ADVANCING THE NAVAJO HOUSING AUTHORITY WITH A LAND INFORMATION SYSTEM

PRESENTED BY
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ESRI USER CONFERENCE – SAN DIEGO, CALIFORNIA

NAVAJO NATION PROFILE

- Largest land area and federally recognized tribe in the United States
- Over 27,000 square miles with a population of over 300,000 people. Covers Arizona, New Mexico, and Utah
- 110 Chapters/communities
- Navajo Housing Authority (NHA) is the largest Tribally Designated Housing Entity (TDHE) in the United States
- NHA managers over 9,000 homes

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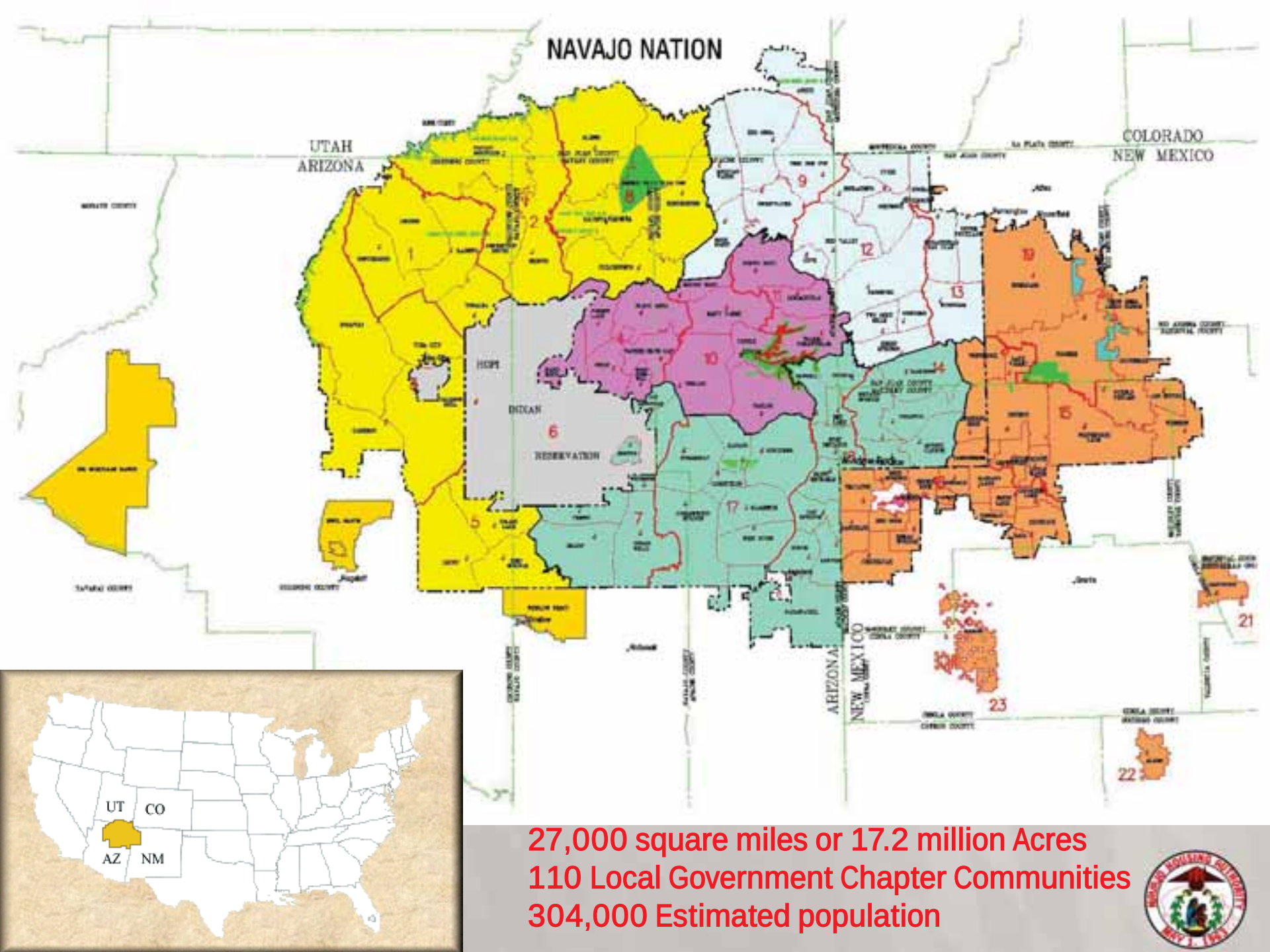

27,000 square miles or 17.2 million Acres
110 Local Government Chapter Communities
304,000 Estimated population

VISION AND MISSION STATEMENT

VISION STATEMENT

- “Housing Our Nation By Growing Sustainable Communities.”

MISSION STATEMENT

- “Hooghandei haa hozhoogoo iinaa silaa’ do a’nooseelth (Center of Family Growth, Strength and Beauty). We are committed to building sustainable quality homes, promoting economic self-sufficiency and providing exemplary services through professionalism, leadership and respect.”

NAVAJO HOUSING AUTHORITY

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PAPER PROBLEM

- Almost all critical records stored in paper format
- Huge volume of paper made organizing and managing difficult
- Location of subdivisions and homes was uncertain

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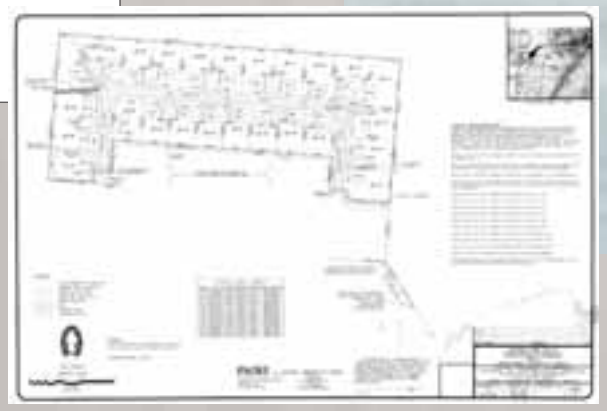
DOCUMENT MANAGEMENT SOLUTION

- Documents were organized, scanned, and indexed
- This allowed for quick search and retrieval
- No more digging through filing cabinets or storage bins

Project Folders

- Resolutions
- Old land lease
- Master Lease
- Environmental Assessment
- Archeology
- Correspondence
- Boundary Plan
- Geotechnical Report

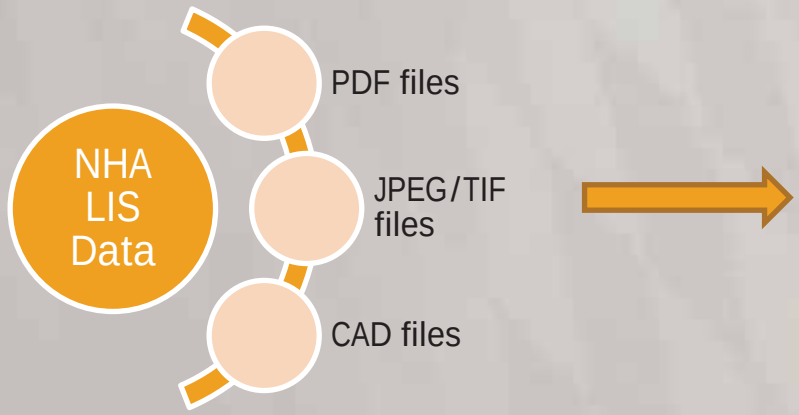
Conveyance/Collateral Documents



Subdivision Plans/ Site Boundaries

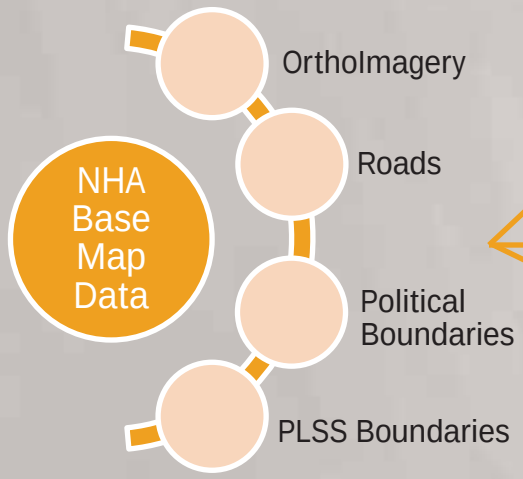
DATA DEVELOPMENT

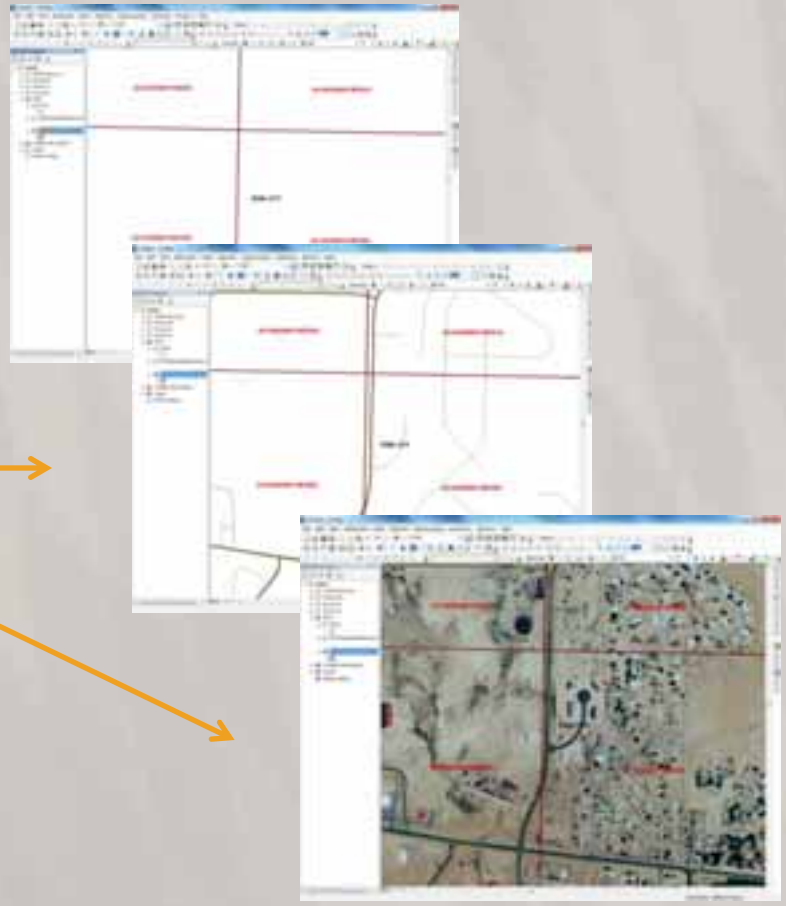
- Step 1 – Survey Data Acquisition



DATA DEVELOPMENT

- Step 2 – Base Map Data Acquisition





DATA DEVELOPMENT

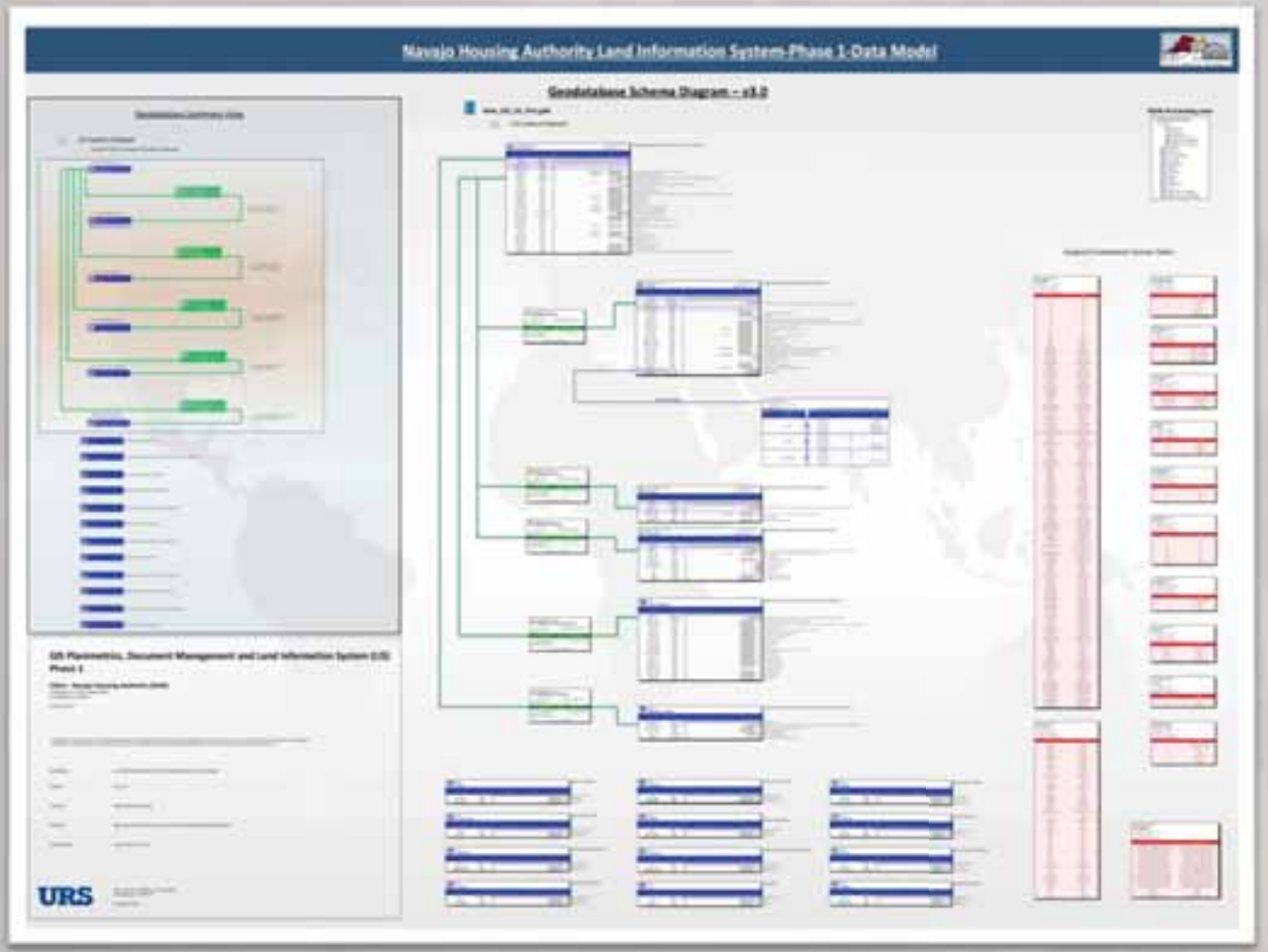
- Step 3 – Finalizing LIS Attribute Properties

Subdivision_Ar Attributes					
Attribute Number	Subdivision Attribute	Field Name	Description	Field Type	Field Width
1	Subdivision Project Number	PROJ_NUM	Project number	Text	100
2	Chapter Name	CHAPTER	Chapter name	Text	100
3	Comments	COMMENTS	Related comments	Text	100
4	Source Format	SRC_FORMAT	Format of the source used for creating subdivision data	Text	20
5	AutoCAD files	CAD_DATA	Availability of AutoCAD files (Y/N)	Text	4

Parcel_Ar Attributes					
Attribute Number	Parcel Attribute	Field Name	Description	Field Type	Field Width
1	Subdivision Project Number	PROJ_NUM	Project number	Text	100
2	Housing Management Office	NHA_HMO	Housing Management Office name	Text	40
3	House Number	HOUSE_NUM	Building or house number on the parcel	Text	12
4	Street Prefix	ST_PREFIX	Direction (N, S, E, W, NE, NW, SE, or SW)	Text	4
5	Street Name	ST_NAME	Street name	Text	75

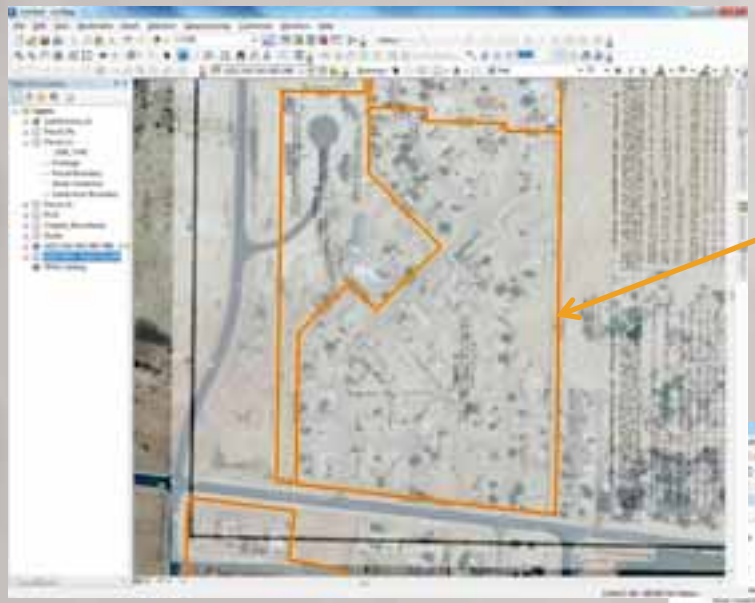
DATA DEVELOPMENT

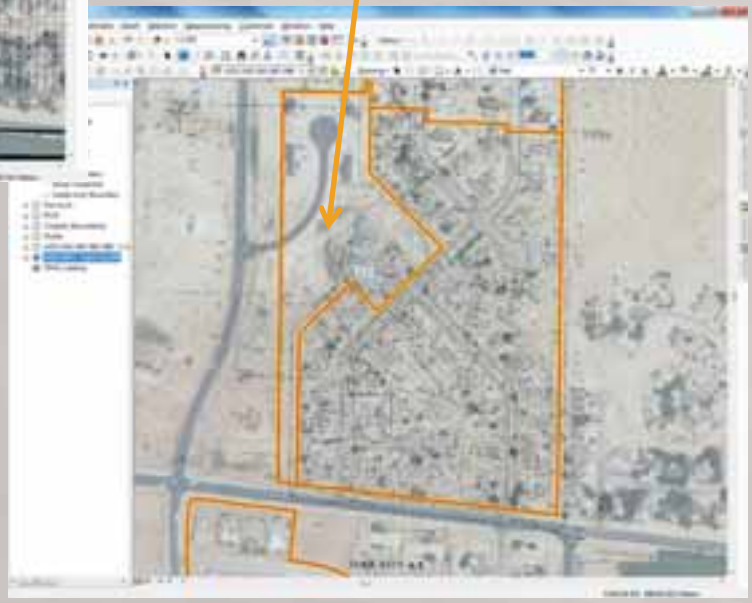
- Step 4 – Design & Development of GIS Data Model



DATA DEVELOPMENT

- Step 5 – Georeferencing/Digitization of Subdivision Survey Data

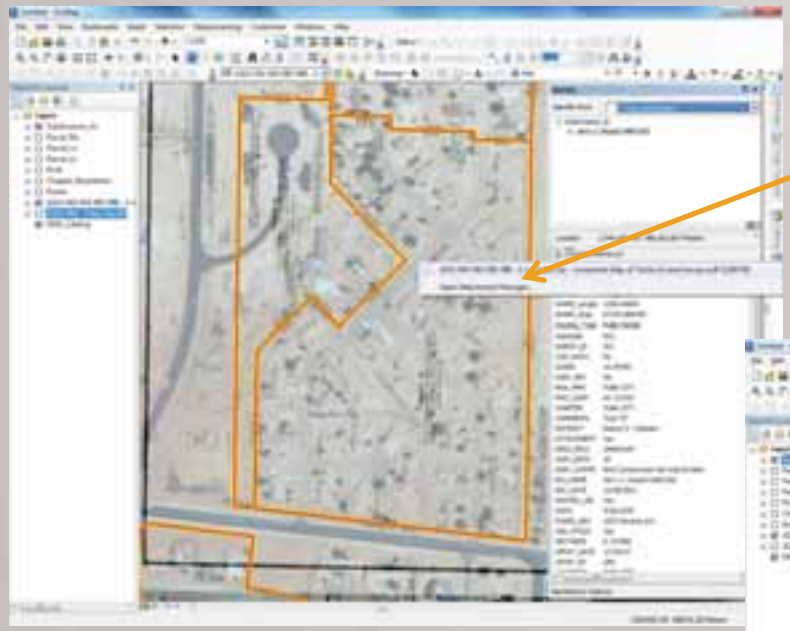




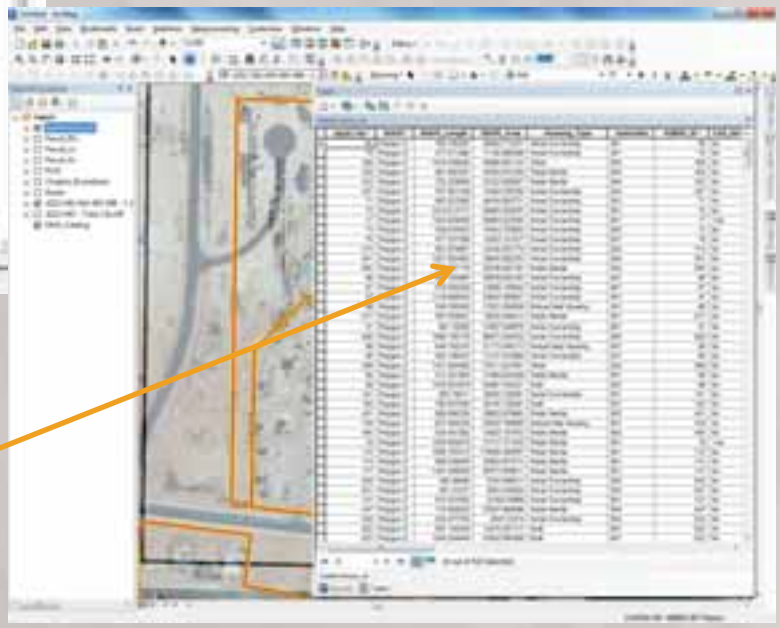
Subdivisions were digitized after the survey documents were geo-referenced to NHA Base Map data

DATA DEVELOPMENT

- Step 6 – Attachment/Attribution of Subdivision Survey Data



Relevant multiple survey documents were attached to individual subdivisions in the GDB.



Attributes were populated using available NHA data.

DATA DEVELOPMENT

- Step 7 – Parcel Data Creation (Parcel Area, Lines, and Points)

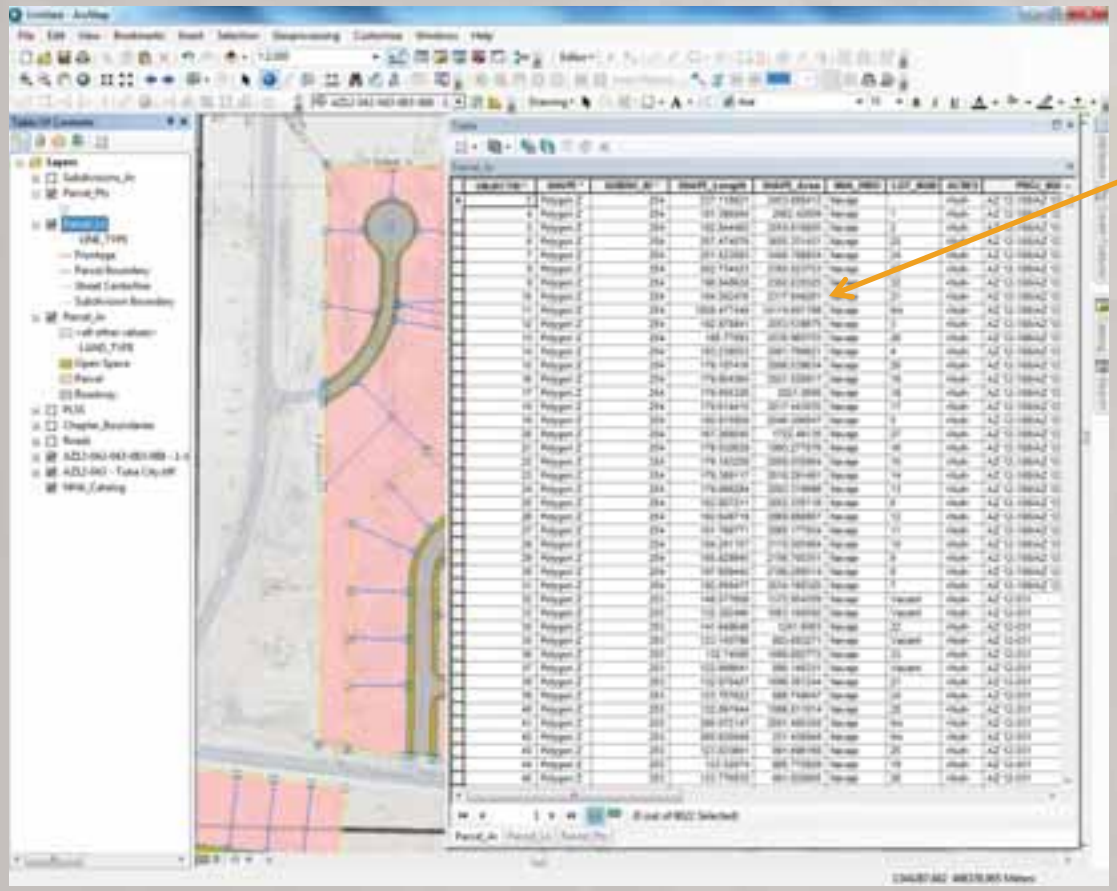
Each polygon is differentiated in the GDB as parcel area, open space and roadway area.

Each polyline is differentiated in the GDB as parcel boundary, frontage boundary, street centerline, and subdivision boundary.

Each point is a reference point located at the parcel line intersection that contain locational information.

DATA DEVELOPMENT

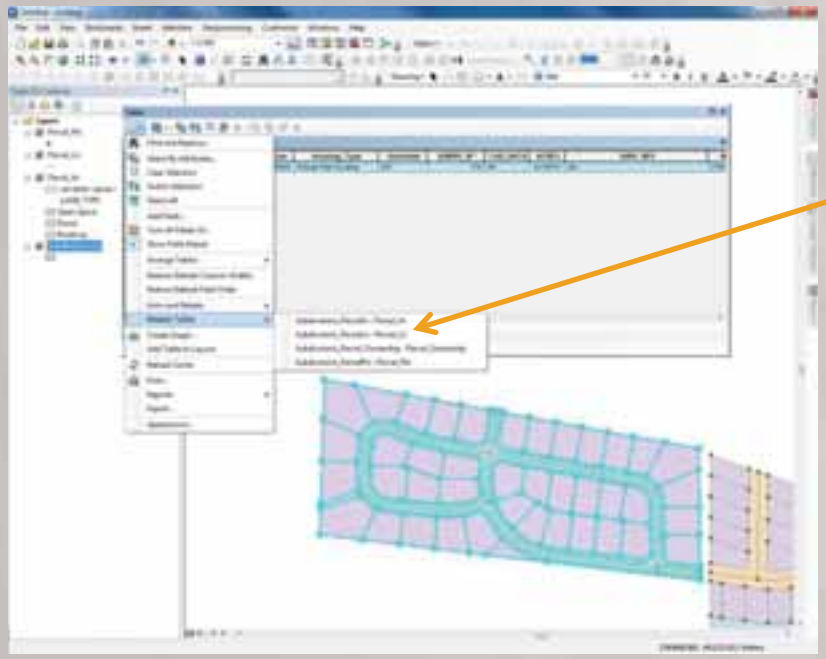
- Step 8 – Parcel Data Attribution



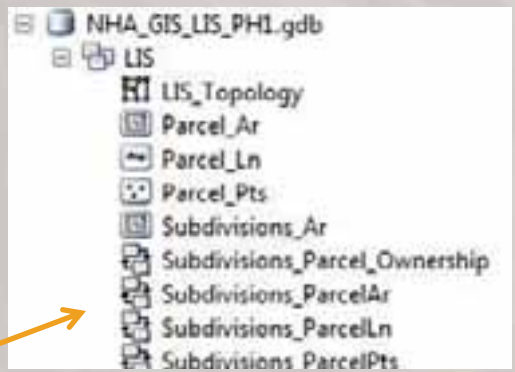
Attributes were populated using available NHA data.

DATA DEVELOPMENT

- Step 9 – Geodatabase Relationships



Relationships modeled between relevant feature classes.



Geo-spatial relationships modeled between subdivisions to parcels (1 – Many) and subdivisions to ownership data (1 – Many)

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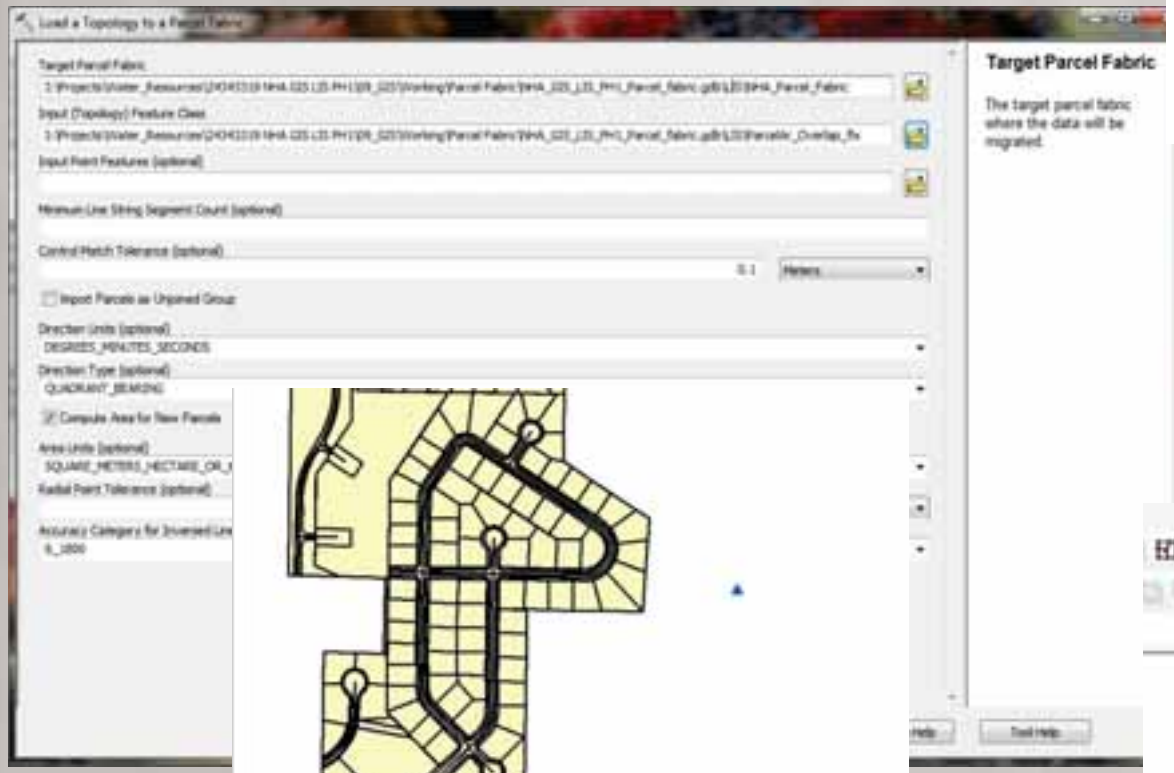
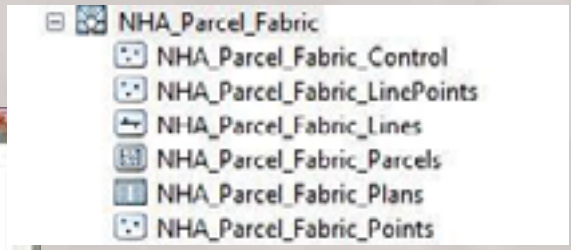
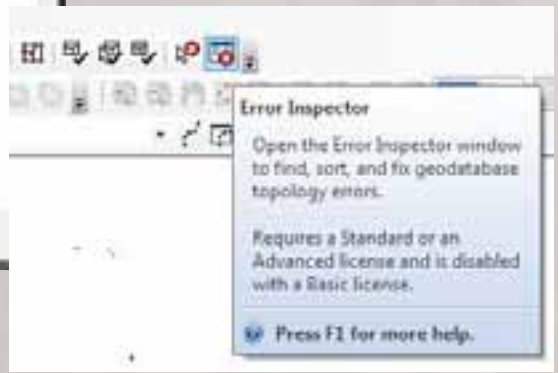
DATA DEVELOPMENT

- Step 10 – Parcel Fabric Creation

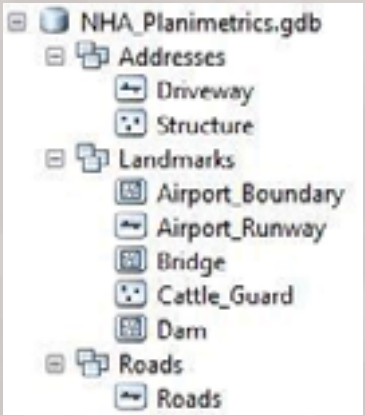






DATA DEVELOPMENT

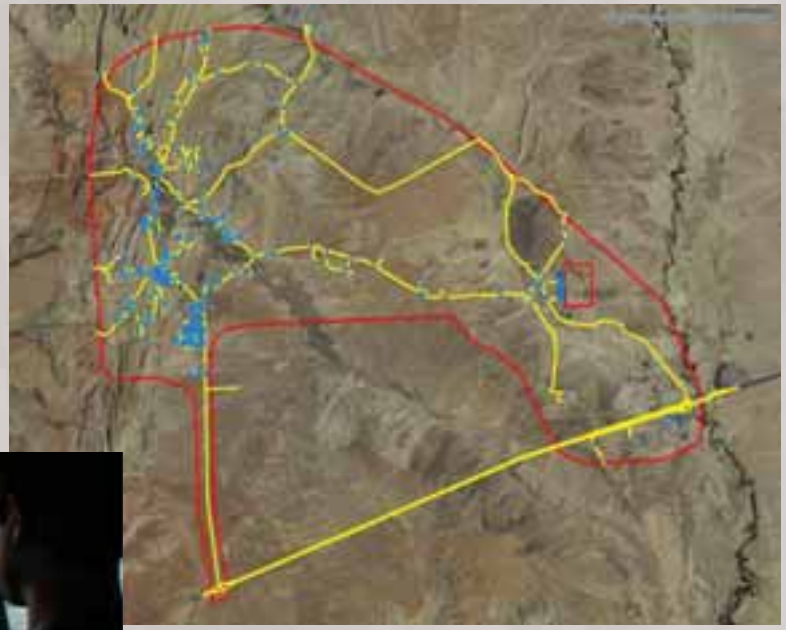
- Step 11 – Planimetric Data Creation (Feature Extraction)



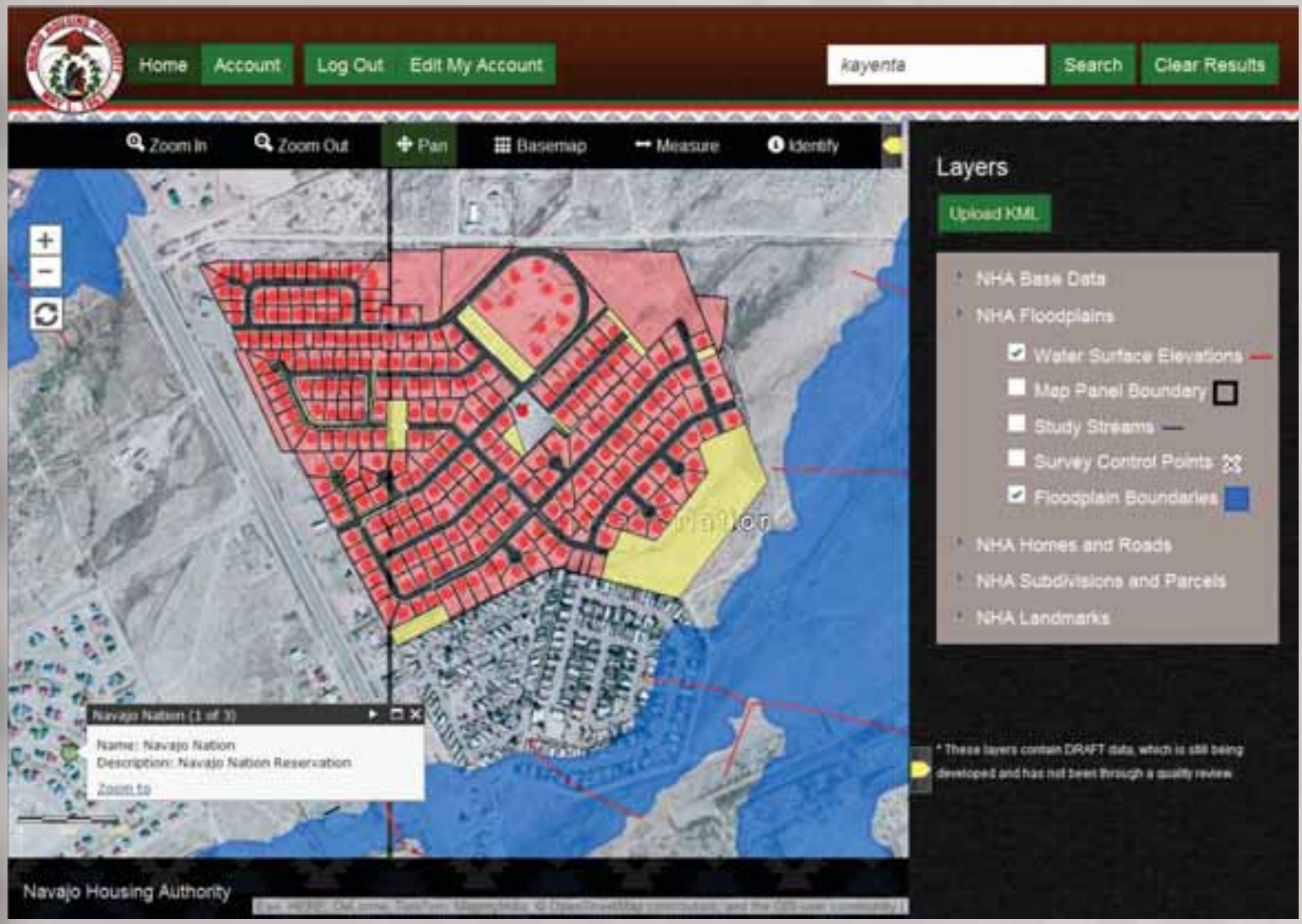
Data digitized and attributed from NHA imagery.

FIELD DATA COLLECTION

- GPS Field Data Collection for Routing System
- NENA Attribution for Next Gen 911



INTERACTIVE WEB MAPPING TOOL



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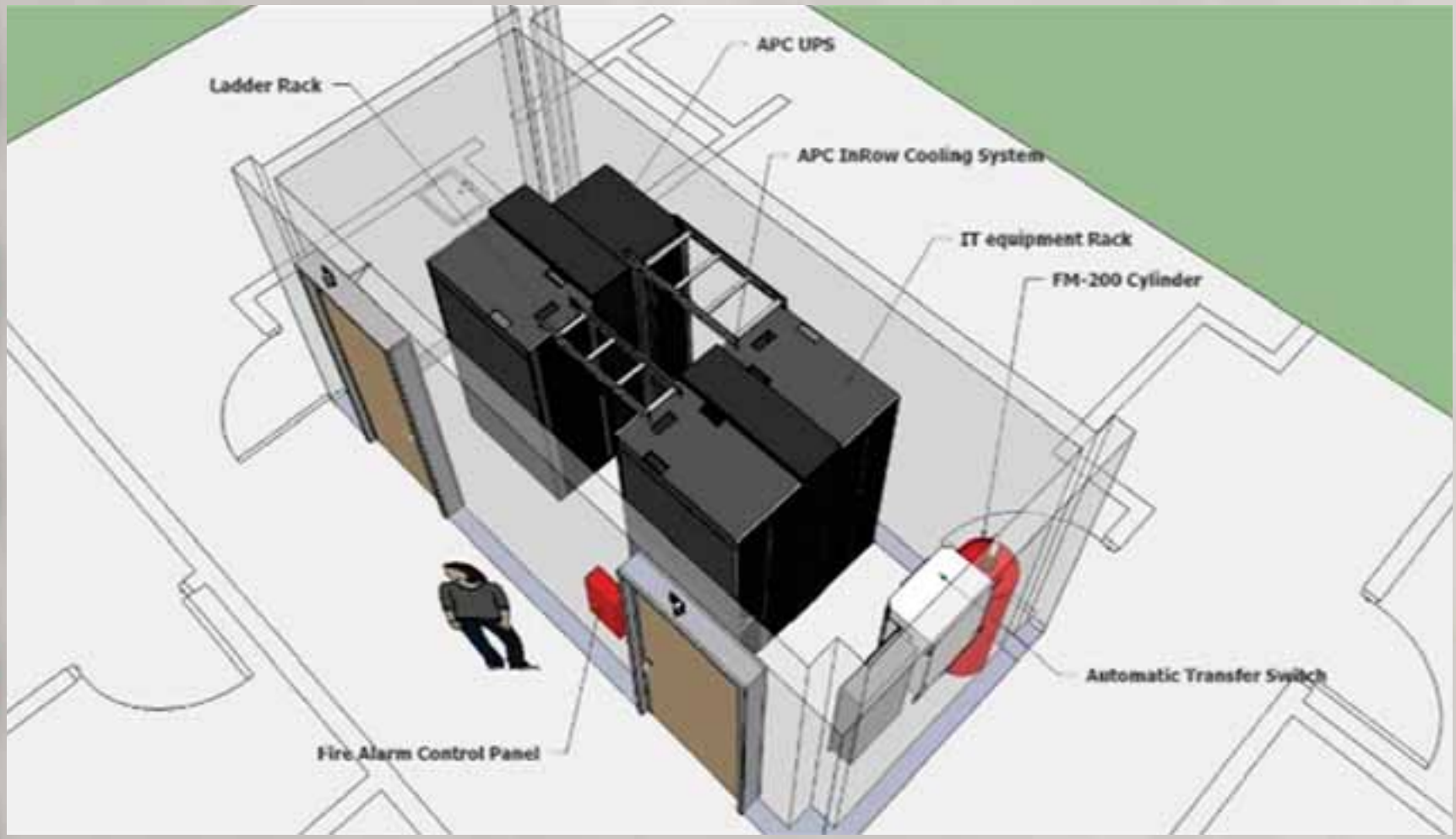
NHA DATA CENTER



SUMMARY

- NHA has advanced its mission and improved business operations through its Land Information Management System (LIMS).

- The LIMS soon to be housed in their Data Center will contain a:
  - Document Management System – for quick retrieval and storage of documents
  - Imagery, Planimetric, and Floodplain Data – for planning and analysis
  - Parcel Layer – for a topologically clean subdivision and parcel dataset
  - Routing System / Next Gen 911 – for routing maintenance vehicles and enhancing emergency operations
  - Interactive Web Mapping Tool – to easily view and access data in the office or remotely in the field

- Using a LIMS allows NHA to plan and develop sustainable communities to meet the housing needs of the Navajo Nation for many generations to come.

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THANK YOU!