

# Enrich and Maintain Structures Data (Building Footprints) in Lane County

Lane Council of Governments



# Who we are



**LANE COUNCIL**  
**of GOVERNMENTS** *Oregon*

Chrissy Barrows

Senior GIS

Address and Structure Coordinator

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Principal GIS

Land Use Modeling

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Principal GIS

Data Architect

Member's of FIT for Address/Building - Land Use Land Cover

And Next Gen911 TAC - OGIC TAC

# Enrich and Maintain

An integrated, authoritative regional structure dataset with critical attributes

## Task 1: Spatial preparations for attribute linking

- Address / Structure / Taxlot relationship

## Task 2: Enriching data attributes

- enhances the value and usability of the structures data.

## Task 3: Documentation

- process documentation and maintenance plan

# Previous accomplishments and ongoing progress

## Phase 1

- Base Feature Class Developed
  - Regionally available and editable by selected users
- ✓ *March 31<sup>st</sup>, 2020*

## Phase 2

- Prepare for data linking – Address/Structure/Taxlot relationships
  - Schema Integrated and Data model finished
  - Data linked
  - Maintenance taking place
- ✓ *Completed May 2023 with help from Framework Funding*



# Why?

## Expected benefits

- Post disaster damage assessment
- Emergency response
- Assessment and taxation
- Risk analysis
- Fire and life safety and urban planning
- Land use planning
- Transportation planning and modeling

## Oregon Framework

- Correctional facilities
- Emergency facilities
- Health care facilities
- Public building footprints
- Public safety station locations
- Schools
- Stadiums

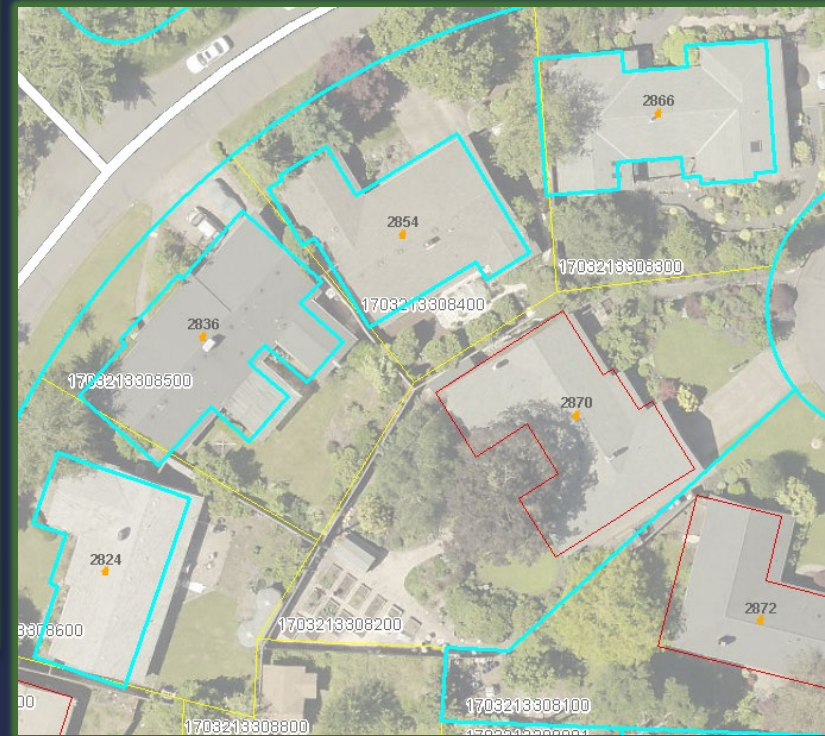
- Stakeholders: OGIC, City of Eugene, City of Springfield, Lane County, EWEB, LCOG members, RLID subscribers



# Task 1

## Vertical Integration Parcel – Structure – Address

### Spatial preparation for attribute linking



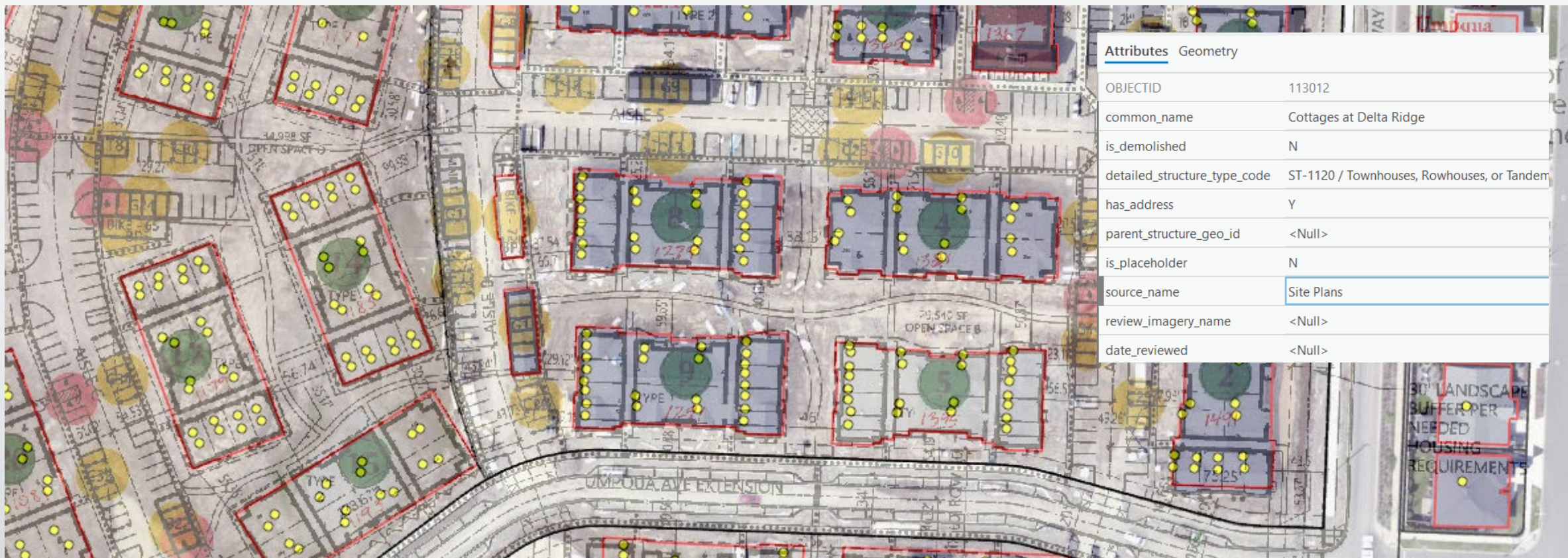


Placeholder features created as building permits are finalized and address placed



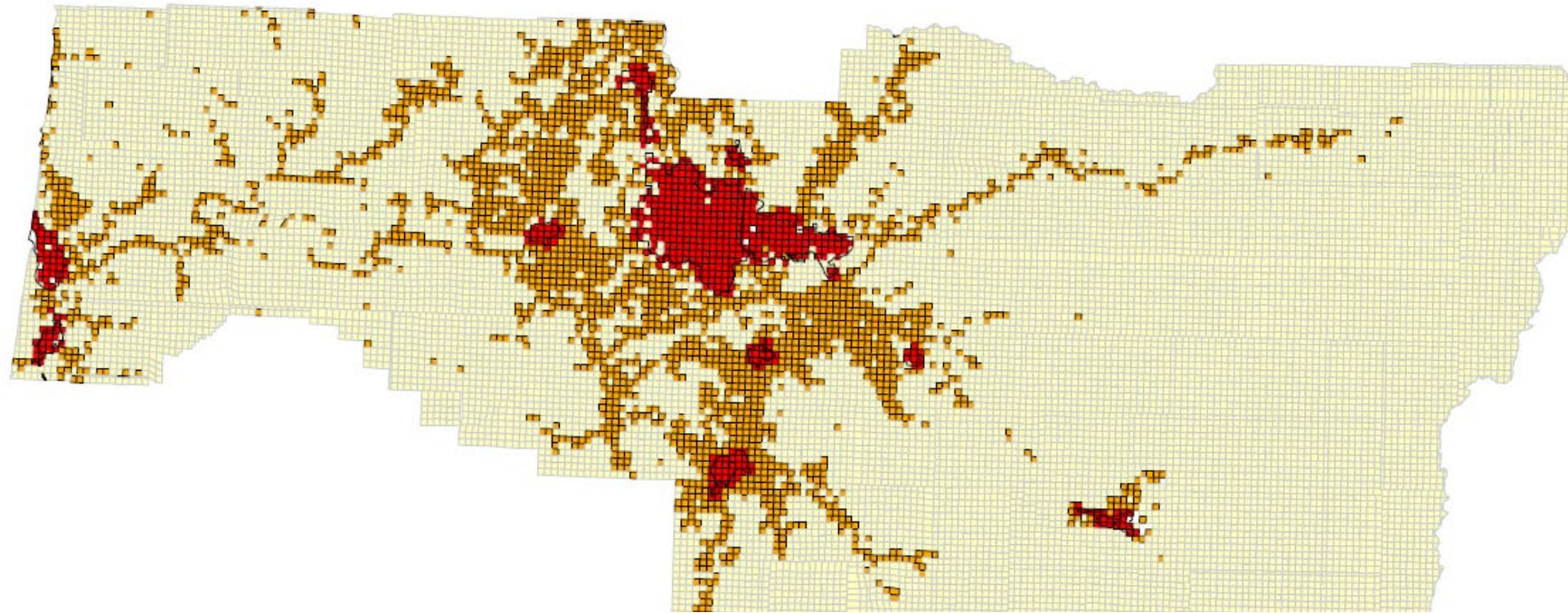


## Site plans georeferenced for address placement and buildings digitized





# Methodology Editing Priority Levels




## Quarter Sections

### Priority Level

 High

 Medium

 Low

 Lane County Urban Growth Boundaries

**High Priority:** 1/4 sections that contain addresses without a structure and intersect or are **within** a UGB

**Medium Priority:** Quarter sections that contain addresses without a structure and are **not within** or intersecting a UGB

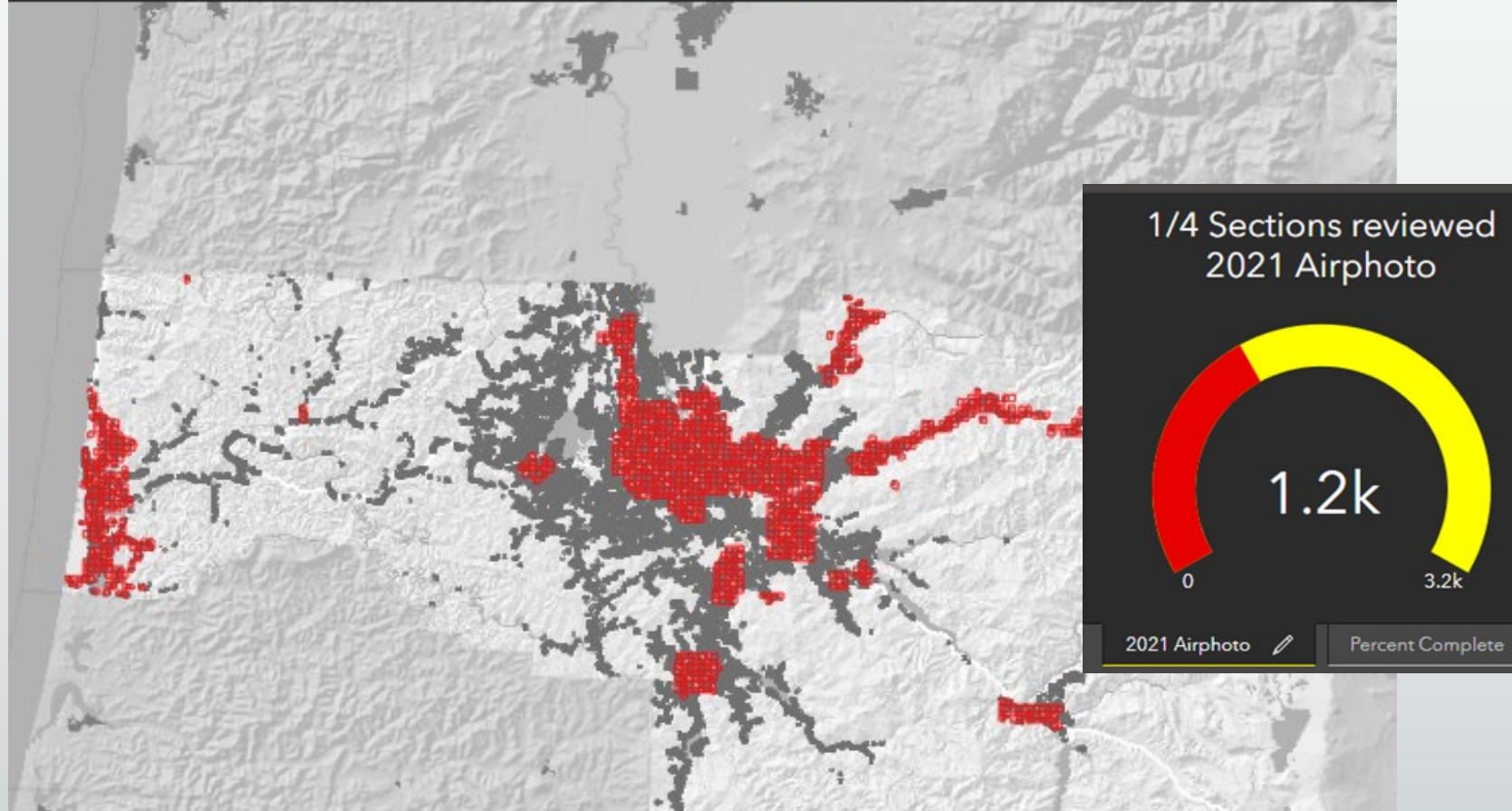
**Low:** All remaining 1/4 sections



# Progress Tracking Dashboard

Imagery acquisition cycle every 2 years

## Structure Editing Progress by 1/4 section Grid Areas





# Task 2: Enriching Data Attributes

## Editor or System derived

- Core Attributes
- Classification Attributes
- Maintenance Attributes

## Needs Research

- # of floors
- Height
- Occupancy Load

## ETL derived

- Editor Tracking
- Address Attributes
- Assessor Attributes
- Education Attributes
- Natural Attributes
- Planning and Development Attributes
- Political Attributes
- Public Safety Attributes
- Geometry Attributes
- Related datasets

<b>Core attributes</b>		
structure_geo_id	Structure geospatial source ID.	Auto-assignment - nightly
{jurisdiction ID} / eug_id	Identifier for jurisdiction use.	Editors
common_name	Name in common use for structure.	Editors
parent_structure_geo_id	Foreign key relating structure to Structure for structure considered the "parent" of the structure. Comm	Editors
<b>Classification attributes</b>		
detailed_structure_use_code	Coding for detailed structure use.	Editors
is_city_landmark	Indicator of whether structure is a city landmark.	Editors - via Structure_Historic_Designation FC
city_landmark_name	Name for structure used in the city landmark inventory.	Editors - via Structure_Historic_Designation FC
historic_register_number	Reference number for structure in the National Register of Historic Places (NRHP).	Editors - via Structure_Historic_Designation FC
historic_register_name	Name for structure used in the National Register of Historic Places (NRHP).	Editors - via Structure_Historic_Designation FC
<b>Maintenance attributes</b>		
date_created	Timestamp for when structure feature was created.	System - editor tracking
creator	Name or ID of editor that created structure feature.	System - editor tracking
date_last_updated	Timestamp for when structure feature was last updated.	System - editor tracking
last_updater	Name or ID of editor that performed last feature update.	System - editor tracking
source_name	Address Maintenance, Building Permits, Site Plans, Airphoto 2021 3 in, Airphoto 2020 9in, Airphoto 20	Editors
review_imagery_name	Airphoto 2021 3 in, Airphoto 2021 9in, Airphoto 2020 30cm	Editors
date_reviewed	Date reviewed not edited per 1/4 section grid maintenance plan	Editors
editor_comments	Noteworthy details about the structure free form	Editors
<b>Address attributes</b>		
has_address	Indicator of whether structure has an address or not.	Editors - default = 'Y'
address_count	Number of addresses located within the structure.	ETL
address(es)	1:M - See Address.structure_geo_id.	n/a
<b>Assessor attributes</b>		
property_maptaxlot_hash	Identifier for property (RLIDv2 concept) the structure lies within.	ETL
taxlot(s)	M:N - See Taxlot_Structure_Xref.	n/a
account_extension(s)	M:N - See Account_Extension_Structure_Xref.	n/a
improvement_count	Number of improvements associated with the structure.	
oldest_year_built	Oldest year an improved part of the structure was recorded as built.	ETL
latest_year_built	Latest year an improved part of the structure was recorded as built.	ETL
oldest_effective_year_built	Oldest year an improved part of the structure was assessed as effectively built based on quality and co	ETL
latest_effective_year_built	Latest year an improved part of the structure was assessed as effectively built based on quality and co	ETL
total_true_tax_value	Total true tax value for all improvements associated with the structure.	ETL
total_finished_area_sqft	Total finished area for all improvement floors associated with the structure, in square feet.	ETL
maximum_floor_count	Count of the maximum number of floors listed for all improvements associated with the structure, in squ	ETL
<b>Education attributes</b>		
school_district_code	State ID code for school district structure lies the most within.	ETL
school(s)	M:N - See Structure_School_Xref.	ETL
<b>Natural attributes</b>		
flood_hazard_area_id	Flood hazard area the structure lies most within.	ETL
flood_insurance_rate_map_number	FEMA flood insurance rate map (FIRM) number for FIRM structure lies most within.	ETL
<b>Planning &amp; development attributes</b>		
census_block_fips_code	FIPS code for current Census block structure lies the most within.	ETL
enterprise_zone_code	Code for state enterprise zone the structure lies the most within.	ETL
market_area_name	Real estate market area the structure lies most within.	ETL
urban_growth_boundary_code	City code for the urban growth boundary (UGB) the structure lies the most within.	ETL
urban_reserve_code	City code for the urban reserve the structure lies the most within.	ETL
<b>Political attributes</b>		
incorporated_city_code	Code for city the structure lies the most within.	ETL
full_city_annexation	Unique string for city annexation the structure lies the most within.	ETL
<b>Public safety attributes</b>		
full_emergency_service	Unique string for full emergency service (e911 emergency service number (ESN), ambulance service a	ETL
has_fire_protection	Indicator of whether emergency service for structure includes fire protection.	ETL
<b>Geometry attributes</b>		
is_placeholder	Indicator that the geometry is a placeholder shape on the structure's location, and not a true represent	Editors - default = 'N'
is_demolished	Indicator that the address was archived due to demo and building does not exist even if on imagery	Editors - default = 'N'
longitude_center	Degree of longitude for the central point of the geometry, as converted from the geometry's spatial refe	ETL
latitude_center	Degree of latitude for the central point of the geometry, as converted from the geometry's spatial refere	ETL
maximum_height_sqft	Maximum height of structure, in square feet.	Undetermined
maximum_elevation_sqft	Maximum elevation of structure, in square feet.	Undetermined
minimum_elevation_sqft	Minimum elevation of structure, in square feet.	Undetermined
Shape	Polygon-geometry of structure.	Editors
Shape.STArea() / area_sqft	Area in square feet of the geometry.	System - derived
Shape.STLength() / perimeter_sqft	Length in feet around the perimeter of the geometry, including internal perimeters.	System - derived
<b>Needs more research</b>		
floors_above		
floors_below		
Occ_load		
Building/Construction type		
Bldg_stat		
Owner Name		
<b>Related datasets/attributes</b>		
Address.structure_geo_id	Geospatial source ID for structure address is located within.	ETL
Account_Extension_Structure_Xref	Cross-reference of related tax account extension & structure (extension is grouping of improvements).	ETL
Structure_School_Xref		ETL
Taxlot_Structure_Xref		ETL



# Structure Type

- 1 - Residential
- 2 - Mixed-Use
- 3 - Infrastructure
- 4 - Trade
- 5 - Industrial
- 6 - Services
- 7 - Recreation
- 8 - Resource Management
- 9 - Other

- ST-1110 Single-Unit Residential Building
- ST-1115 Cottage in Cluster
- ST-1120 Townhouses, Rowhouses, or Tandem Duplex Residential Building
- ST-1130 Manufactured Residential Building
- ST-1135 Mobile Residential Building
- ST-1220 Duplex Residential Building
- ST-1230 Triplex Residential Building
- ST-1240 Quadplex Residential Building
- ST-1310 Multi-Unit Apartment Building
- ST-1320 Multi-Unit Condominium Building
- ST-1810 Residence Hall or Dormitory Quarters
- ST-1820 Assisted Living Residential Quarters
- ST-1830 Boarding, Rooming, or Fraternal Housing Quarters
- ST-1840 Religious Housing Quarters
- ST-1850 Government Housing Quarters
- ST-1860 Shelter or Other Transitional Housing Quarters
- ST-1910 Nondwelling Accessory Structure

# Quality Control

## Issues Feature Class

- Used by the structure editors
- Nightly procedure
- Priority level assignments flag issues needing immediate attention and that may not integrate into our RLID (Regional Land Information Database)

## Structure\_Account\_Extension\_Point Feature Class

- Represents a relationship between a tax account extension and structure. Resolves the many-to-many relationship between their respective tables (Account\_Extension & Structure).
- We can use this to identify areas where automation fails to collect complicated details of many to one relationships and a manual review should be done.
- An account extension is a collection of (likely) related improvements covered by a tax account.
- Most relationships between structures and account extensions are created by a mix of simple auto-assignment, manual application, and some quality control analysis. This is not perfect, nor is the relationship between structures and account extensions always straightforward.



# Use cases

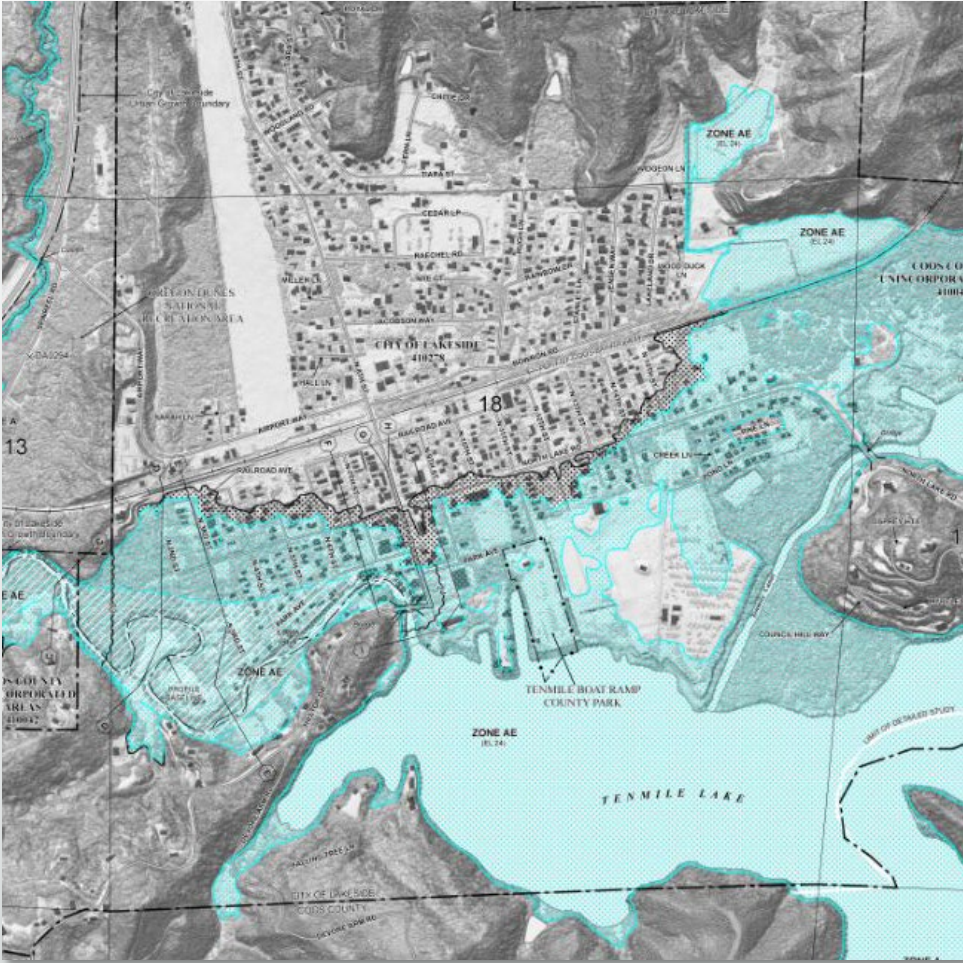
## Holiday Farm Fire



- Difficult to locate a property that is gone
- ATC-45 Damage Assessment Forms – FEMA. Land Management Department inspections were based on buildings and had questions about Number of stories, Occupancy Type and Building type.



# Flood studies



# Earthquake loss estimates





# City of Eugene

991 dispatchers and PSAP mapbooks



## Planning and Development

Track structure information over time



# Eugene Water and Electric Board

Prioritizing emergency incidents





# Conclusion

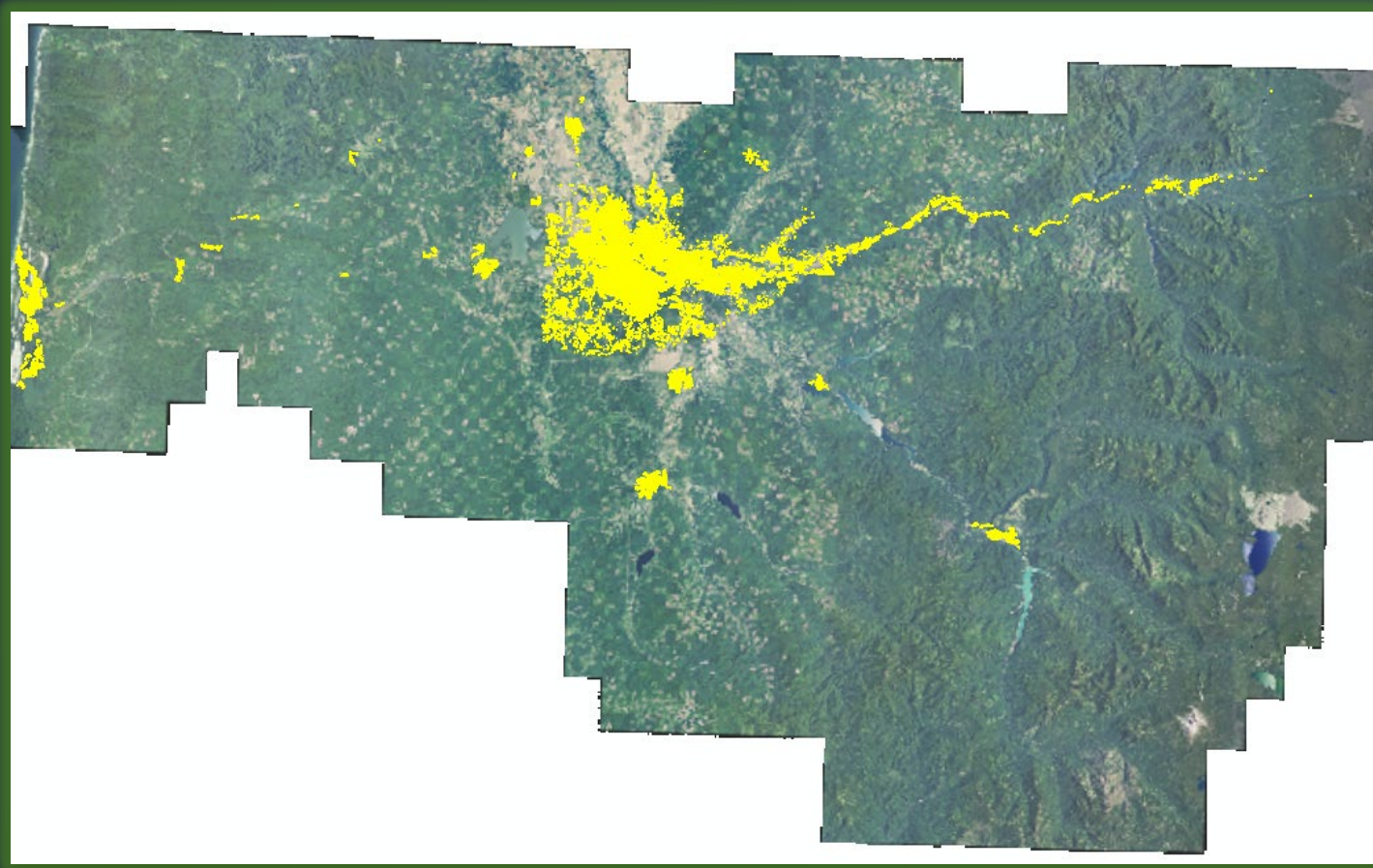
## Outcome

- Structure polygon Improvements from this funding cycle include
  - 31% more polygons captured local vs state (199k vs. 151k)
  - Addresses that were not contained within a structure improved from 32k to 7k
- Attributed dataset that is being maintained daily
- Current data for inclusion to the statewide dataset at frequent intervals
  - ArcGIS online collaboration?
  - Data Stewardship?

## Ongoing Communication

- Methodology/maintenance plans can be a model for other local governments
- Communication regarding the Draft Data Standard
- Regular FIT meetings

# Discussion



## Contact

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