



CASPER | LARAMIE | SARATOGA | **ARVADA** | FT. COLLINS

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[www.2DOTconsulting.com](http://www.2DOTconsulting.com)



## RECLAMATION WEED MANAGEMENT

*drones • environmental • engineering • water | soil | air • remediation • gis*

# RECLAMATION SERVICES

- RECLAMATION PLANNING & DESIGN
- BMP INSTALLATION
- SEEDING & WATERING
- SOIL SAMPLING, ANALYSIS, AMENDMENTS
- SOIL ANALYSIS
- VEGETATION TRANSPLANTING
- HERBICIDE APPLICATION
- EARTHWORK
- SEED BED PREPARATION
- PERMITTING
- PIT CLOSURES
- WEED MANAGEMENT PLAN

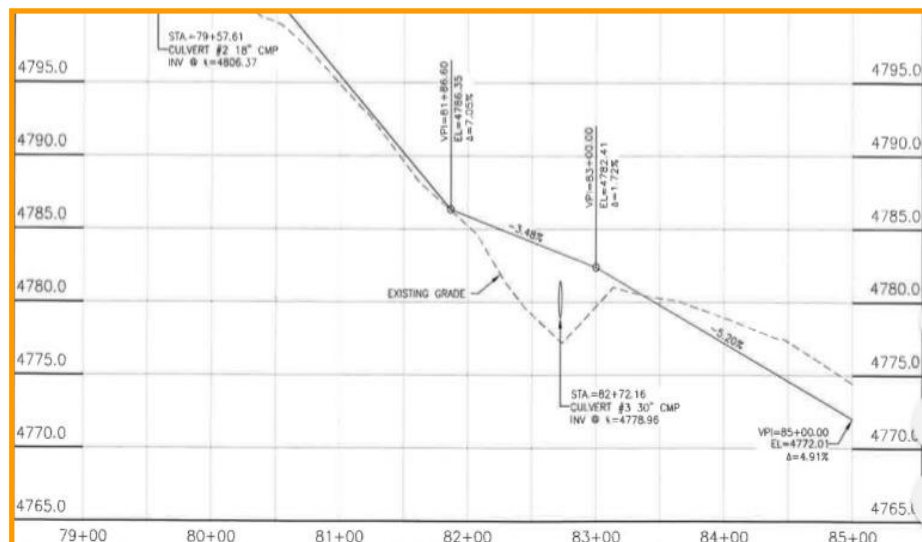
## DESIGN

- Reclamation Plan Design
- Soil pile calculation and management
- Weed Management Plan
- Pesticide and Herbicide application (2DOT holds herbicide applicators license for WY/CO)
- Stormwater Regulatory Compliance Inspections and Reporting
- BMP Selection & Design



## PROJECT EXPERIENCE

- Commercial and Residential Development (5 - 500ac)
- Land Development and Site Improvements
- SPCC Plans and Secondary Containment
- Stormwater Design/Grading Plans

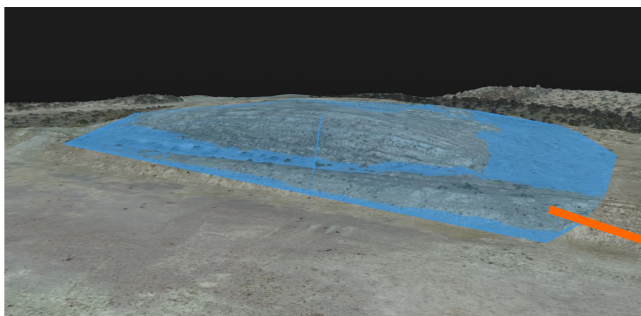




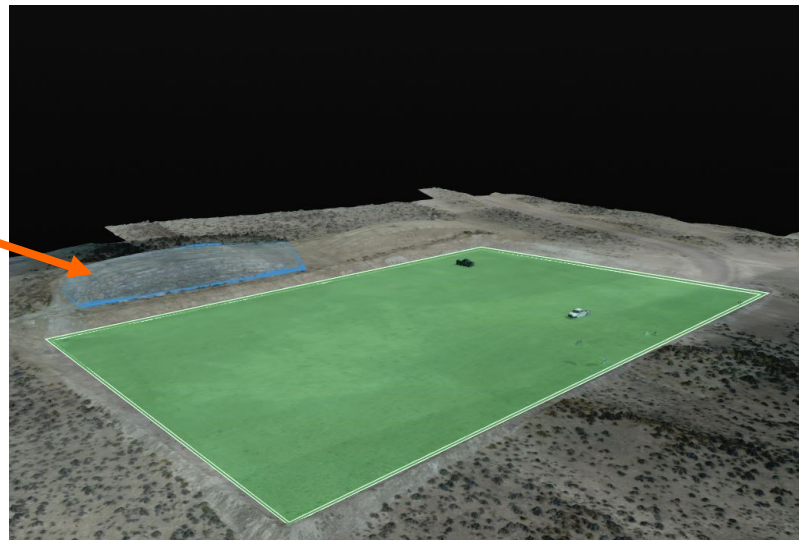


**Soil Amendments** — When soils are healthy, they play a significant role in our ecosystem. When soils have limiting factors, such as lacking organic chemistry, we can adapt and improve their physical and chemical properties to enhance plant growth and contribute to a successful reclamation project.

We take a site-specific, science based approach to reclamation. By collecting soil samples, mapping healthy soils and vegetation communities, and understanding soil limitations, we can provide an economic and efficient approach to large and small reclamation projects.



We map soil stock piles with drones and calculate soil quantities. When soils are properly stored, we can use them to reduce reclamation costs and save time.





## WEED MANAGEMENT AND RARE PLANT SURVEYS

2DOT botanists have extensive experience using state or federal protocols for protected and noxious plant surveys in WY, CO, NE, UT, KS, NM, and TX. We find the most updated botanical literature, online databases, and plant physiology information to optimize our field survey time and your budget. 2DOT is also able to provide herbicide application for the management of noxious weeds on a wide variety of project types.



### MANAGEMENT

Reclamation is necessary to restore ecosystem function and advance vegetation succession following any activity that disturbs the ecological characteristics of a site.

### FIELD OPERATIONS

- Soil chemistry analysis
- Soil amendments
- Seed bed preparation
- Water distribution



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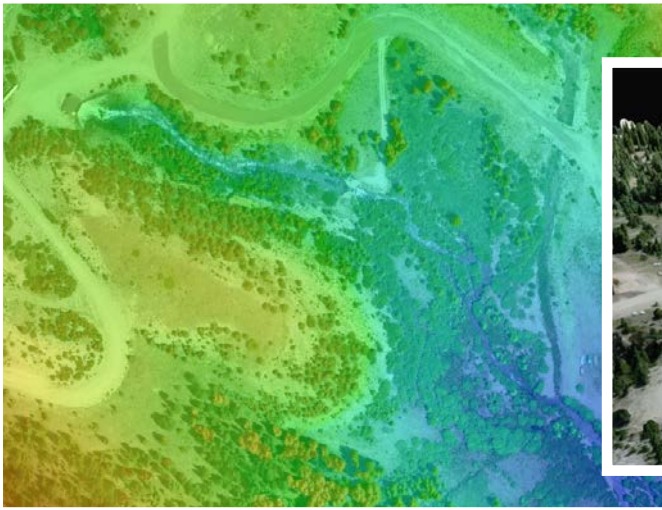
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## DRONE AND GIS SERVICES

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## Collect, Analyze, and Share Accurate Data

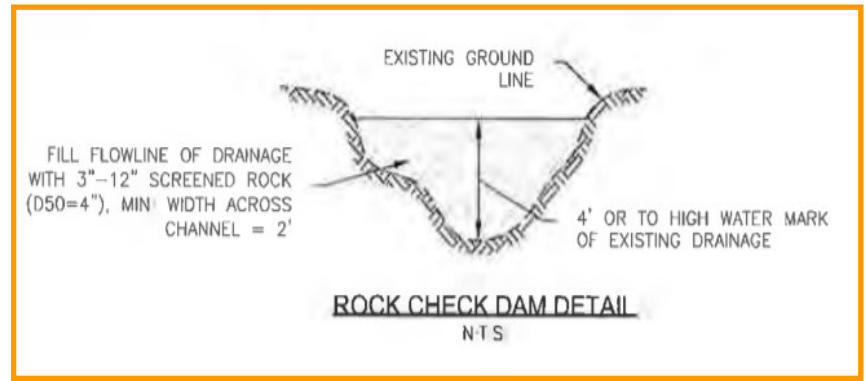
2DOT's UAV aerial imagery service has no minimum altitude, allowing aerial oblique or directly vertical perspectives that can satisfy most, if not all, imagery needs. Drones offer a cost and time effective solution to a wide variety of projects.

2DOT uses its UAV imagery to provide orthorectified, high resolution imagery and 20+ megapixel stills. UAV imagery integrated with GIS analysis can provide percent coverage, volume, and area calculations as well as georeferenced 2D maps and 3D models.

### 2DOT Drone and GIS Services:

- Reclamation Monitoring—Pre/Post Disturbance
- Wildlife and Raptor Surveys
- Land-Use/Land Cover/Vegetation Mapping
- Equipment Inspections
- Aerial Imagery (high resolution)
- 3D Modeling & Map Making
- Stormwater Management & Inspections
- Area & Volume Calculations
- Noxious Weed Mapping and Surveys
- Visual Surveillance & Monitoring
- Wetland Survey Mapping
- Phase I and II Site Assessments





## GIS Data Solutions

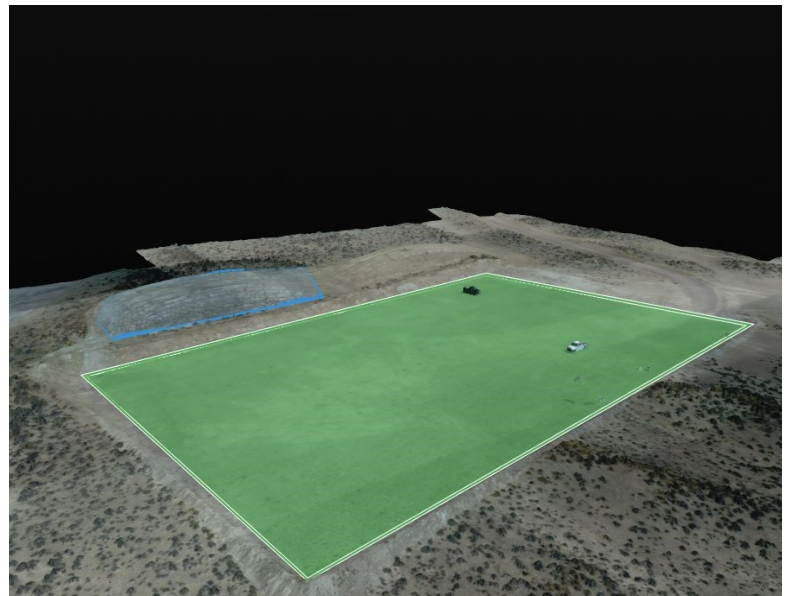
2DOT uses GIS to capture, store, manipulate, analyze, manage, and present all types of geographically-defined data and metadata. 2DOT incorporates a variety of processes to efficiently input new data, or migrate existing data, into our GIS Systems. Our staff has experience with the technologies and concepts that allow us to provide optimal solutions related to data integration, data analysis, mapping, and all facets of GIS application for every industry.

### Typical GIS Data Sources

- Aerial imagery with drones
- Field data collection
- GPS collection
- Data migration (GIS to CAD; CAD to GIS)
- Existing databases, maps, drawings and other documents
- Electronic maps and drawings

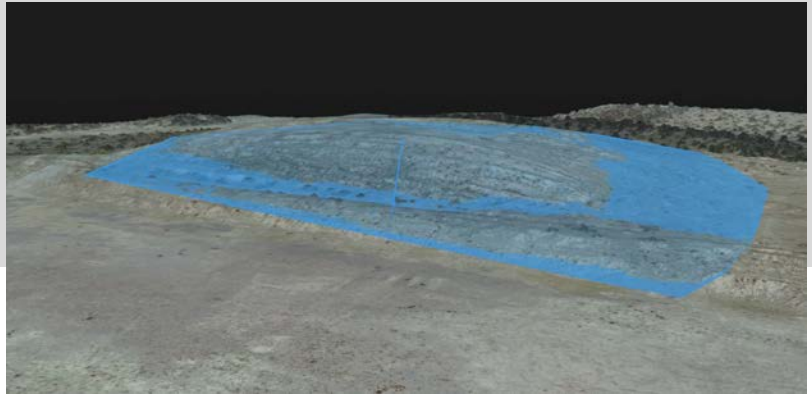
### Typical GIS Deliverables

- Wetland delineations
- Stormwater Management Plans
- Database design & system configuration
- Database maintenance & implementation
- Data conversion and migration
- As-built drawing & model development
- Map and alignment sheet generation
- Mapping services
- Pipeline and utility routing and design
- Pipeline regulatory compliance
- Right-of-way and easements



## UAV & GIS Project Experience:

- Pre and post-construction high quality aerial imagery for stream restoration
- Conservation easement baseline reports
- Stormwater regulatory inspections
- Reclamation progress on federal lands
- Stockpile soil volume and area calculations
- Website and marketing imagery
- Federally threatened, endangered, and sensitive species mapping
- Noxious and invasive weed mapping
- Wetland delineation reports
- Turnkey environmental regulatory compliance services
- Stormwater Pollution Prevention Plans (SWPPP)
- Stormwater Management Plans
- Database management for energy clients
- Georeferencing
- Wildlife habitat mapping



## Qualifications:

- Commercial Remote Pilot Small Unmanned Aircraft System (UAS) License (FAA Part 107 Registration)
- 4K and 20-megapixel capable commercial UAV
- General liability insurance up to \$1,000,000
- Geospatial Information Systems Professionals
- Software: ArcGIS, ERDAS Imagine, Pix4D, Drone Mapper

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## STORMWATER MANAGEMENT

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# 2DOT'S STORMWATER MANAGEMENT SERVICES

## Pre-Construction and Engineering

- Stormwater Conveyance Design & Engineering
- Permit Submittals: Municipal, State, and COGCC
- Preparation and Design of SWMP/SWPPP with ESC Maps
- Amendments to Existing Plans

## Construction Monitoring

- Weekly or Bi-weekly and Post-Precipitation Inspections
- BMP Installation, Maintenance, and Removal
- Vegetation Monitoring and Weed Management
- Groundwater Sampling and Reporting

## Post-Construction Reclamation and Maintenance

- Reclamation: Grading, Seeding, Watering
- Final Stabilization Monitoring and Inspections
- Weed Management
- Permit Termination: Municipal, State, and COGCC





## PURPOSE

Stormwater replenishes our aquifers and flows into streams and rivers. Heavy or contaminated runoff can cause stream bank erosion, habitat destruction, infrastructure damage, and downstream flooding. Our stormwater management solutions are meant to mimic natural hydrology and control infiltration into the ground.



## BMPs & CONTROL MEASURES

Temporary and Permanent BMP Installation and Maintenance (Silt Fence, Straw Wattle, Inlet Protection, Rock Check Dams, etc.)

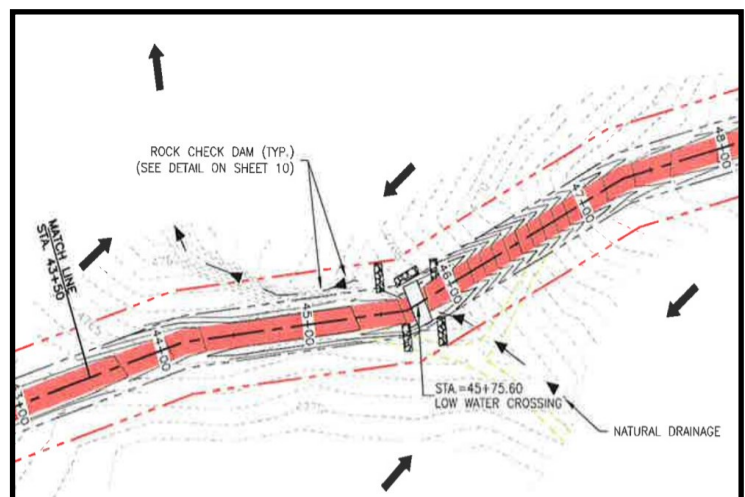
Temporary and Final Stabilization (Erosion Control Blanket, Surface Roughening, Seeding and Straw-Crimping, Hydroseeding, etc.)

## DESIGN

- Engineered stormwater structure and conveyance design (drainage structures, rip-rap)
- BMP selection based on federal, state, and municipal standards
- SWMP/SWPPP: preparation and design including ESC maps
- Stormwater program audits and training
- Regulatory compliance inspections

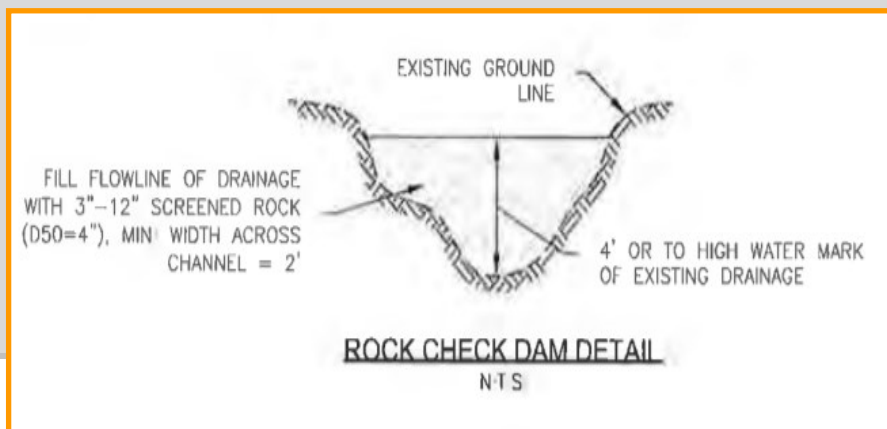
## RESTORATION

- Stream embankment stabilization/restoration
- Landscape and planting plan design
- Seeding and planting



## STORMWATER PROJECT EXPERIENCE:

- Large construction permits
- Municipal, transportation, industrial, and construction stormwater permits
- Commercial and residential development (5 - 500ac)
- Land development and site improvements
- SPCC plans and secondary containment
- Stormwater design/  
grading plans
- Agency coordination
- Stream restoration
- Reclamation/  
remediation



## QUALIFICATIONS:

- Professional Civil Engineer: WY, CO, and UT
- CDOT SWMP Preparer Certification
- CDOT Transportation Erosion Control Supervisor (TECS) Certification
- 40-hour OSHA HAZWOPER Training
- 10-hour OSHA Construction Industry Safety Training
- 8-hour OSHA Site Supervisor Training
- 4-hour OSHA Confined Space Entry Training
- Colorado Association of General Contractors
- Erosion, and Sediment Control Inspector Training
- Secondary Containment for SPCC Plan Training

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