provided a venue to discuss and receive input on two pending Airport programs—the Airspace Study and a Temporary Seasonal Tower—aimed at finding ways to reduce noise and other environmental impacts from aircraft operations and enhance safety.

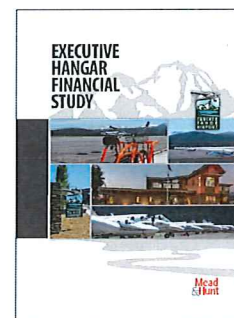
Executive Hangar Financial Study. This study assessed the financial implications of TTAD developing new executive box hangars versus preparing the hangar site and leasing land for private development.

Demand Drivers Study. Mead & Hunt prepared this study to identify what drives aviation activity at TRK. This included extensive analysis of real estate and tourism economics, and aviation trends in the local area and nationwide. Information gathered during extensive outreach efforts supported data-based conclusions drawn by the project team.

Aeronautical Survey and Airport Airspace Analysis. Mead & Hunt is using the geospatial data gathered by this project to help Airport management conduct detailed flight procedure analysis and make informed decisions. Mapping terrain will allow TRK to mitigate obstructions and data collected can be used to develop new instrument procedures, which may reduce overflight of noise-sensitive land uses and improve accessibility in low visibility conditions.



Mead & Hunt updated TRK's latest Airspace Plan in 2015.



REFERENCES



Mead & Hunt has an excellent reputation for providing high-quality comprehensive aviation consulting services. This can be readily confirmed by contacting our client references. We've been in the aviation consulting business for more than 70 years and 90 percent of our clients are repeat customers. Our repeat clients are a testament to the quality of our work. This can only happen when you bring quality projects in on time and within budget.

But do not take our word for it. We encourage you to contact our clients and ask them about the service they receive from Mead & Hunt staff members. We have many satisfied clients and are confident you will receive positive feedback from them. Mead & Hunt has placed a high priority on developing a professional reputation as a firm willing and able to do what is necessary to exceed our clients' expectations. We look forward to providing you with the same high-quality service and personal attention that our clients have come to expect.

Our staff represents an integration of foresight, knowledge and innovation with a track record of successful commissions and very satisfied clientele.

We are proud of our body of work and believe this work represents a background rich in experience; an experience that has been forged by participation in some of the most challenging planning, environmental, engineering and architectural issues facing airports in the last few decades. Our work experience throughout California and across the nation allows us to offer our clients the most current and cutting-edge solutions to accomplish their project needs.

REFERENCES

Clint Torp, CM
Airport Director
La Crosse Regional Airport
2850 Airport Drive
La Crosse, WI 54603
608.789.7456
TorpC@lseairport.com

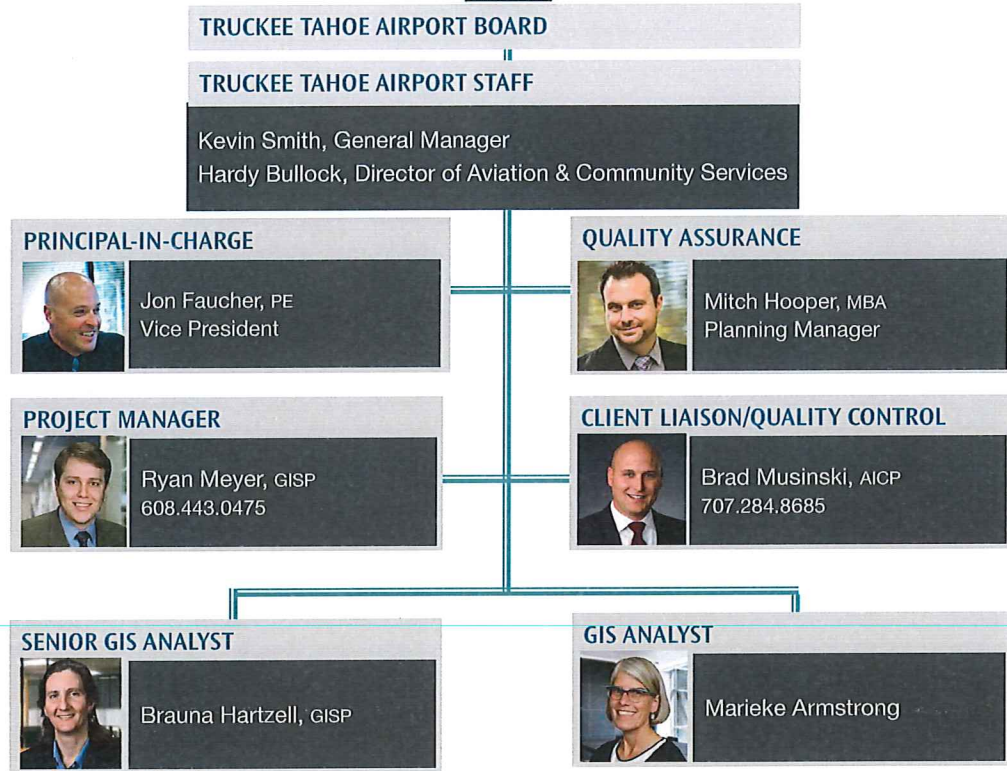
Greg Haug
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ghaug@bismarcknd.gov

John Bassett
Flood Control Engineer
Sacramento Area Flood Control
Agency (SAFCA)
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Sacramento, CA 95814
916.874.7606
bassettj@saccounty.net

D – QUALIFICATIONS AND RECENT EXPERIENCE

E. KEY PERSONNEL

ORGANIZATIONAL CHART



Mead & Hunt uses full-time geographic information systems (GIS) staff working alongside aviation planners and engineers with GIS experience to see that planning drawings can be efficiently converted to GIS deliverables.

GIS performed in conjunction with master planning and ALP drawings will be compatible with District and Airport GIS systems. Mead & Hunt has significant experience providing deliverables to clients with existing GIS standards. In addition to airports using Federal Aviation Administration standards, clients served in this manner are the US Air National Guard, the US Army National Guard, the Federal Energy Regulatory Commission, the Federal Emergency Management Agency and various state and municipal governments. Mead & Hunt can provide compatibility by coordinating with District and Airport staff. Some of the items requiring coordination could include defined coordinate systems employed by the city and county, the GIS format used at the city, and the base layers in use by the county and the city systems.

GIS data submitted to the FAA must also be compatible with the FAA criteria governing it. These criteria are largely contained in FAA Advisory Circulars 150/5300-16A, -17C and -18B. Mead & Hunt is at the forefront in implementing these important standards, and this recent experience will enable us to efficiently apply the standards at TRK. There are efficiencies for an airport that manages its GIS in a format compatible with FAA standards. We will work with the Airport to design and maintain data that is compliant with FAA data models and meets the needs of TRK. The FAA-compliant data we are collecting for your Airports GIS project will be integrated with existing airport data into one data model for you.

Mead & Hunt has been performing GIS for its diverse client base for more than 20 years. Clients range from airports, to military installations and federal agencies, to state, county and local jurisdictions. Services include spatial analysis, cartography, application design and building, database design, data creation and systems integration.

KEY PERSONNEL

RYAN MEYER, GISP – PROJECT MANAGER

Ryan Meyer has more than 20 years of experience in technical Geographic Information System (GIS) consulting and project management. He performs needs assessments and logical and physical data modeling to define client data creation, migration and updating standards. He has created project exhibits and map series and custom Web applications with ArcGIS Online and ArcGIS Server, managed deployment and modification to customizable off-the-shelf Web mapping applications, and created custom database applications.

Ryan has led FAA Airports GIS projects at more than 30 airports across the country. Ryan created an application to define the GIS data needed for meeting FAA AC 150/5300-18 and coordinates GIS deliverables for team members working with Mead & Hunt on projects using the FAA AGIS system. Projects include master plans, runway construction, eALP, obstruction survey and approach modifications.

Ryan creates and deploys applications for field inventory and facility condition assessments. He coordinates the architects, engineers, planners, and surveyors working on assessment and inventory teams to collect data and make it available to all working on the project. Management of the data in centralized databases allows for access to information and pictures for efficient evaluation, analysis, report writing.

Ryan has delivered GIS Services and data integration for Master Plans at Bismarck Municipal (North Dakota), Redmond (Oregon), Reno-Tahoe International, and Central Wisconsin airports. Data collection for master plan inventory is done with multiple tablets in the field syncing multiple personnel and having all data available for in-office analysis and inclusion in the Master Plan. Ryan performed the General Mitchell FAA AGIS survey getting the airport to FAA AGIS standards while migrating existing data enabling the Airport's Cityworks asset and work management systems to stay operational throughout the process. Using ArcGIS Online Crowdsourcer Reporter, he created a public comment application for the Bismarck Airport Master Plan that allowed visitors to public meetings, the airport's website and members of the planning process to submit comments, view, respond to or "like" other comments, and display the Airport's response to every comment. Ryan designed the ArcGIS Online Height Limitation Zoning website for La Crosse Regional Airport.

Ryan has managed data collection and implementation planning for multiple industries. The tools and methods for data collection and information management apply to multiple industries. Coordinating with subject matter experts has allowed efficient and accurate inventories for projects nationwide. Agencies include Sacramento Area Flood Control Agency (SAFCA), the Metropolitan Water Reclamation District of Greater Chicago, South Carolina Department of Health and Environmental Control, Illinois Tollway, and multiple municipalities.

Mead&Hunt



E – KEY PERSONNEL

Areas of Expertise

- Project management
- Technical GIS consulting
- ESRI ArcGIS Server
- Systems integration
- Database management

Education

- BS, Cartography and Geographic Information Systems, University of Wisconsin – Madison

Credentials

- Certified GIS Professional (GISP), GIS Certification Institute
- Project Management Training, Project Management Institute (PMI)

Publications

- ACRP Report 88: *Guidebook on Integrating GIS in Emergency Management at Airports*, Transportation Research Board's Airports Cooperative Research Program, 2013. GIS expert and contributing author.

Awards

- Mead & Hunt *Innovation Award for SAFCA Levee Certification Field Data Collection Tools* for designing and utilizing a system that integrated field collection and GPS tools with internal GIS.

Training

- Integrated Distance Learning Environment (IDLE) training, FAA
- Creating Effective Web Applications Using ArcGIS Server, ESRI
- Using Open Source Software for Mobile Data Collection, WLIA
- Developing Applications with ArcGIS Server Using the Microsoft .NET Framework, ESRI

BRADLEY MUSINSKI, AICP
CLIENT LIAISON/QUALITY ASSURANCE

With over a decade of aviation planning experience, Brad Musinski will serve as client liaison for this engagement. Brad will maintain client contact during all projects and ensure that they are being performed on schedule and to the Airport's satisfaction.

Brad has extensive experience at TRK. He was the project manager for the Airport Master Plan, Demand Drivers Study and Executive Hangar Study. Brad led the development of the Master Plan and subsequent ALP update in 2017. The projects on your ACIP were developed during this Master Plan, including the Runway 2/20 lengthening and widening, taxiway improvements and hangar development.

Brad is committed to providing TTAD and TRK with the highest quality product and understands the issues that concern the TTAD Board. He is aware of the dynamics between the Airport and the community. Brad's experience leading outreach for the Master Plan provided him detailed knowledge of public feelings for the Airport's vision, in addition to community and Board concerns on growth management.

Additionally, Brad has served various general aviation and small-hub clients throughout Northern California and Nevada. Brad prides himself on client satisfaction through quality control techniques, budget tracking and regular client communication.

Brad is currently assisting with the Reno-Tahoe Airport Master Plan Update as Senior Airside Planner. With Reno-Tahoe Airport located within the sphere of influence of TRK, this plan relates to aviation activity at TRK. Brad has also served as Deputy Project Manager on the Spokane International Airport Master Plan, plus various other master plans, ALP updates and AGIS projects in Northern California. Some of these include: Yuba County ALP Update with AGIS, Stockton Metropolitan Airport Master Plan, and the Arcata-Eureka ALP Update. He is also well experienced in land use planning, heliport planning, airspace analysis and noise studies.

Brad is committed to providing a superior product, on schedule and within budget. He excels in situations where the outcome depends on close collaboration, open communication and solid execution. Brad promotes teamwork, efficiency and he gets results.



Areas of Expertise

- Project management
- Stakeholder engagement
- Airport layout plans
- Airport master plans
- Land use compatibility plans
- Heliport plans
- Aviation pavements
- Noise analysis
- AutoCAD

Education

- BS, Urban and Regional Planning, Michigan State University

Awards

- Mead & Hunt's *Innovation Award for ALP and AGIS integration*. In the Northern California region, the FAA has used Brad's ALP and Airspace plans as an example of the preferred techniques to use in preparing these documents.

JON FAUCHER – PRINCIPAL-IN-CHARGE

Jon Faucher is Mead & Hunt's west coast aviation services leader. He has overall responsibility for aviation services performed in the western US, as well as internationally. Jon has extensive knowledge of project funding sources, particularly FAA funding criteria, policies and requirements. He is a highly respected aviation professional with a profound knowledge of the industry he has served for more than 25 years.

Jon has served as project manager for some of our most complex projects requiring coordination with multiple agencies and stakeholders. Among them was the runway extension and EMAS installation at San Luis Obispo County Regional Airport. This was the first application of EMAS as a means to extend a runway in California. Jon is the Project Manager for the Meadows Field Airport Rehabilitation and Reconstruction of Runway 12L/30R and associated taxiways. He also served as Program Manager for the Charles M. Schulz – Sonoma County Airport Runway Safety Area Improvements Project. Jon is a member of Mead & Hunt's Board of Directors, and is a Vice President and Business Unit Leader for Aviation. Jon is also a licensed private pilot.



Education

- BS, Construction Administration, University of Wisconsin
- ACEC SEI Class 18, 2014

MITCHELL HOOPER, MBA – QUALITY ASSURANCE

Mitch Hooper is Mead & Hunt's Western US Aviation Planning Manager and one of Mead & Hunt's forecast practice leaders. He is known by clients as knowledgeable, innovative and customer-focused. Mitch uses his years of experience to provide a comprehensive analysis of the four elements of airport sustainability: environmental, financial, socioeconomic and operational. Mitch is experienced in various computer software programs such as ESRI ArcGIS with 3D Analyst and TERPS Airspace Analysis. He manages GIS projects, develops and coordinates GIS standards, and assist with quality control. Projects include eALPs, GIS analysis for feasibility studies and land use studies, obstruction survey and instrument procedure modifications. Mitch has completed FAA Integrated Distance Learning Environment (IDLE) training for AC 150/5300-18 and attended multiple technical seminars and conferences focusing on the FAA's move to AGIS.

Mitch has recently completed a complex runway extension analysis for the Reno-Tahoe International Airport (RNO) Master Plan, and is finishing the Master Plan for the Redmond Municipal Airport (RDM). Mitch has worked with TTAD on several projects, including the Demand Drivers Study, the Approach Procedures Study, and the Airports GIS Study. He has provided airspace analysis services to over 70 wind energy sites across the US and Mexico, and worked on FAR Part 77 and Terminal Instrument Procedure analysis projects for the past decade.



Education

- Masters, Business Administration, University of Oregon
- Certificate, Airport Financial Management, IATA Training and Development Institute
- BS, Urban Planning, Specializing in Transportation Planning and Geographic Information Systems, Arizona State University

BRAUNA HARTZELL, GISP – GEOGRAPHIC INFORMATION SYSTEM (GIS) ANALYST

Brauna Hartzell has more than 29 years of experience applying GIS software and database design techniques to support aviation and military planning, wetlands and water resources, historic preservation, community planning, transportation, municipal infrastructure and storm water management. She has worked extensively with GIS and mapping software including ArcGIS desktop and has specialized experience with 3D Analyst, Network Analyst, Spatial Analyst and Business Analyst. She also collects environmental field data using hand-held GPS units and post-processes information for inclusion in databases and use in spatial analyses. Brauna collaborates with personnel from multiple disciplines to solve complex spatial problems through scripting and spatial analysis to deliver results and data for project-specific needs. She utilizes geoprocessing models, Python and VBA to meet analytical needs of projects.

Brauna is experienced with GIS-related data submittal requirements associated with the Federal Energy Regulatory Commission (FERC) and the Federal Aviation Administration (FAA) data standardization initiatives. She has extensive experience developing Geodatabases with the Spatial Data Standards for Facility, Infrastructure, and Environment (SDSFIE) standard and creating Federal Geographic Data Committee (FGDC)-compliant metadata.

Brauna develops mobile web mapping applications through ArcGIS Online to support field data collection and verification, and public involvement tasks. She coordinates with clients to develop Extract-Transform-Load (ETL) workflows for reviewing and managing data in the field; editing and adding records; and returning data to client databases.

Brauna has created custom GIS tools for quality assurance and to increase efficiencies. She developed tools to automate uploading of GIS data to the FAA Airports GIS format. The tools translate data and ensure the FAA data model is applied to airport GIS data. Brauna also created GIS automation tools for Airport Wildlife Hazard Assessments that create standardized data using a consistent data schema for Assessments performed nation-wide.



Education

- MS, Environmental Monitoring, University of Wisconsin – Madison
- BS, Biological Science, Florida State University, Tallahassee

Registrations/Certifications

- Certified GIS Professional (GISP), GIS Certification Institute

Training

- Intro to Geoprocessing Scripts Using Python, ESRI
- Building Web Applications Using the ArcGIS API for Flex, ESRI
- Geodatabase Design Concepts, ESRI
- GPS Field Collection Techniques Training Workshop for Trimble GeoXH, Seiler Instruments
- Integrated Distance Learning Environment, Level 3 Training for FAA Advisory Circulars AC 150/5300-16A – 18A
- Basic Wetland Delineation Workshop, University of Wisconsin–LaCrosse
- Basic Hydric Soil Identification, University of Wisconsin–LaCrosse
- Web page design, Madison Area Technical College
- Visual Basic, University of Wisconsin – Milwaukee
- Spatial Data Administration, University of Wisconsin – Milwaukee

MARIEKE ARMSTRONG

GIS ANALYST

Marieke Armstrong has over 16 years of experience providing regulatory analysis, agency coordination and environmental document preparation within engineering consulting firms to support water resources and land development projects. She is an experienced environmental coordinator for multi-phase construction projects working with an outside environmental team and manages and prepares California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documents for water development and flood control projects. She is experienced coordinating with field personnel, design engineers, and regulatory agencies to obtain required approvals. Marieke is experienced in Geographic Information Systems and using ArcGIS to perform analyses and create maps to support feasibility and planning phases of design projects.

Marieke supports many of our California airport projects with GIS efforts, including the recent Stanislaus County and Contra Costa County Airport Land Use Compatibility Plan Updates.

RELEVANT PROJECTS

GIS Mapping of Reservoir System Features, Northern California Power Agency (NCPA) – Tuolumne and Alpine Counties, California

Marieke assisted NCPA with regulatory approvals for Lake Alpine and Utica Reservoir in Tuolumne and Alpine counties. Marieke compiled data and produced exhibit maps using ArcGIS to support FERC part 12 inspections to evaluate the safety of the Upper Utica project structures. Information in the GIS-generated maps included aerial photographs, base mapping, and historical seismic activity.

Wildlife Hazard Assessments, Nationwide

Marieke has worked on numerous Wildlife Hazard Assessments at airports throughout California and nationwide. She was responsible for GIS data analysis, graphic support and report preparation in accordance with FAA guidance and protocols.

2D and 3D GIS for Airspace and Zoning

Marieke has worked on airport and airspace zoning projects for Bismarck, North Dakota and Wayne County Airport Authority (Detroit Metro and Willow Run Airports, Michigan). She created data for Part 77 surfaces and local zoning ordinances in three dimensions. The data is used to make zoning and permitting decisions for the airport and the municipalities issuing permits. She performed GIS analysis to identify developable areas and heights.



Education

- MS, Environmental Science, Indiana University
- BS, Ecology, Behavior, and Evolution, University of California – San Diego

Awards

- Mead & Hunt *Innovation Award* with Ryan Meyer for *SAFCA Levee Certification Field Data Collection Tools* for designing and utilizing a system that integrated field collection and GPS tools with internal GIS.

F. ADDITIONAL CAPABILITIES – INNOVATIVE APPROACHES

Mead & Hunt regularly integrates new and innovative processes into GIS. Data collected with drones and Streetview cameras have a spatial component that is linked in the GIS. The data is then retrieved through a mapping interface at a great time savings given the amount collected. Viewing through a GIS map allows the end user to efficiently turn the data into decisions.



Mead & Hunt owns and operates an **Unmanned Aerial Vehicle (UAV)**. We are currently using the UAV to document the construction progress during the different phases of work for the Meadows Field Runway 12L/30R Reconstruction, a 3-year, multi-phase project in Bakersfield. Our UAV has the ability to capture high-resolution video and photographs. The camera eliminates vibration due to abrupt movements of the UAV, resulting in extremely smooth video and crisp photographs. **It can also be outfitted with GPS sensors and LiDAR units to obtain unique documentation perspectives.**

The applications for our UAV are numerous. The videos and still photos are high resolution, making documentation during each phase of a construction project valuable. We have used ours for construction inspection, detailing airfield pavement improvements and damage on high buildings and control towers. Another example of how Mead & Hunt has used this technology is to document the roof structure and upper-story exterior of deteriorated historic buildings that are unsafe to enter.

Drones can move in any direction or hover indefinitely in a fixed location. This makes them ideal for structural investigations on buildings and bridges. They are safer, faster and often more economical for many tasks.

Though widespread commercial use of drones has been slowed by lack of clear regulatory framework, the FAA has proposed new provisions allowing their use. The rules would limit flights to daylight operations, require visual contact of the drone and create an operator certification program (which we have). This is good news for the continuing use of our drone at airports.



Mead & Hunt's **Applied Streetview Camera** allows us a turnkey solution to create street or airport views, in-house. The system includes the recording of information, processing of data and presentation of this information, all in one package. By having this capability internally, we can provide valuable information to clients during all phases of airport development. **Easily mounted on the roof of a car (as shown above) or even hand-held, the camera delivers maximum flexibility and cost-efficiency.**

Throughout the planning phase of projects we can capture the "before" picture of the site, and use this information to identify areas that may need to be further evaluated for issues related to obstructions, zoning, terrain, and land use. This information can be shared with experts throughout the company, and allows an on-site perspective without leaving the office.

During the design phase, the information can be used to reexamine areas of concern, or identify structures and even utility locations from the office. This can allow design team members the ability to reconfirm the recommended locations of new and reconstructed infrastructure does not interfere with existing conditions on the airfield. Having this data in a shareable environment can provide a visual aid for staff to understand progress on the project, and discuss any challenges that have been identified.

All data sets are able to be observed concurrently or individually depending upon the desires of the viewer.

G. PRICING SCHEDULE

MEAD & HUNT, Inc.
Western Standard Billing Rate Schedule
Effective January 1, 2017

G – PRICING SCHEDULE

Standard Billing Rates

Clerical.....	\$80.00 / hour
Interior Designer, Technical Editor	\$106.00 / hour
Senior Editor	\$156.00 / hour
Registered Land Surveyor.....	\$120.00 / hour
Accounting, Administrative Assistant.....	\$98.00 / hour
Technician I, Technical Writer	\$91.00 / hour
Technician II, Surveyor - Instrument Person	\$106.00 / hour
Technician III	\$114.00 / hour
Technician IV	\$138.00 / hour
Senior Technician	\$165.00 / hour
Engineer I, Scientist I, Architect I, Planner I.....	\$125.00 / hour
Engineer II, Scientist II, Architect II, Planner II.....	\$137.00 / hour
Engineer III, Scientist III, Architect III, Planner III	\$148.00 / hour
Senior Engineer, Senior Scientist, Senior Architect, Senior Planner, Senior Economist.....	\$169.00 / hour
Project Engineer, Project Scientist, Project Architect, Project Planner	\$182.00 / hour
Senior Project Engineer, Senior Project Scientist, Senior Project Architect, Senior Project Planner.....	\$222.00 / hour
Senior Associate.....	\$271.00 / hour
Principal.....	\$281.00 / hour
Senior Client/Project Manager.....	\$281.00 / hour

Expenses

Geographic Information or GPS Systems	\$32.00 / hour
Total Station Survey Equipment.....	\$16.00 / hour
Charges for other equipment may appear in a proposal	
Out-Of-Pocket Direct Job Expenses.....	cost plus 15%
Such as reproductions, sub-consultants / contractors, etc.	

Travel Expense

Company or Personal Car Mileage	\$ IRS rate / mile*
* the current IRS rate as of Feb. 2, 2017 is: 53.5 cents per mile	
Air and Surface Transportation.....	cost plus 15%
Lodging and Sustenance.....	cost plus 15%

Billing & Payment

Travel time is charged for work required to be performed out-of-office. A minimum of two hours will be billed for any work out-of-office.

Invoicing is on a monthly basis for work performed. Payment for services is due within 30 days from the date of the invoice. An interest charge of 1.5% per month is made on the unpaid balance starting 30 days after the date of invoice.

This schedule of billing rates is effective August 1, 2017, and will remain in effect until December 31, 2018, unless unforeseen increases in operational costs are encountered. We reserve the right to change rates to reflect such increases.