

MHA Drone Project: Planning and Protocol Development Report

Summary of Listening Sessions on January 22, 23 and 24, 2024

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Background: The *MHA Drone Project: Planning and Protocol Development* (Project) Department of Transportation funded project in collaboration with the Nueta Hidatsa Sahnish (NHS) College, the University of North Dakota (UND), Three Affiliated Tribes (TAT) GIS Water Resources Department, and the Northern Plains UAS Test Site hosted seven World Cafés (listening) Sessions. A session was offered in each segment of MHA Nation to determine the need for drone use on these Tribal Lands. The goal was to gain a greater understanding of the use of drones to inform the Project's efforts and plans. The sessions were offered from January 22-24, 2024. The sessions were designed to support broad community participation and engagement in determining opportunities, barriers, and needs relative to the use of drones (UAS) at MHA Nation with publicity shared broadly through a flyer designed by the Project team. Below are the dates and locations of World Cafés (listening sessions)

- January 22, 2024, from 9:00 AM to 10:30 AM located at Sage Coulee at 1321 Elbowoods Lane in Bismarck, ND.
- January 22, 2024, from 2:00 PM to 3:30 PM at the Wellness Center located at 112 E Main Street Halliday, ND
- January 23, 2024, from 9:00 AM to 10:30 AM at the Diabetes Wellness Center at 1058 College Drive in New Town, ND
- January 23, 2024, from 11:00 to 12:00 at Nueta Hidatsa Sahnish (NHS) College located at 220 8th Avenue East, New Town, ND
- January 23, 2024, from Noon to 1:30 PM online in Parshall, ND
- January 24, 2024, from 9:30 AM to 11:00 AM at the New Ralph Wells Memorial Community Center in White Shield, ND
- January 24, 2024, from 2:00 PM to 3:30 PM at Water Chief Hall at Mandaree, ND

Implementation: Five of the sessions were offered in a hybrid format with project team members in-person and online except for Parshall and Four Bears (online only) and Mandaree (in-person only). Due to the various technology capabilities at the locations, some challenges occurred for participants attending online to hear content. However, dedicated facilitators were on site who kept notes that contributed to the content provided in this report including four DOT project members, with two being citizens of MHA Nation, who facilitated the session and provided content. Nineteen people attended the sessions with only two online. The written notes gathered were analyzed and summarized into three categories 1) strengths and opportunities, 2) challenges and considerations, and 3) summary of outcome. Email addresses of all who participated were gathered and this DRAFT report will be shared with participants before distribution.

The background surrounding the current use of drones at TAT was provided by the GIS/Water Resources staff who had representatives at each session in their role as a sponsor of the listening

sessions. The access to \$1,966,345.00 in funds from the Department of Transportation (DOT) to support this effort in a timeline of August 2023 to February 2025 was also underscored. The role of MHA Nation as prime in securing this funding from the Department of Transportation (DOT) was described. Conversations were organic with numerous topics raised in the groups involving opportunities, challenges, potential next steps, and ideas for consideration, etc Primary themes emerging from the sessions are categorized from written notes and described in the next section.

Overarching Theme: The use of drones on these Tribal lands must ensure the **protection of the Seven Generations of the future**. This includes protecting their energy, water, and natural resources. Acknowledgment of relationships of citizens of MHA was emphasized with one participant stating, “**We are all related culturally, socially, or by blood**”. In terms of the focus of the use case of the Project, it was noted that the use case in the proposal to DOT is the delivery of medications between Twin Buttes and New Town. A statement underscored that when “**medication is going to a relative**” there will be gratitude and appreciation.

Identified Strengths and Opportunities: 10 Items for Possible Development:

1. **Ensuring the use of drones for positive environmental outcomes.** For example, drone use for **monitoring pipelines for oil spills** is an opportunity to assist and respond to environmental crises. This will save the time of the people on four-wheel vehicles monitoring the lines. Related to environmental reclamation, drones may be used to **monitor environmental safety**. Further, drones could **monitor road damage, flooding, and continued construction site progress**. The opportunity to **create three-dimensional topographic maps is easier, safer, and more efficient as drones can fly over more difficult or dangerous terrains** to ensure environmental safety.
2. **Drones as a resource to create a more successful and safe community.** Along with the GIS/Water Resources Department, the TAT Game and Fish Department and the Energy Sector use drones. Still, opportunities exist to **expand drone use to emergency services and law enforcement**. Us for **search and rescue** was a theme. Recognition of various locations on tribal lands that may benefit from the use of drones for **surveillance among law enforcement** and others exists. For example, drones could be used to **identify encampments on Tribal lands**.
3. **Expand the use of drones to support animal husbandry/agricultural use.** UAS/drone use for livestock management was a recurring theme. It costs \$2.5K+ to replace a lost animal which has a huge economic impact on ranchers’ livelihoods. Searching for cattle, in general, and finding calves during the calving season, especially during/following a blizzard, were raised as expanded opportunities for the use of drones. Further, GIS applications in agriculture are a continued need (soil coverage and aerial view of grasslands). Other agricultural uses include the elimination of noxious weeds.
4. **Expanding the workforce at MHA to improve access to pilots - 107 Certified.** Currently GIS/Water Resources at TAT contracts with Frontier Precision¹ in Bismarck for training pilots. Discussions are underway about establishing a certification program at NHS College in partnership with the University of North Dakota - John D. Odegard School of Aerospace Sciences. Interest was expressed in providing support to begin the process of training pilots and creating an interest in aeronautics at the Twin Buttes High

¹ <https://frontierprecision.com/events/event/1-day-part-107-uas-training-bismarck-nd-25/>

School which is under construction and will have space. Further, opportunities exist for dual training of drone pilots working in search and rescue as emergency responders or working in collaboration with pilots. Beyond pilots, there is interest in the potential demand for UAS-connected workers at MHA particularly to ensure sovereignty of the data gathered to be analyzed and summarized by Tribal members.

5. **Opportunities exist to expand business-to-business and government-to-government partnerships by establishing a process focused on sovereignty.** This includes ensuring data sovereignty as the data drives the effort and guides future decision-making for the Tribe. Given that six counties border MHA Nation, several opportunities exist to partner however, this also creates challenges. The project creates opportunities for industry and higher education to work collaboratively with MHA Nation. A **need for a Tribal Resolution on the ethics and safety of drone use on Tribal lands** and consideration of a corridor for flight paths was discussed¹.
6. **Building on the current and potential capacity of the GIS/Water Resources Office was a theme.** A strength is their existing capacity including expertise in GIS and drone pilots and GIS data specific to these Tribal lands. Collecting GIS data potentially serves multiple purposes developing efficiencies in the GIS office as they continue to gain momentum in their work. Their drones are equipped with infrared or thermal imaging to analyze heat patterns from the air. The office also secures external grant dollars as well as their work with the *MHA Drones Project: Planning and Protocol Development* team. For example, the elimination of the noxious weed program was funded by the US Department of Interior through Indian Health Services with approval from the Tribal Council through resolution number 23-017-FWF to secure and access this funding with efforts beginning in the spring and summer of 2024.
7. **Respecting Cultural and Sacred Spaces and Tribal Events** (e.g., Pow Wows). Protecting cultural spaces and Native Site Information locations and monitoring unidentified drone activity in the area was underscored by many participating in the sessions. Using drones while setting exclusionary areas and boundaries to protect sacred spaces was identified as both necessary and possible. Of note, drones flying recreationally during powwows were expressed as a concern.
8. **Addressing food scarcity.** Both quantity and quality of food are concerns for MHA Nation. For example, people living in Twin Buttes travel to Beulah (38 miles) to shop for food that is not in a convenience store. On the day of the meeting in Twin Buttes, that road was covered in snow and ice with an hour's drive one-way. An impactful statement made was that "There should not be a hungry household on tribal lands." MHA Greenhouse² and Buffalo³ Projects, and potential future use cases tied to both of those endeavors, are opportunities. Availability of fresh fruits and vegetables and other healthy food options is a concern with discussions on the role of drones in enabling the delivery of healthy foods. Though pharmacy deliveries were also raised as a possibility, food delivery was a strong theme.
9. **Youth Involvement and Future Workforce.** There was a strong theme across groups about involving children and grandchildren in drone efforts with implications for a future workforce. Of note was an appreciation for the collaboration of the DOT Project staff and GIS/Water Resources in offering a Drone Camp in New Town at the Earth Lodge Village

² <https://www.mhanation.com/news/2021/4/19/mha-nation-breaks-ground-on-greenhouse-project>

³ <https://echo-maker.com/the-mha-buffalo-project/>

in October 2023. Many ideas emerged for youth. Outreach to the High Schools located at the various segments was underscored, particularly to support their role in workforce development. It was noted that drone racing is fun and a great way to include kids. Visiting the high schools to conduct educational outreach was suggested. Perhaps accessing the Drone Cage that UND purchased for MHA as a resource to engage students in the proper use of drones and establish a drone team for High Schools. Though UAS is the topic right now, developing autonomous systems in general, both air and ground-based is possible.

10. **Adopting emerging technologies for drone use was also discussed.** This will include the capacity to remain innovative in developing the use of drone-in-a-box technology, enhancement of 3D printing capabilities, increasing payload and battery capacity of drones, and improvements in remote identification. The goal could be the development of a QR code that all could have access to that will ensure safety and support for travel. The future holds promise for increased capacity to use drones.

Identifying Challenges and Considerations:

1. **Expanding public education to ensure the public is engaged and has input on this effort.** Overall, there is both interest and hesitation about drones that generates conversation and questions which calls for the need for more public education. Expanding community education would facilitate the six segments working together to expand the use of drones. **Building a drone program, setting up a satellite office for flight recording, and offering a Drone 101 course for the public** were discussed for consideration. The adults we spoke with had never flown a drone. Interest exists in finding a way to engage more hands-on opportunities so Tribal Members can experience flying a drone in a safe environment that ensures addressing privacy concerns.
2. **Expanding use to enhance public safety is necessary.** The potential use of drones to add to public safety was a theme as discussed above. However, the importance of **privacy in the use of drones was underscored in the public safety comments.** Privacy appeared as a subtheme within other general themes like public safety. There were stories of instances of attempts to “shoot down” drones already happening. Tribal members may be inclined to protect themselves from unknown drones on their property. The question was raised regarding the use of drones to prevent crime. At present, droning related to public safety is described as “a reactive tool, not a proactive tool.”
3. **Serving remote and rural Tribal areas can be difficult.** There are many needs emanating from the rural challenges of the six segments and the six counties create challenges. For example, some rural roads are not all named, they are isolated, and **sometimes there are no 911 addresses.** At times, individuals and families are stormed in due to a blizzard for multiple days which is most problematic for running out of medication and oxygen. Also, access to dialysis during power outages is a concern. The needs of rural tribal members, due to their isolation, need to be made known to inform policymakers. A road map for rural delivery could help.
4. **Adaptations are necessary for use in inclement weather:** Cold temperatures and high winds were often topics of conversation. The extremes of -50 degrees Fahrenheit and 75 mph winds were raised. MHA land does fall in a geographical area with “good” and

“excellent” wind as a resource⁴. However, that is challenging for drones, so for implementation, drone specifications need to consider local weather conditions.

5. **Ensuring privacy and security is paramount.** Security challenges and identifying which units or departments will protect cultural resources in people’s homes and on their lands were discussed. Education regarding the laws around flying over air space and people’s homes or being a nuisance. Potential concerns from individual landowners (e.g., water intakes on private lands) about the uses of drones by the tribe as well as by industry. There is a need to be compliant with airspace laws and be respectful of landowners.
6. **Tribal/Industry relationships and privacy issues vs environmental issues were raised.** Using UAS to monitor companies' wells/construction/pipeline/industrial sites raises both privacy issues and environmental issues. Conflicts like oil companies opposing rules and regulations, the tribe not having enforcement or capacity to enforce, see or detect aircraft in Tribal air space etc. The importance of keeping a business-friendly culture but also adhering to rules and resolutions from the Tribe was emphasized. Participants want to protect Tribal lands and keep companies honest while still facilitating a healthy business environment. Discussion occurred regarding balancing business interests with accountability and adherence to laws. Continued discussion about environmental surveillance when dealing with companies with a common theme of environmental protection. A suggestion was provided regarding promoting Mandaree as the “drone hub” due to its ample land and the presence of oil companies. This would expand capacity to ensure that oil companies comply with regulations on dumping and use of waste sites.
7. **Airspace, sovereignty, and policy development need to be understood broadly to ensure safety.** Formulating drone usage laws on these Tribal lands was mentioned as an opportunity. Noting the limited staffing in the GIS team despite heavy drone use. Concerns about this being “the wild west” in the use of drones were expressed. Questions were raised about airspace use and policies.
8. **Involving Tribal leadership in the future of drone use.** A need exists for Tribal Council involvement and buy-in. There was a suggestion to meet with segment leaders directly. Tribal members want more information regarding the use of drones and this project. There was also a suggestion that project members get involved in more regular community gatherings.
9. **Drone knowledge, technology capabilities, and challenges exist.** Participants were curious about the types of drones, sizes, and how they are currently used. Access to large payloads on the drone is a challenge. Wind and weather limitations as previously stated were a potential limitation raised. Noise from drones is both an environmental concern and a potential nuisance. Flight safety is a concern and curiosity around seeing and detecting aircraft in the airspace.
10. **Medication delivery is a need but not paramount.** Of note, medication delivery is a priority to pursue in the aims of the DOT fundings from the listening sessions, it was not often raised by community participants as a priority. This theme primarily emerged, however, related to winter weather. Citizens have mentioned the delivery of medications from veterinarians for animals as a possible use case as well.

⁴ <https://windexchange.energy.gov/maps-data/78>

Summary of Outcome

The use cases for drones that were identified in the listening sessions include:

- identifying Tribal artifacts,
- protecting Native Site Information,
- conducting environmental surveillance/environmental protection ie monitoring drill pads and pipelines,
- continuation of efforts to monitor construction sites,
- expanding use of emergency services and use among law enforcement,
- continuing all efforts to ensure safe water access,
- delivering bison from the Bison Farm to citizens,
- delivering fruits and vegetables from the Native Green Grow project ⁵
- checking fences,
- general animal husbandry (counting cattle),
- measuring soil coverage and grasslands,
- expanding industry and government-to-government relationships.

Building internal capacity and understanding was critical to the DOT-funded project. The listening sessions were not only an opportunity for the project team to listen and learn, but they were also an opportunity for GIS staff to do outreach and share their current capabilities with the community. Further, it was an opportunity for the project team, GIS Office, and community members to interact about building capacity. An opportunity exists to have a radar system that will allow for the Tribe capacity to monitor launch and landing sites within the reservation borders. It is anticipated that the Project will assist in this endeavor. Sophisticated GIS mapping of the reservation is another opportunity that remains. Finally, there is an opportunity for future funding to build infrastructure as the DOT funding has a Stage 2 opportunity for funds. This document can guide future efforts and be organic as future needs arise and the technology of drone use grows.

The team wishes to thank all who participated in these sessions and provided such valuable feedback.

The DOT has provided liaisons from the Federal Aviation Administration to offer guidance on safety and guidance in the use case identified in the project. Monthly meetings are occurring with partners on the project.

⁵ <https://www.nativegreengrow.com/>