

## Survey results

- Positive overall support for moving forward

## Current and potential uses of geodetic data

- Higher imagery resolution drives need for high accuracy data collection
- City of Pocatello- public right away, sewers etc., with legal and accuracy requirements
  - o Has survey and high accuracy GPS collected. Currently using CORS
  - o Don't really need high accuracy, but it could be useful in future as requirements and use increase
  - o Would like to ask about vertical to help out engineers with survey grade equipment
- Bryant- Montana realizes accuracy requirements vary with use as expectations increase
- Donna- GCDB and PLSS fabric for mapping parcels- want best available to make best data set for accuracy. Want to adjust parcels once, not over and over again
  - o Could be used to update GCDB, high accuracy is better in a pinch when you can't afford a surveyor
  - o Waiting on tools from BLM to do a GCDB readjustment and RTN could help with this project
- Craig- Parcel mapping is for assessment purposes. Ortho photos, LiDAR, weed data are no longer matching with the parcels. This causes question in reliability. We need a better control point layer than GCDB
- Raj- ISU uses GCDB for planning and reconnaissance purposes, not for gold standard
  - Most agencies have to use it as a gold standard because there is nothing else available
- Zach- Utah uses ground control to explore NAIP imagery to 1 meter accuracy
  - o Bryant- NGS estimated less than 1% of geodetic control is reported back for NGS database, indicating this needs to be done on state wide level
- Keith- geodetic control for research purposes- growth of technology has forced us to need higher control of data. We need to be sure we are fitting our sample area into a pixel and higher resolution imagery makes that difficult. Rule of thumb is accuracy needs to be 50% of pixel size. Now getting to need cm accuracy
- Curt Smith- NGS- CORS is getting denser to help national control. NGS may not maintain a geodetic database any longer, so RTN is critical. NGS system is becoming more and more obsolete. NGS will provide assistance in implemented RTN and maintain national positioning system through that network. It will not maintain an RTN, but will have a sparse network to plug into state wide networks. Will advise on a regional level.

## Sources and limitation of geodetic control data

- Dennis- We have laws and access to lots of data and CORS stations in SE Idaho, few limitations
- Donna- Seems like any survey needs to have a base station set up since CORS are readily available. Also use NGS data.

- How is Montana control point database working out? No comment
- Keith- Agriculture is enormous part of geodetic control. It is the fastest growing user group for precision GPS
- DeInma- Precision Ag needs to have real time accuracy. SE Idaho has been using RTK for at least 10 years. Dry land areas use mostly WAAS, but trend is the all crops are moving to RTK to get better machine control (implement driving, etc.). Doesn't need GCDB. Used to track \*-cide application. Technologies being developed around correction source (irrigation strips underground to prevent evaporation, etc.) Need to have repeatability.
  - o Single base correction is relative to location of the receiver, which can propagate error. Multiple stations will create more accurate locations by testing locations of each other.
  - o Not known if any agriculture in this area if CORS is being used because no network is available. Other areas are using CORS, but falling away from it because it isn't responsive enough, so private industry is stepping in.

#### Real-time vs. Post-processed

- Discussion as directed to need of higher accuracy and real-time services
  - o Keith- moving more towards higher accuracy and real-time, agriculture agrees
  - o Danielle- Expectation of real-time because of WAAS. Most feel post-processing and unnecessary and extra step.

#### Organizational Roles

- Need to define because of costs and ownership, partnerships and leadership
- Dennis- Business plan needs to highlight agriculture need to get legislature behind funding
  - o DeInma- Lots of RTN available in other states that find a way to combine public and private equipment to create a more robust system. Need to find a way to make it work for both. If farmers are buying own stations, need to allow them to be part of network for them to leverage full use of their purchase. There are hardware issues (Trimble, John Deere, etc.), but trending to being more compatible. System needs to be consistent and responsive.
- Danielle- Emergency management system- tap into flood mapping or dam movement. Could be used to monitor levees and dams during flood time.
  - o Bryant- some tie-ins in Montana
- Donna- How will emergency dispatch tie-in to RTN?
  - o Dennis- currently triangulating with cell towers, but face datum problems, RTN could be a benefit when they are ready for it
- Keith- Other states (UT, WA, etc.)- some are public funded through state with subscription (UT), WA and OR is a mix of public and private.
- Donna- Federal agencies will be supportive of this endeavor where it is on state or regional level with maybe some dollars. Public/private model could be ideal if there is a road map.
  - o Keith- documents available on RTN site with guidelines to build and RTN. Best case scenario- have a public organization owns and operates everything (\$\$\$) and not using

existing infrastructure. Realistically, need to work with what we have and partner with other networks available.

- DeInma- Any legal ramifications of running a public/private network? Who will take care of money or subscription fees? Some agriculture applications do not require a monument. Will that be required? Should provide a list of equipment that can be used.
  - o Keith- WA model would bring in private stations with reduced or waived rates for the year using MOU/MOA. Can use that as a model. Station requirements are not set, ideally they will be built like a PBO. Will be hardware, latency, communication protocols, and accuracy. Will provide a list of preferred specifications for equipment. Can't make it too loose because it can affect accuracy. Need to build a valuable reliable service that will deliver what it promises.
  - o Bryant- need to have a leading agency to get the ball rolling and have the benefits highlighted as tangible.

#### Funding sources available

- Donna- ITD is a champion for moving this forward (Bill and Rayce) in SE Idaho. Anything in agriculture organization besides individuals?
  - o DeInma- There are organizations, but they need to know what we are asking for, make things more concrete.
  - o Keith- need contacts to get them educated and talk to them through established contacts they know and trust
- Keith- Construction machine control should be included