Geologic Report Workflows with ArcGIS Pro and ArcGIS Online

Presented By: Roger Bannister
Unimin and Fairmount Santrol merged to form Covia on June 1

Covia (KO-vee-ah) is a leading provider of minerals and material solutions for the Industrial and Energy markets

50+ plants, 94 operating terminals, access to all major Class One railroads, and over 3,000 employees

Broad array of high-quality products, including high-purity silica sand, nepheline syenite, feldspar, clay, kaolin, lime, resin systems and coated materials

Trading on the NYSE under “CVIA”
Background

Our Vision:
- Standardize Map Styles for Annual Reserves/Resources Reporting
- Create a Reserves Dashboard for Executives

Translation: We need a...
- Quick workflow that’s
- Easy to learn and
- Creates consistent deliverables.

Mitigating Factors:
- High Pressure/Time Constrained
- Mostly limited GIS Experience
Prepared by the site Geologist in collaboration with site Mine Planner

Cross-tab/pivot style table cleanly shows the quantity but not the **where**

### 2018 Reserve Statements

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESERVES</td>
<td>RESOURCES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owned/Leased Areas</th>
<th>Proved</th>
<th>Probable</th>
<th>Measured</th>
<th>Indicated</th>
<th>Inferred</th>
<th>Acquisition</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owned Areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 1</td>
<td>XXXXX</td>
<td>XXXXX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Area 2</td>
<td>XXXXX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 3</td>
<td>XXXXX</td>
<td>XXXXX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Owned/Leased Reserves/Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acquisition Targets</th>
<th></th>
<th></th>
<th>XXXXX</th>
<th>XXXXX</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area 4</td>
<td></td>
<td></td>
<td>XXXXX</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td>Area 5</td>
<td></td>
<td></td>
<td>XXXXX</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td>Total Acquisition Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>XXXXX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRAND TOTAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Years at Forecasted Annual Sales Pace</td>
<td>XXXXX</td>
</tr>
</tbody>
</table>

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Setting up a project template
The Dreaded Step by Step SOP…
Tasks – Interactive SOPs

Reserves/Resource Polygons for GIS

1. Navigate to site and create bookmarks
2. Create Le Sueur County MN Geographic Transformation
3. Extract tracts/land assets to update property boundaries in MineSight
4. Prepare Reserves/Resource polygon shapefile from MineSight
5. Reset existing reserves/resources polygon GIS data
6. Import Reserves/Resource polygons to blank GIS layer
7. Publish Reserves/Resource layer to ArcGIS Online
8. Export map layout for report

These steps will walk you through importing all the reserves polygons prepared in the previous task into a blank GIS layer.
Designing a Task

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Name:**
- Extract Category from Name

**Instructions:**

Attempts to automatically set the category based on keywords in the name. E.g., if Name = “Smith Proved” then category will be set to “Proved Reserve”. This tool is very sensitive to spelling. E.g., if the name contains “Proved” instead of “Proven” it won’t set the category.

**Add Category from Name**

- Additional Actions
  - When starting the step: Add Action -
  - Prior to command execution: Add Action -
  - When completing the step: Add Action -

**Run/Proceed Instructions**

- 150 characters left

**Step Behavior**

- Manual: User runs and proceeds
- Auto Run: Step runs and user proceeds
- Auto Proceed: User runs and step proceeds
- Automatic: Step runs and step proceeds
- Hidden: User will not see the step
- Optional: User can skip this step

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Set the command or geoprocessing tool for the step**

**Get Category from Name**

**Additional Actions**

- When starting the step: Add Action -
- Prior to command execution: Add Action -
- When completing the step: Add Action -

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Set active view and which view(s) are open**

**View**
- None
- Reserves and Resources Map
- Export Land Assets
- Half page

**Active View: Reserves and Resources Map**

- From the list of layers and tables below, set the layers for this step

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Set active view and which view(s) are open**

**View**
- None
- Reserves and Resources Map
- Export Land Assets
- Unmop Map
- Unmop Imagery NAM
- World Imagery

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Set active view and which view(s) are open**

**View**
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- Export Land Assets
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- Unmop Imagery NAM
- World Imagery

**Task Designer**

**Steps:**
- Extract Category from Name

**General | Actions | Views | Contents**

**Set active view and which view(s) are open**

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- World Imagery
Tasks – Subtle Time Savings in Each Step

1. Zoom to area of interest
2. Select By Rectangle
3. Export tract and land asset polygons to shapefile

Use the Explore tool or use a bookmark to zoom to pan/zoom to your area of interest. Remember if you hold down shift with the Explore tool you can click and drag a rectangle to zoom to.

Click and drag a rectangle over the area of interest to select the Tract and Land Asset polygons.

Found 2 error(s):
Error: No Tract polygons selected. Try creating a selection again.
Error: No Land Asset polygons selected. Try creating a selection again.

Click next when you are satisfied with the selection.

Choose the output folder, output coordinate system, and geographic transformation to export the selected Tract and Land Asset polygons to shapefile in the plant coordinate system.

The land data is stored in WGS84 coordinates. ArcGIS Pro will automatically identify a geographic transformation to convert between WGS84 and other datums. Here are values you can expect to see with datums used at NAM sites:

NAD27: NAD_1927_To_NAD_1983 NADCON = WGS_1984(ITRF00),To,NAD_1983
NAD83: WGS_1984(ITRF00),To,NAD_1983

Parameters | Environments
--- | ---
| Layers | Tract
| | Land Asset

Output Folder
Click Finish to export the shapefiles.
Tasks – Key Takeaways

Successes:
- Developing tasks went quickly
  - No coding!
- Sharing project templates on ArcGIS Online eased deployment
- Very easy to train people to use tasks

Lessons Learned:
- Can’t “pause” a task
- Interrupting a task may leave the map in an “unexpected” state
- Tasks are sensitive to map contents
  - Accidentally remove a layer → broken task
- Some step changes lead to quirks
- Setting layer states slows steps
Part 2: Creating an Executive Dashboard

We needed something…
- Simple
- Interactive
- Yesterday

AGOL to the rescue!
- Web App Builder
- Dashboard theme
- Configurable widgets
  - No coding
  - Quick and easy to share
Dashboard – Web App Builder
Conclusions

- Project duration: ~2 weeks
- Learning curve for Pro is lower than ArcMap, especially for brand new users
- Tasks in Pro are powerful for well defined workflows
  - Saves users time, improves accuracy
  - Saves GIS support time
- Dashboard provided spatial context in an engaging way
Questions?

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