Data QA/QC for Spawning Ground Surveys Using Survey 123 and ArcGIS Enterprise

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GIS TEAM LEAD

IDAHO DEPARTMENT OF FISH AND GAME

Content

Background

Data Entry QA / QC

- Survey 123
- Field Maps

Spatial QA / QC

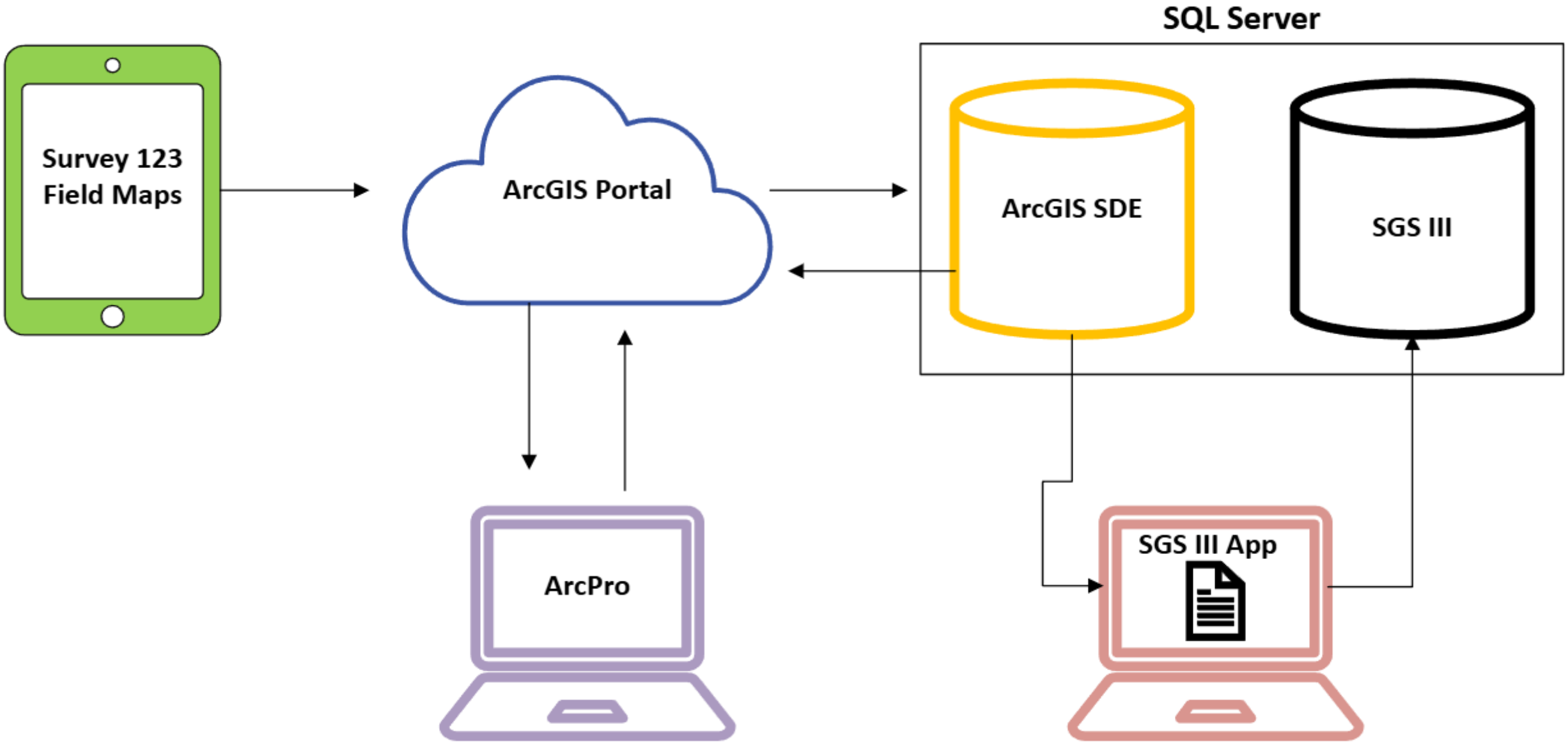
- ArcPro
- Attribute Rules

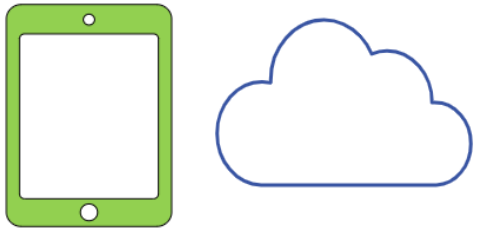
Background

SGS application and database, a central repository for Idaho based spawning surveys.

Goals

- Migrate from paper to digital.
- Improve data capture speed and accuracy.
- Streamline data entry and transfer.
- Integrate with existing SGS Desktop Application and database.


SQL Server
Survey 123
Field Maps
ArcGIS Portal
ArcGIS SDE
SGS III
ArcPro
SGS III App



Common Issues

Wrong Stream Selected

Waypoint management issues

Wrong known point selected

Incorrect units

PIT tags

Sample Numbers

Calculating or updating measures is time consuming

Survey 123 Form

Auto complete

Automate Waypoint Names

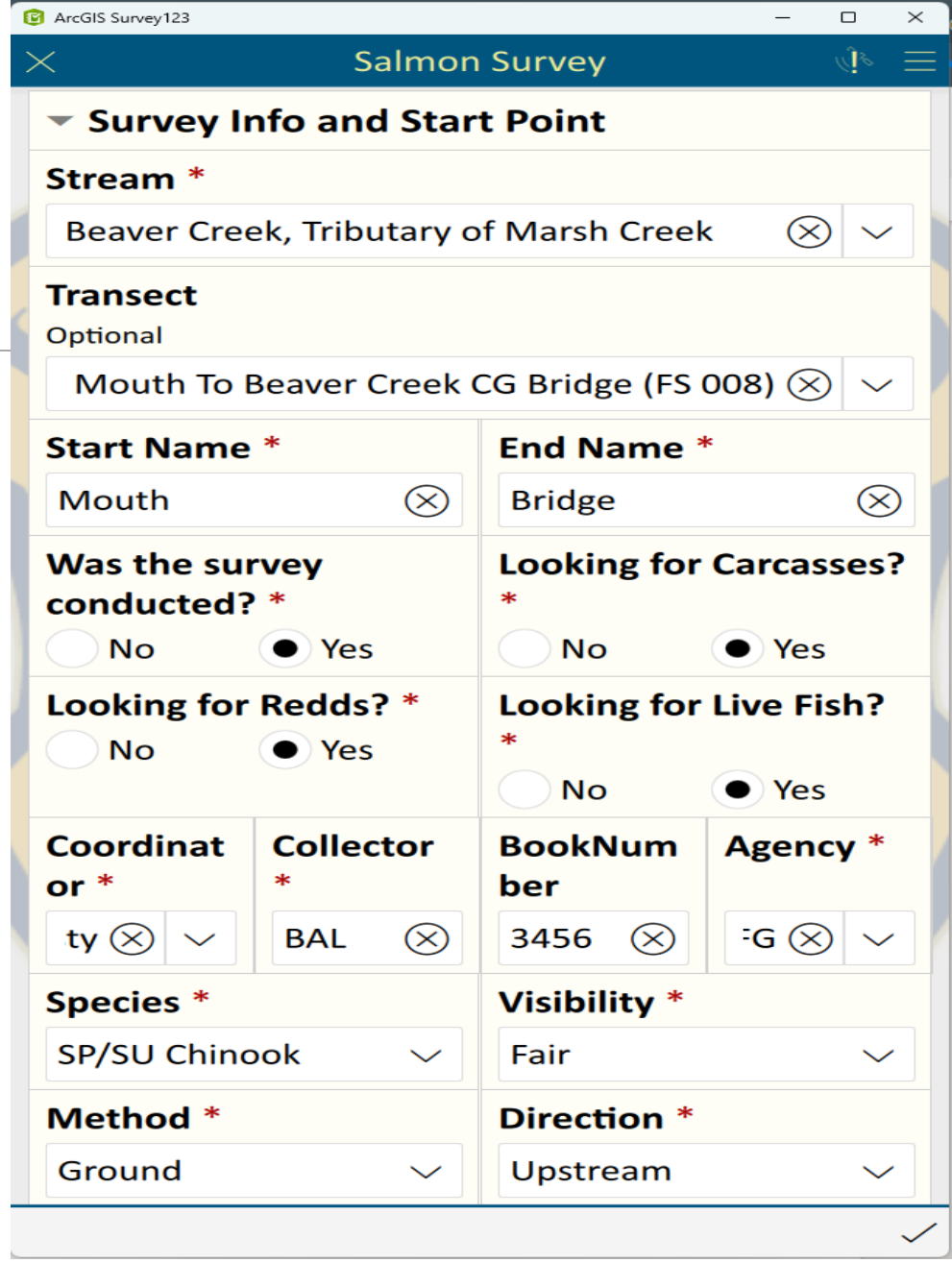
Required fields and constraints

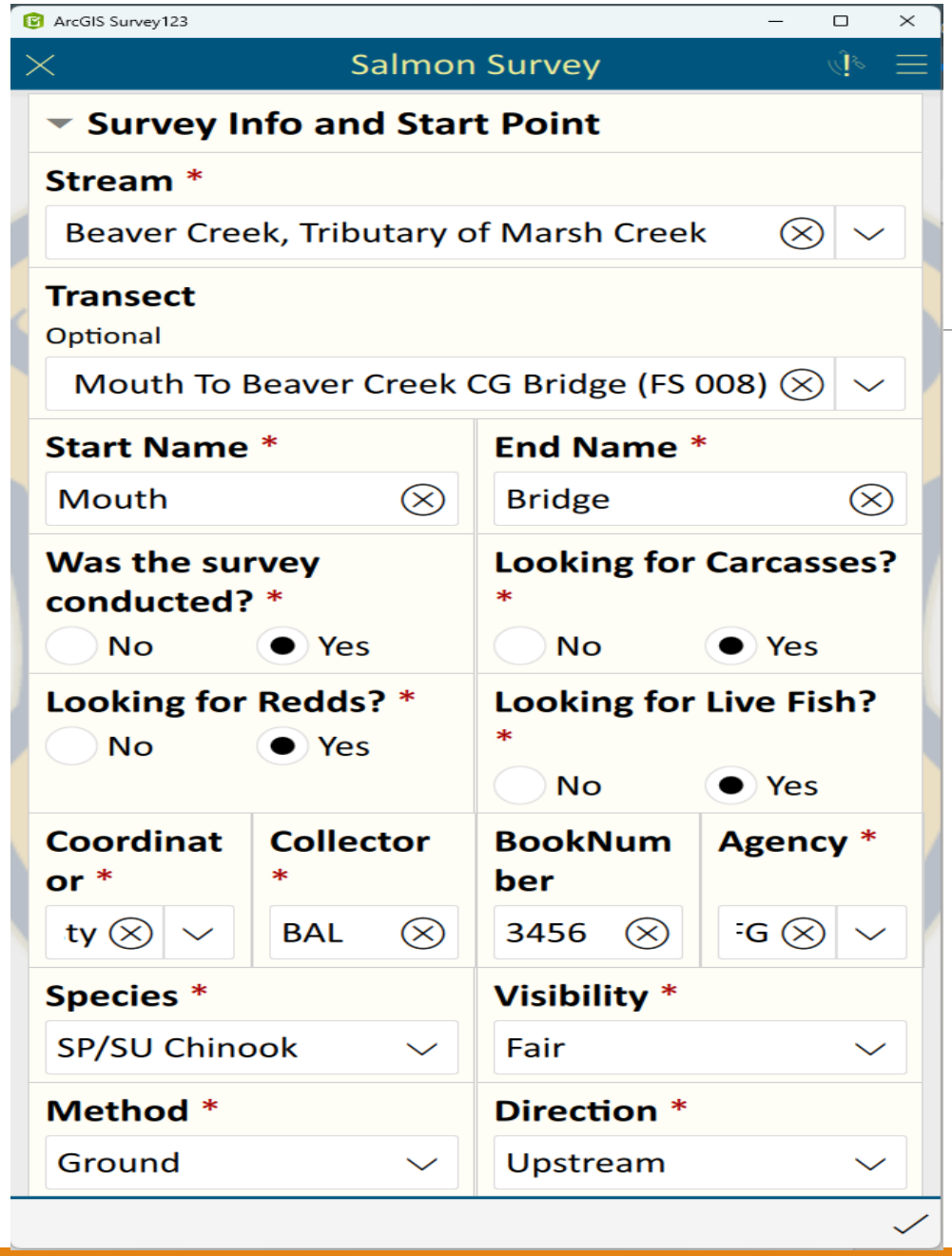
Offline Maps

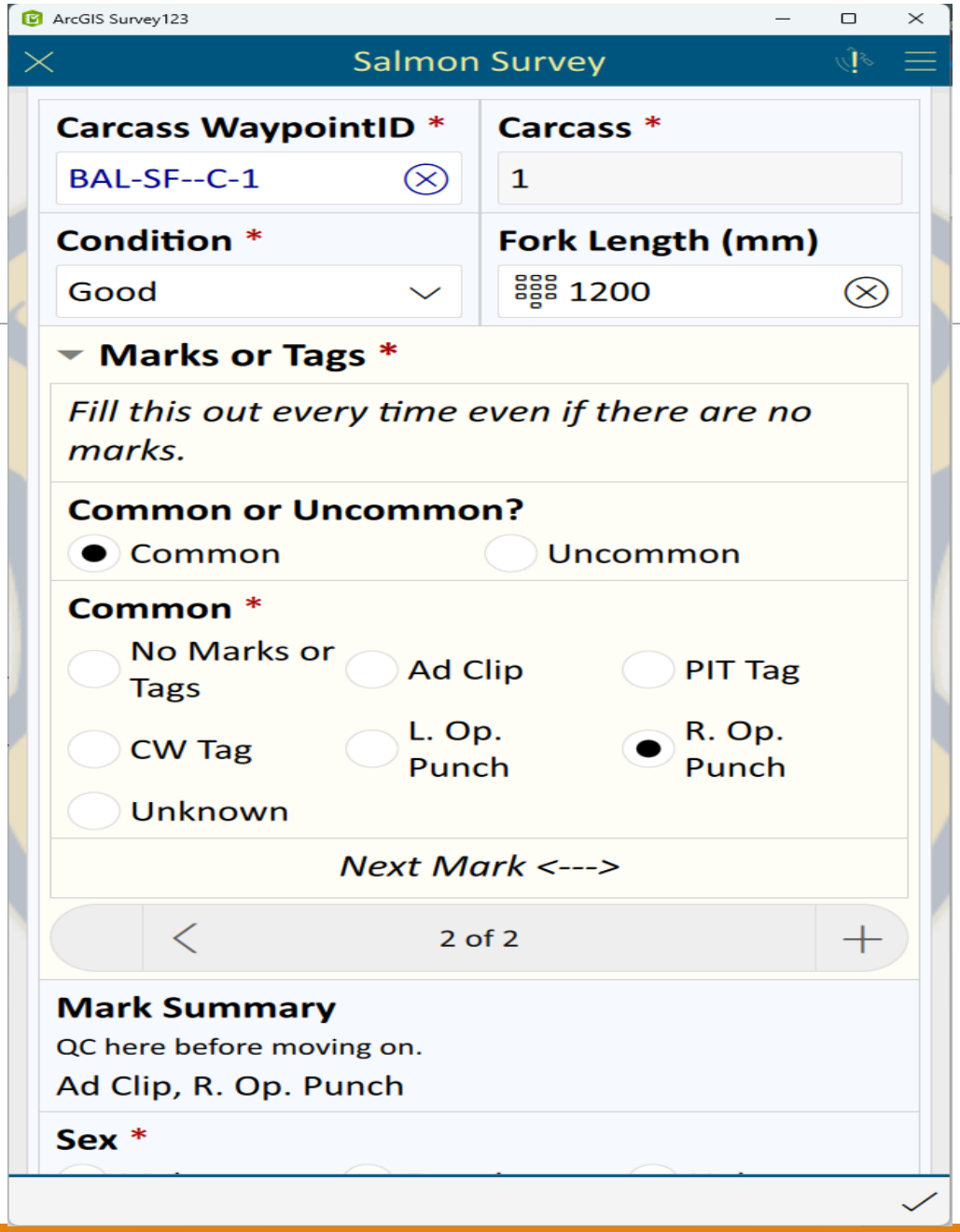
Summary of marks and samples

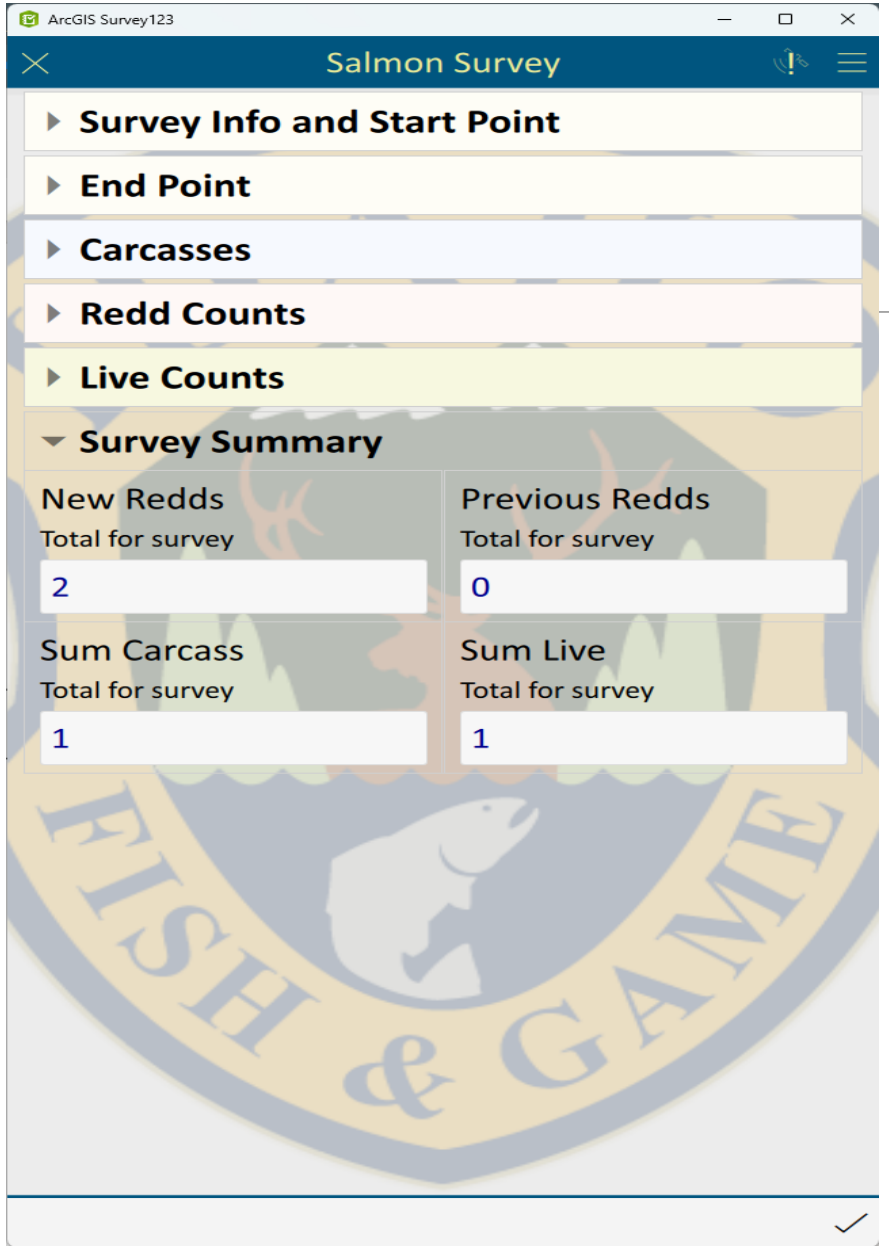
Summarize Survey Carcasses, Redds and Live Fish

Track tablets and versions




ArcGIS Survey123
Salmon Survey
Survey Info and Start Point
Stream *
Beaver Creek, Tributary of Marsh Creek
Transect
Optional
Mouth To Beaver Creek CG Bridge (FS 008)
Start Name *
Mouth
End Name *
Bridge
Was the survey conducted? *
No
Yes
Looking for Carcasses? *
No
Yes
Looking for Redds? *
No
Yes
Looking for Live Fish? *
No
Yes
Coordinator *
ty
Collector *
BAL
BookNumber
3456
Agency *
:G
Species *
SP/SU Chinook
Visibility *
Fair
Method *
Ground
Direction *
Upstream


ArcGIS Survey123
Salmon Survey
Carcass WaypointID *
BAL-SF--C-1
Carcass *
1
Condition *
Good
Fork Length (mm)
1200
Marks or Tags *
Fill this out every time even if there are no marks.
Common or Uncommon?
Common
Uncommon
Common *
No Marks or Tags
Ad Clip
PIT Tag
CW Tag
L. Op. Punch
R. Op. Punch
Unknown
Next Mark <--->
2 of 2
Mark Summary
QC here before moving on.
Ad Clip, R. Op. Punch
Sex *


ArcGIS Survey123
Salmon Survey
Survey Info and Start Point
End Point
Carcasses
Redd Counts
Live Counts
Survey Summary
New Redds
Total for survey
2
Previous Redds
Total for survey
0
Sum Carcass
Total for survey
1
Sum Live
Total for survey
1

Field Maps

Preload Offline Areas based on HUC boundaries

Streams and Lakes

Trails

Ownership

Transect Boundaries

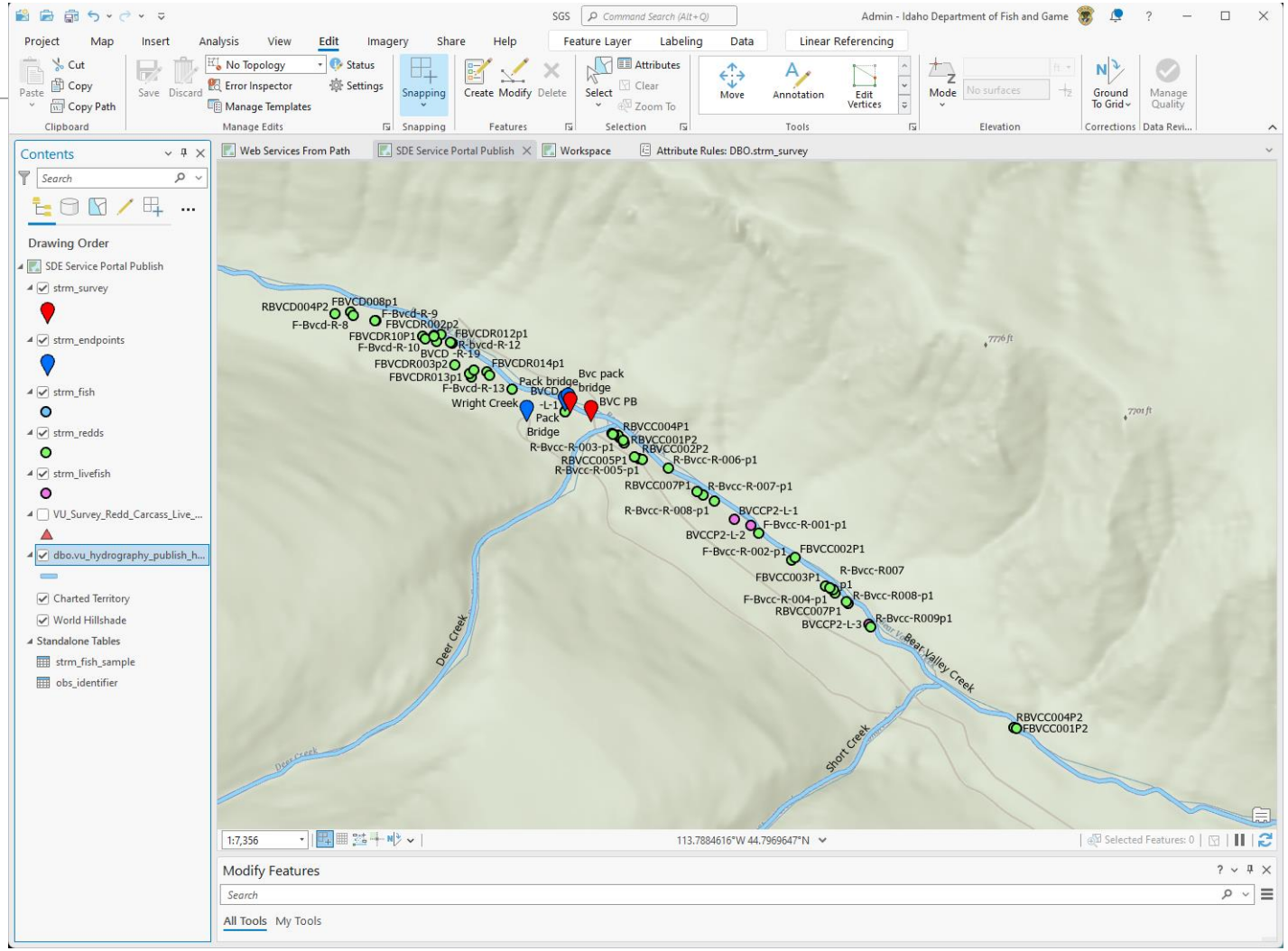
ArcPro

Referenced data to ArcGIS Portal (Real time)

Creator and Editor Tracking

Device metrics

Coordinators and techs inspect the data for data and spatial errors.



Attribute Rules

Available in ArcGIS Enterprise SDE

Essentially database triggers using ESRI's Arcade scripting language.

Executes on inset, update or delete or during editing.

Examples

- Get m value of a point on the stream (distance from the mouth)
- Get the nearest stream
- Get distance between start and end points on the stream
- Transform coordinates to other systems with math (no projection function at this time)

Expression Builder

Language Arcade

Fields

ObjectID
GlobalID
RowID
device_id
device_model
device_os
device_app_version
surveyid
Stream
Transect
Start Name
End Name
Coordinator
Collector

Functions

Abs()
Acos()
Angle()
Any()
Area()
AreaGeodetic()
Array()
Asin()
Atan()
Atan2()
Attachments()
Average()
Back()
Bearing()

Insert Values

Expression

```
// CONVERT TO POINT
var json_pnt = {"x":x,"y":y,"spatialReference":{"wkid":102605,"latestWkid":8826}};
var source_pnt = Point(json_pnt);
// LOOK AT RECORDED STREAM
var id = $feature.waterbody
// INTERSECT BUFFERED POINT
var intersectLayer = Intersects(FeatureSetByName($datastore, "dbo.vu_hydrography_publish_hydro_line"),buffer
  (source_pnt,200,'meters'))
// LOOP THROUGH INTERSECTED FEATURES WITH MATCHING LLID
for (var f in intersectLayer){
if (id == f.LLID ) {
var result = NearestCoordinate(f, source_pnt);
return {
    //RESULTS FOR EACH FIELD
    "result": {
        "attributes": {
            "stream_measure": result.coordinate.m,
            "stream_distance": result.distance}
}
}
}

}
return '-999'
```

OK Cancel

Expression Builder

Language Arcade

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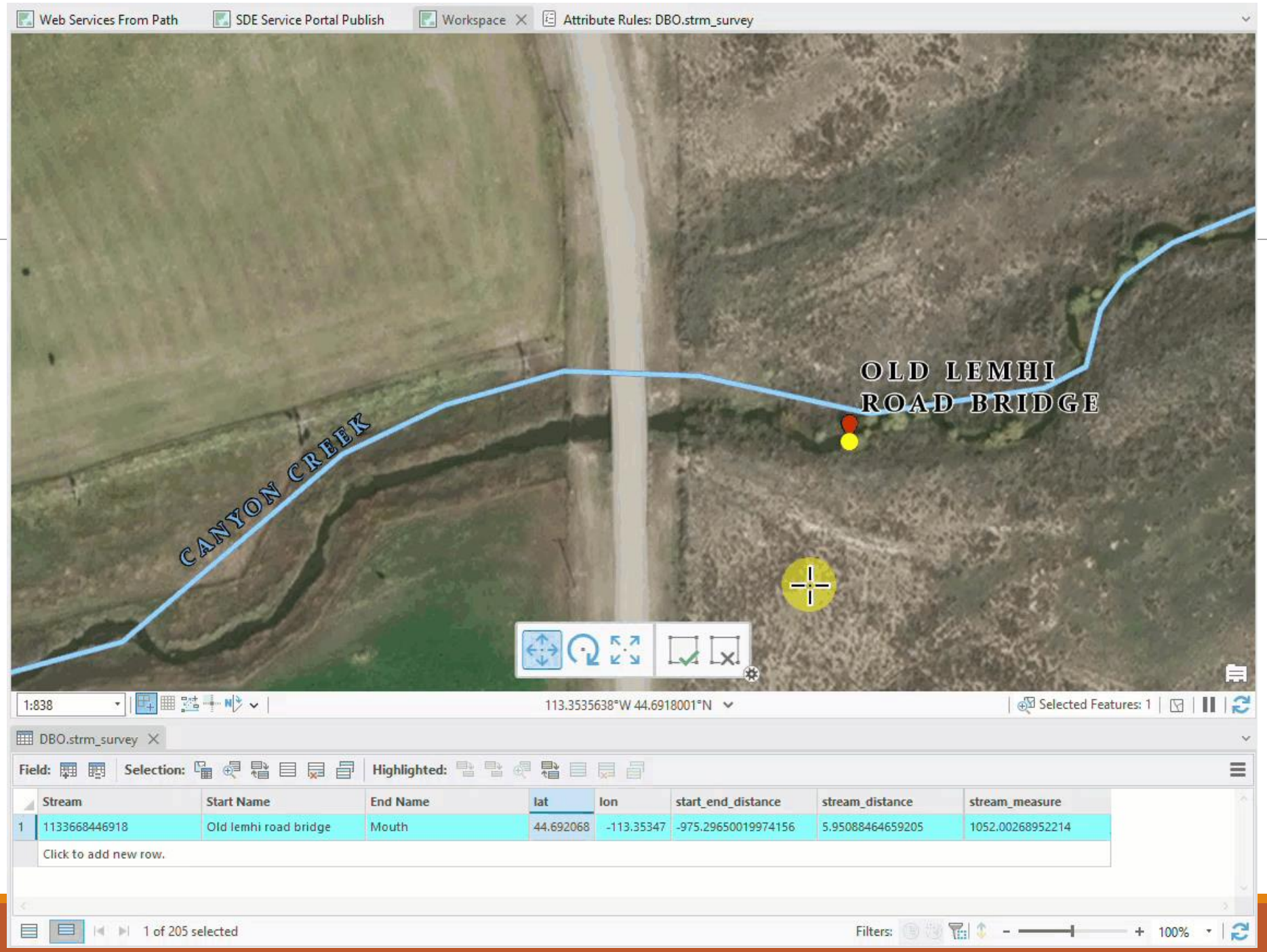
Bearing()

Insert Values

Expression

```
var lat_dd = geom.y;
var lon_dd = geom.x;

// 2. CONVERT DEGREES TO RADIANS
var deg2rad = PI / 180.0;
var lat_rad = lat_dd * deg2rad;
var lon_rad = lon_dd * deg2rad;

// 3. PROJECTION PARAMETERS FOR IDAHO TM (EPSG:8826)
var lat0_dd = 42.0;          // Latitude of origin
var lon0_dd = -114.0;        // Central meridian
var k0 = 0.9996;             // Scale factor
var falseE = 2500000.0;      // False easting
var falseN = 1200000.0;      // False northing

// Convert lat0/lon0 to radians
var lat0_rad = lat0_dd * deg2rad;
var lon0_rad = lon0_dd * deg2rad;

// 4. ELLIPSOID PARAMETERS (GRS80 ~ WGS84)
var a = 6378137.0;                  // Semi-major axis
var f = 1.0 / 298.257222101;        // Flattening
var e2 = 2.0 * f - f * f;           // Eccentricity squared
var e = Sqrt(e2);

// 5. HELPER FUNCTIONS FOR TRANSVERSE MERCATOR
```

OK Cancel


Web Services From Path
SDE Service Portal Publish
Workspace
Attribute Rules: DBO.strm_survey
OLD LEMHI
ROAD BRIDGE
CANYON CREEK
1:838
113.3535638°W 44.6918001°N
Selected Features: 1
DBO.strm_survey
Field:
Selection:
Highlighted:
Stream
Start Name
End Name
lat
lon
start_end_distance
stream_distance
stream_measure
1
1133668446918
Old lemhi road bridge
Mouth
44.692068
-113.35347
-975.29650019974156
5.95088464659205
1052.00268952214
Click to add new row.
1 of 205 selected
Filters:
100%

Questions?

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