

Using New Technology

The Washington, DC Experience

Presentation

for

71st Annual International
Conference on Assessment Administration

Anchorage, Alaska

September 19, 2005

by

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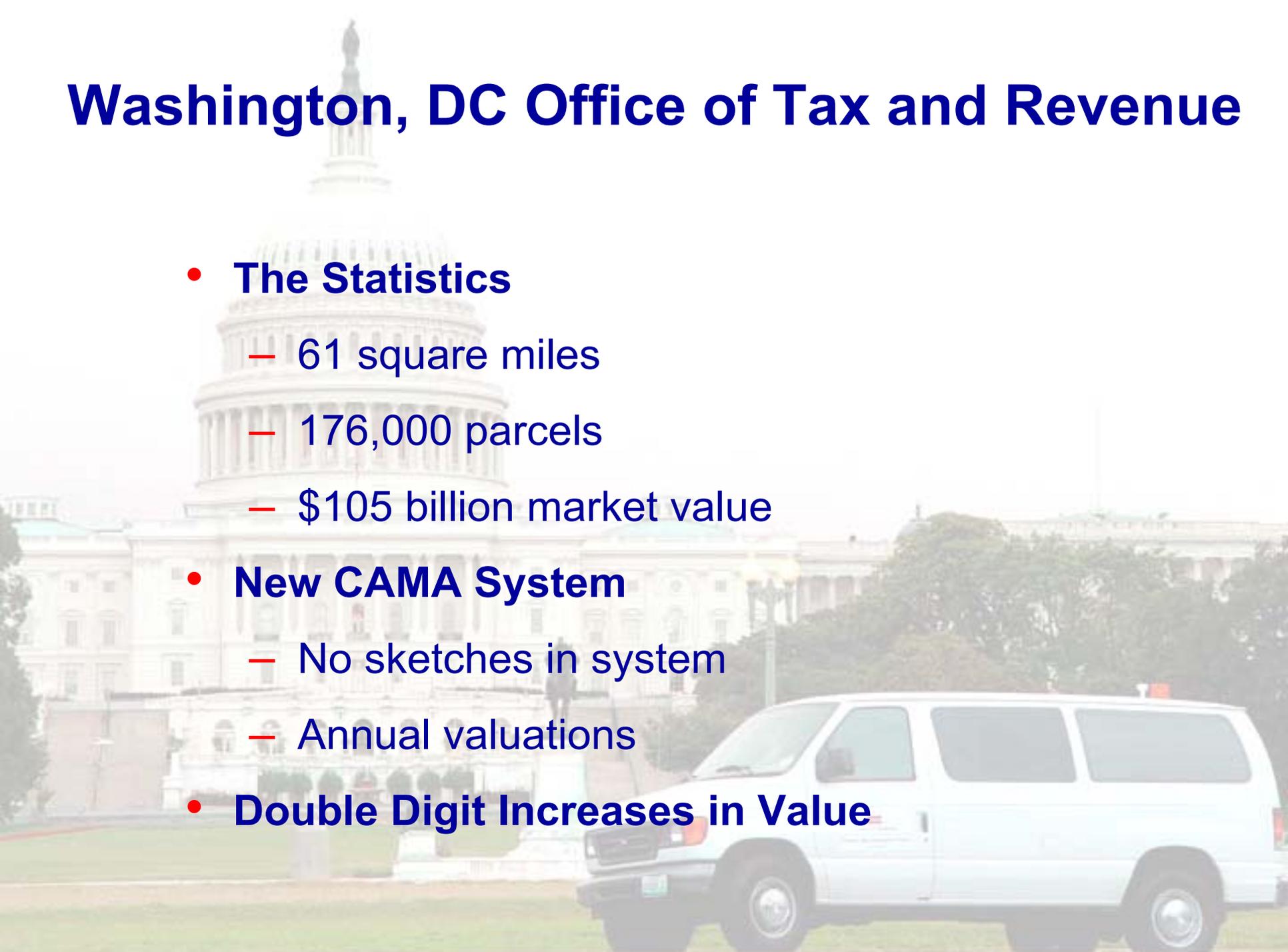
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Principal Consultant

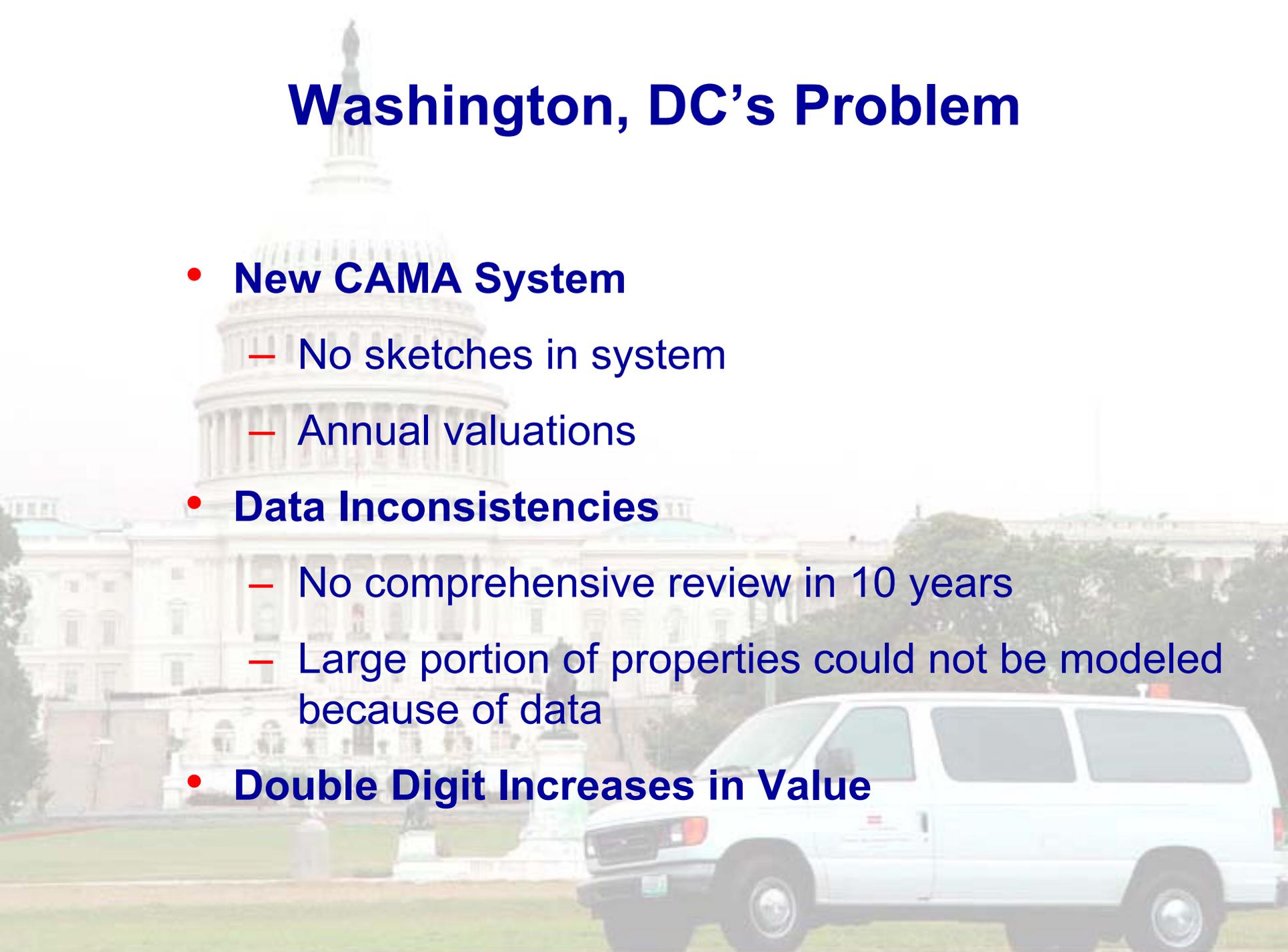
TEAM Consulting

Washington, DC Office of Tax and Revenue

The background of the slide features a faded image of the United States Capitol building in Washington, D.C., with its iconic dome and neoclassical architecture. In the foreground, a white van is parked on a grassy area, partially obscuring the lower part of the Capitol building.

- **The Statistics**
 - 61 square miles
 - 176,000 parcels
 - \$105 billion market value
- **New CAMA System**
 - No sketches in system
 - Annual valuations
- **Double Digit Increases in Value**

Washington, DC's Problem

The background of the slide features a faded image of the United States Capitol building in Washington, DC, with its iconic dome and neoclassical architecture. In the foreground, a white van is parked on a grassy area, partially obscuring the lower part of the building.

- **New CAMA System**
 - No sketches in system
 - Annual valuations
- **Data Inconsistencies**
 - No comprehensive review in 10 years
 - Large portion of properties could not be modeled because of data
- **Double Digit Increases in Value**

Washington, DC Goals and Objectives

- Review of All Taxable Properties (except condos and coops)
- 125,000 Residential and Commercial Properties
- Outsource Data Review
- Use the Latest Technology
- Complete Project in Less than 12 Months
- Spend Less than \$1,000,000



What Washington, DC Decided To Do

Issue an RFP

- Sketch Vectoring
 - Vision Appraisal System
- Data Verification
 - Manatron, Inc.
 - Mobile Video Services, Inc.
- Project Quality Control
 - TEAM Consulting



Appraisal Data Verification (ADV+)



Appraisal Data Verification (*ADV+*) Process

Combines mass appraisal's best methods, GIS/GPS,
remote sensing, data analysis techniques and
mobile data collection technology
to
re-engineer the appraisal data field verification process



Appraisal Data Verification (ADV+) Process

- Photos
- X-Y Coordinates
- Street Address
- Appraisal Data Review
- Analysis
- Update CAMA System



Property Imaging

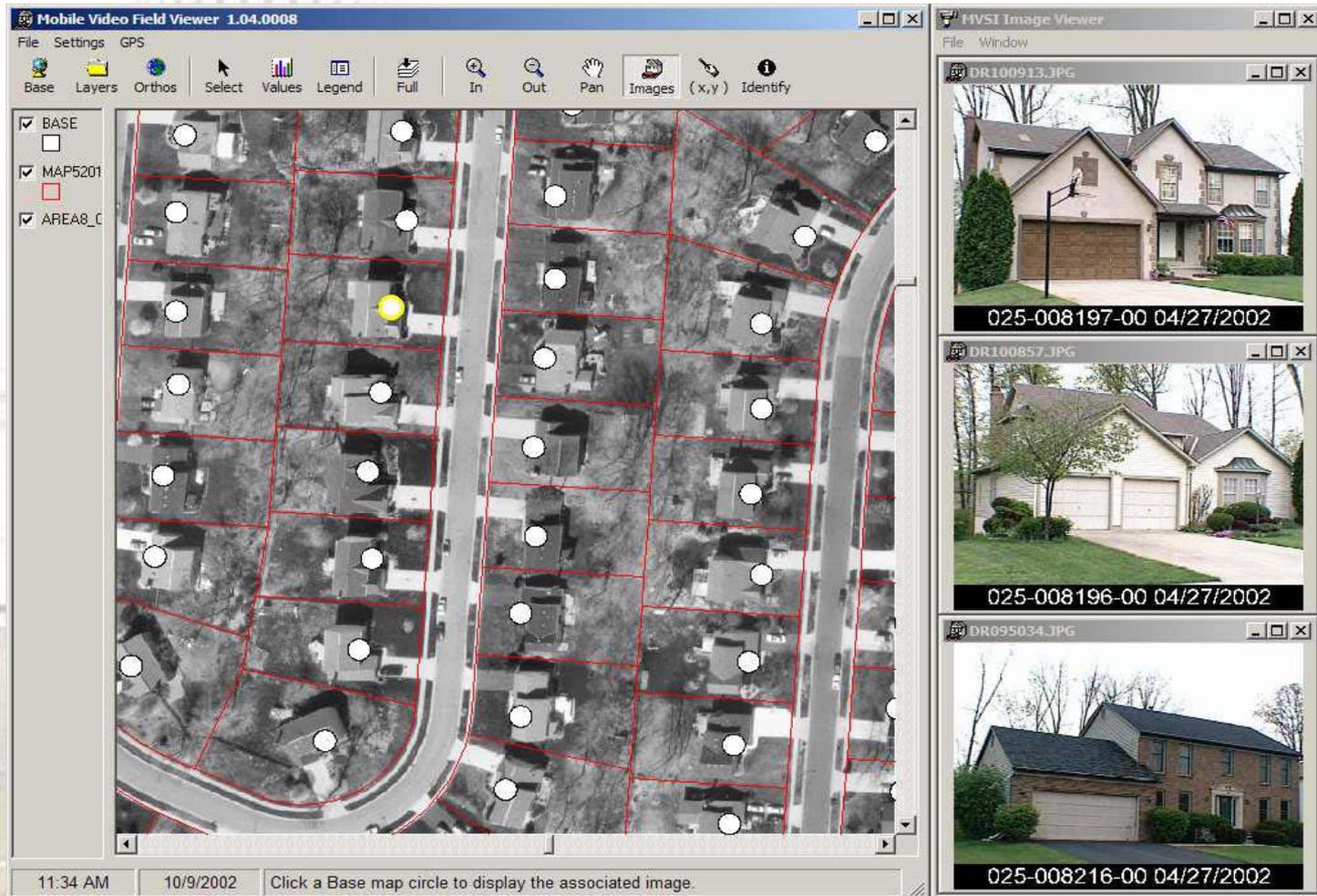
Reflects Overall Value & Minimal Obstructions



2790 0054 06/08/2004

X-Y Coordinates

Intelligent points linking each structure's x-y coordinate to its parcel number, verified address, CAMA file and street-view photograph



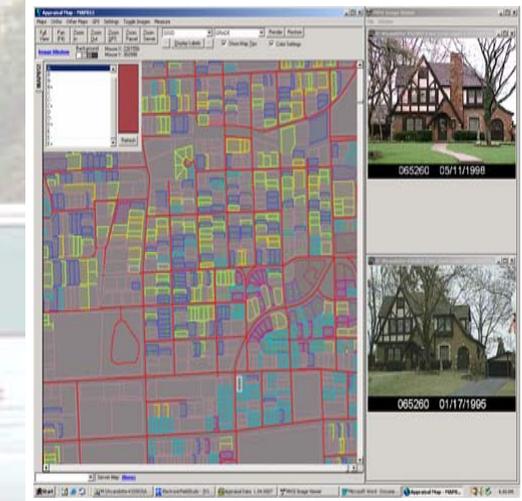
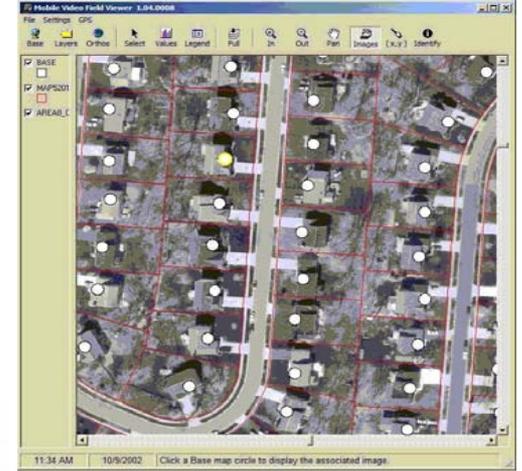
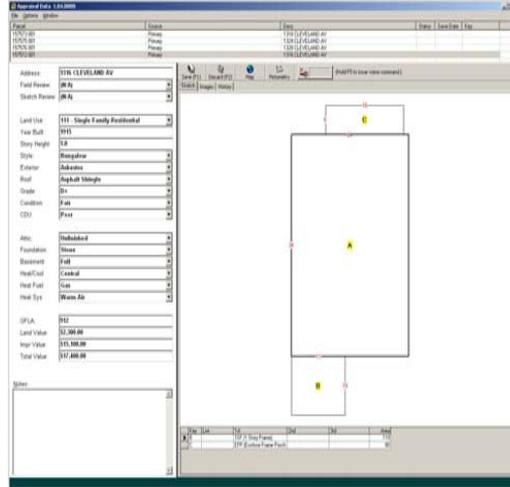
Verify Appraisal Data



Data for Field Verification

The Data that was taken into the field included the following:

- CAMA Data
- PRC JPEG
- Property Sketches
- GIS
- Orthophotographs
- Planimetric Footprints
- Oblique Imagery



Verify Appraisal Data

Objective Property Characteristics

Parcels requiring additional review identified with Field and Sketch Review Attributes

- Property Class-Use
- Style
- Effective Age
- Exterior Walls
- Story Height
- Roof Material
- Attic
- Basement
- Foundation
- Air Conditioning
- Out Buildings
- Parking

Jurisdiction specific factors

Appraisal Data 1.04.0000

Parcel	Source	Desc	Status	Save Date	Key
157573 001	Primary	1318 CLEVELAND AV			
157575 001	Primary	1324 CLEVELAND AV			
157576 001	Primary	1328 CLEVELAND AV			
157572 001	Primary	1316 CLEVELAND AV			

Address: 1316 CLEVELAND AV
 Field Review: (N/A)
 Sketch Review: (N/A)

Land Use: 111 - Single Family Residential
 Year Built: 1915
 Story Height: 1.0
 Style: Bungalow
 Exterior: Asbestos
 Roof: Asphalt Shingle
 Grade: D+
 Condition: Fair
 CDU: Poor

Attic: Unfinished
 Foundation: Stone
 Basement: Full
 Heat/Cool: Central
 Heat Fuel: Gas
 Heat Sys: Warm Air

GFLA: 912
 Land Value: \$2,300.00
 Impr Value: \$15,100.00
 Total Value: \$17,400.00

Notes:

Key	Lwr	1st	2nd	3rd	Area
B		1SF (1 Story Frame)			110
C		EFP (Enclose Frame Porch)			80

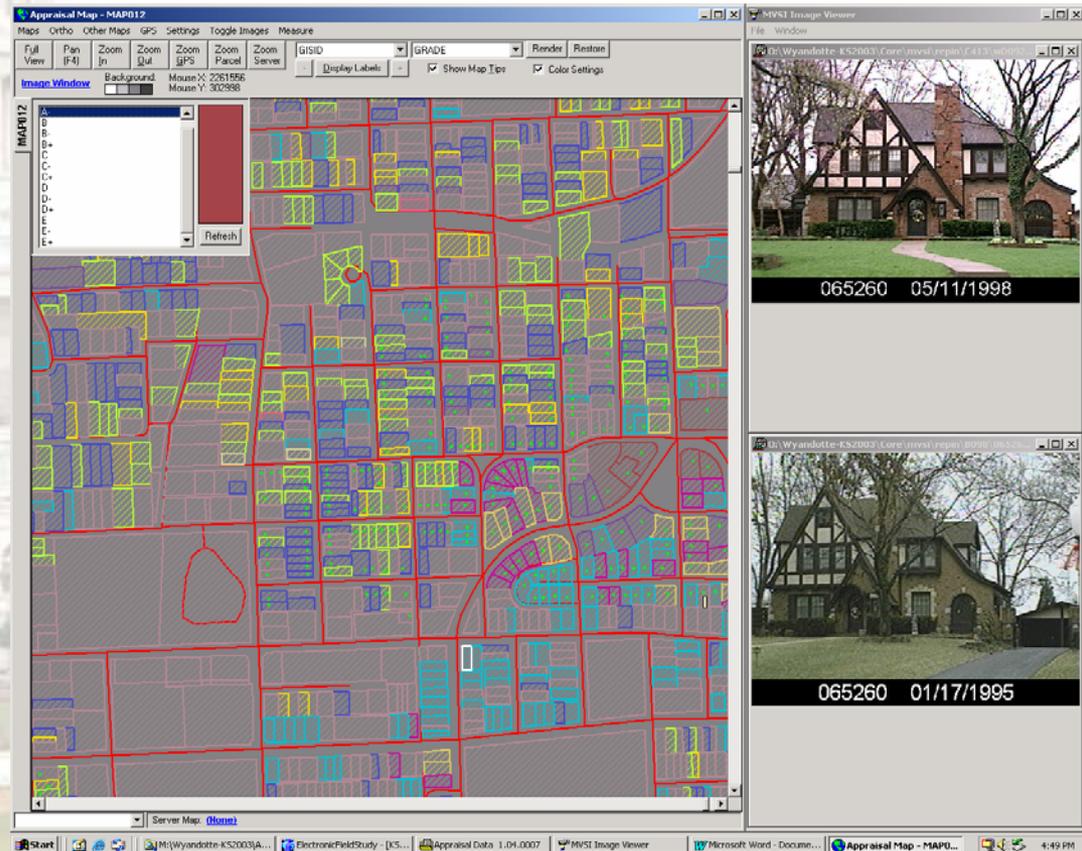
Verify Appraisal Data

Subjective Property Characteristics

Parcels requiring additional review identified with Field and Sketch Review Attributes

- Grade
- Condition
- Location Factors
- Jurisdiction specific factors

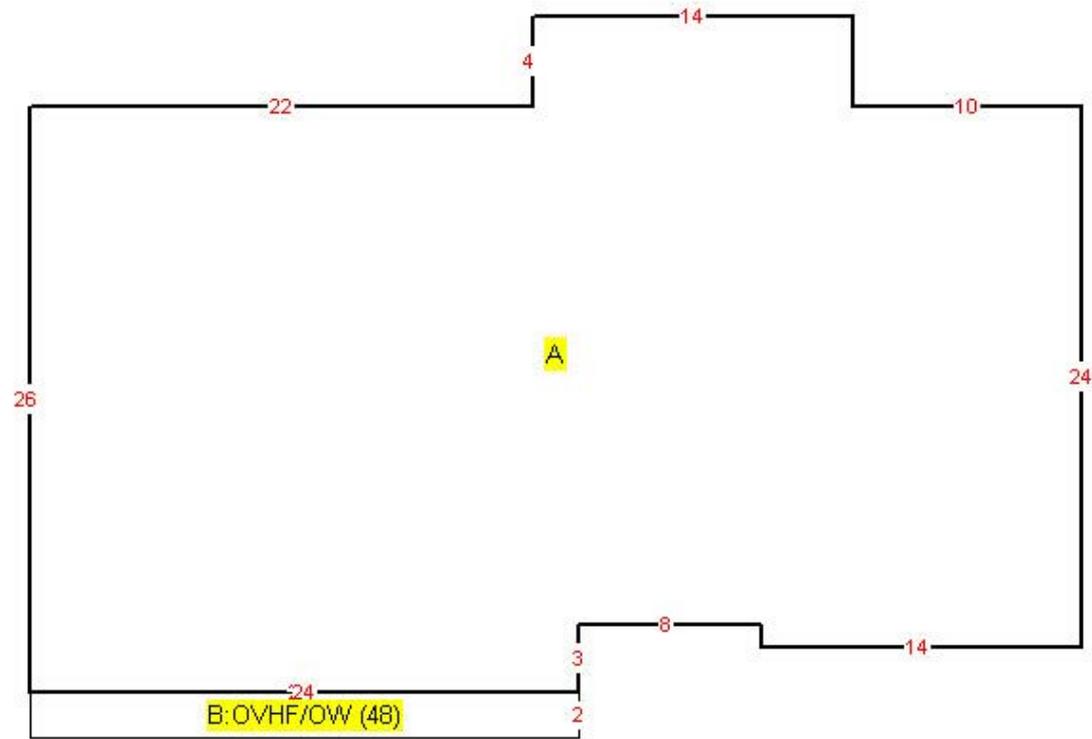
The integration of data with GIS, sketch and imaging provides for a high-quality review and enhanced productivity.



Verify Sketch and Measurements

In-Field Sketch Comparison to:

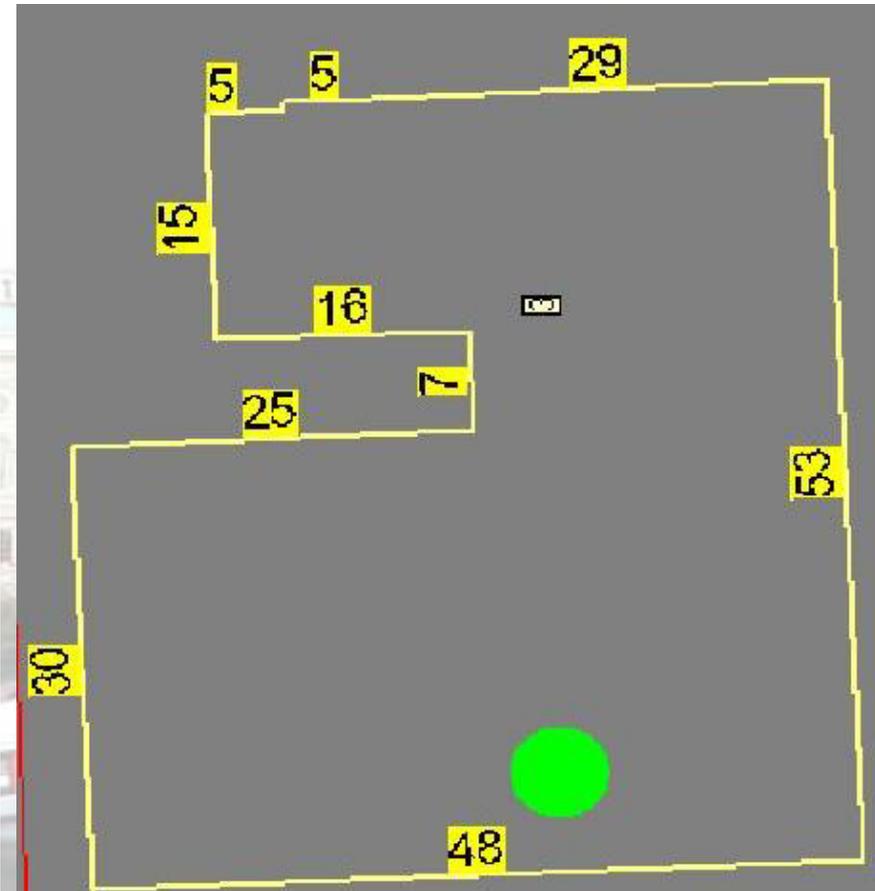
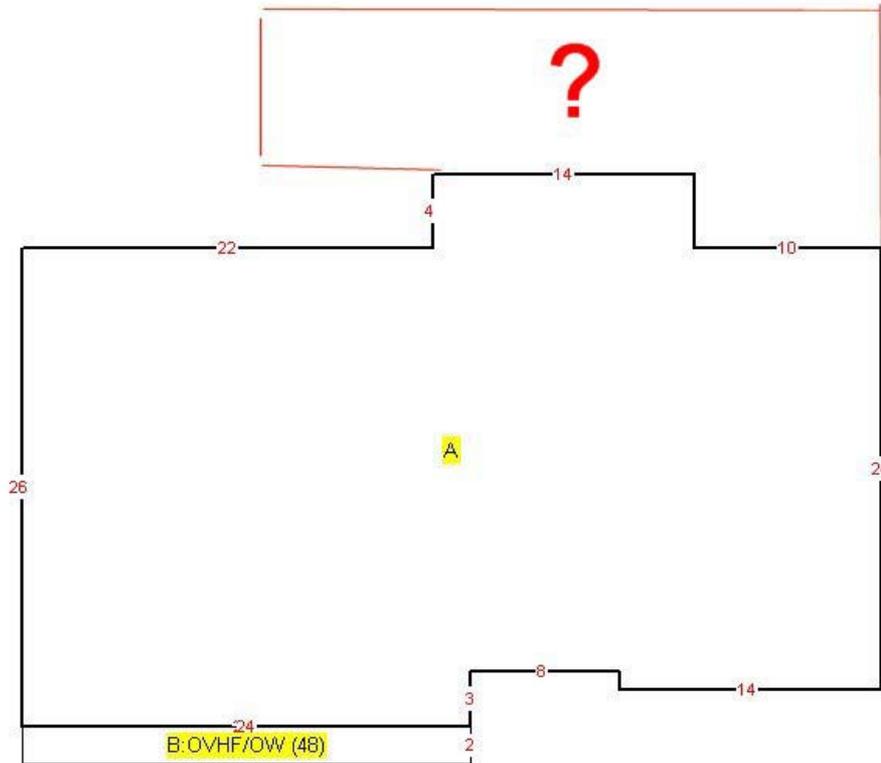
- **Structure**
Verify sections, levels and labels
- **Planimetric Footprint**
Verify perimeter measurements
- **Orthophotography**
Identify additions and obstructed view



Verify Sketch and Measurements

Planimetric Footprint

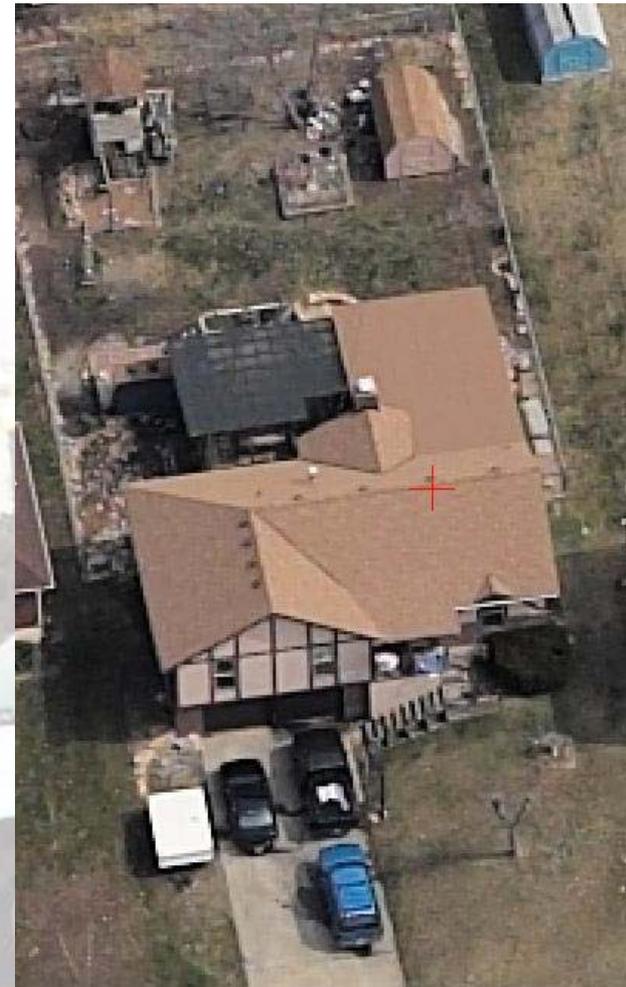
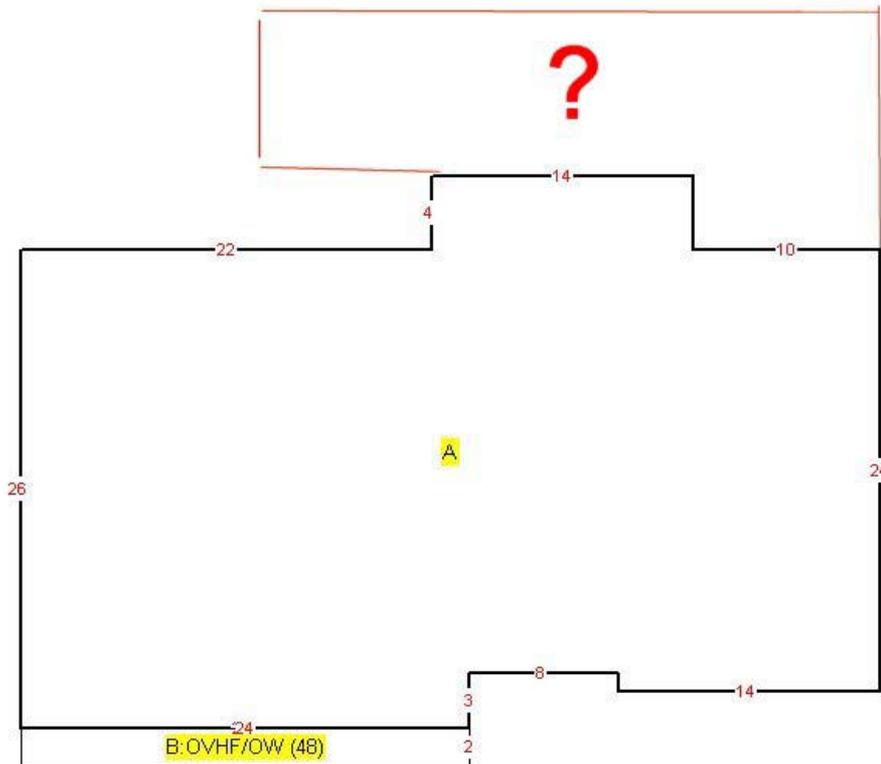
The mass appraiser in the field collection unit compares the dimensions on the planimetric footprint (minus the estimated roof overhang) with the same walls on the CAMA sketch to see if the two are within allowable tolerances.



Verify Sketch and Measurements

Oblique View

The use of Oblique Photography provides the mass appraiser with the ability to view the entire property to determine building orientation, outline, characteristics and context.



Data Entry and Processing

Workflow Processes

- Data organized into review levels
- Each review level has separate procedures for review and entry
- Problem data elements are pushed to higher review levels
- Data entry into CAMA system
 - Mass update when supported by CAMA system
 - Manual data entry due to software limitations



Data Entry and Processing

Image Management and Analysis Software
Focused Software Applications

- Analysis of data exceptions
- Virtual walk through neighborhood
- Linked to GIS and Pictometry
- Display and print comp report
- Maintain image warehouse
- Analyze sales and data

The screenshot displays the 'Mobile Video Parcel Viewer' interface. At the top, there are navigation buttons (Back, Forward, Home, etc.) and search options (Owner Search, Address Search, Sales Comp, Attribute Search). Below this is a table with columns: Parcel, Map, LAND VALUE, TOT IMP VA, QUALITY, EFFECTIVE, YEAR BUILT, BEDROOMS, GARAGE, NEIGHBORHOOD, and ValuePerSqFt. The table contains 14 rows of data for various parcels in the 'IVY MEADOWS' neighborhood. Below the table, there are two image thumbnails. The left thumbnail shows a house with a porch, labeled '19302343'. The right thumbnail shows a larger house with a garage, labeled '19302333'. The bottom of the window shows the taskbar with the 'Mobile Video Control' and 'Mobile Video Parcel Viewer' windows open.

Parcel	Map	LAND VALUE	TOT IMP VA	QUALITY	EFFECTIVE	YEAR BUILT	BEDROOMS	GARAGE	NEIGHBORHOOD	ValuePerSqFt
19302333 001	193	24000	106300	2	1892	1999	3 Y		IVY MEADOWS	56
19302334 001	193	24000	83770	2	1408	1999	3 Y		IVY MEADOWS	59
19302335 001	193	24000	83290	2	1388	1998	3 Y		IVY MEADOWS	60
19302336 001	193	24000	73630	2	1199	2000	3 Y		IVY MEADOWS	61
19302337 001	193	24000	80470	2	1340	1998	3 Y		IVY MEADOWS	60
19302338 001	193	24000	82730	2	1404	1999	3 Y		IVY MEADOWS	59
19302339 001	193	24000	91280	2	1520	2000	3 Y		IVY MEADOWS	59
19302340 001	193	24000	60900	2	1494	2000	3 Y		IVY MEADOWS	59
19302341 001	193	24000	75300	2	1206	1998	3 Y		IVY MEADOWS	62
19302342 001	193	24000	82740	2	1405	1999	3 Y		IVY MEADOWS	59
19302343 001	193	24000	83290	2	1388	1998	3 Y		IVY MEADOWS	60
19302344 001	193	24000	72990	2	1227	1999	3 Y		IVY MEADOWS	59

The screenshot displays the 'Mobile Video Parcel Viewer' interface for a specific parcel. The top window shows a table with columns: Parcel, Map, FieldReview, FieldReviewDesc, SketchReview, SketchReviewDesc, NotesDesc, SupervisorReview, and SupervisorReviewDesc. The table contains 4 rows of data for parcel 590-0211-0048-001. Below the table, there are two image thumbnails. The left thumbnail shows a house with a porch, labeled '590-0211-0048 04/28/2003'. The right thumbnail shows a plat diagram with dimensions and labels. The bottom of the window shows the taskbar with the 'Mobile Video Control' and 'Mobile Video Parcel Viewer' windows open.

Parcel	Map	FieldReview	FieldReviewDesc	SketchReview	SketchReviewDesc	NotesDesc	SupervisorReview	SupervisorReviewDesc
590-0211-0048-001	Map062	1	MAJOR CONSTRUCTION	0	1 SKETCH FLIP	sk chg to addr	0	(N/A)
245-0000-0079-001	Map062	1	CANNOT IDENTIFY RECORD	0		sk chg not as listed	0	(N/A)
245-0000-0103-001	Map062	1	MAJOR CONSTRUCTION	0		sk chg enter	0	(N/A)
245-0000-0104-001	Map062	1	MAJOR CONSTRUCTION	0		sk chg not as listed	0	(N/A)
590-0202-0038-001	Map062	1	MAJOR CONSTRUCTION	0		sk chg not as listed	0	(N/A)

Data Entry and Processing

Data exceptions for 125,000 residential parcels

<u>Level</u>	<u>Count</u>	<u>Description</u>	
1	372,990	Property Characteristics	→ <u>Residential</u>
2	2,190	Review Characteristics	- Use Code 2,394
3	7,252	Office Action Required	- Old Style 4,768
4	12,569	Office Action Complete	- Roof Covering 25,768
5	3,172	No Sketch	- Building Type 1,400
6	2,947	Field Action Required	- Story Height 7,079
7	<u>2,817</u>	Field Action Complete	- Air Conditioning 1,235
			- Exterior Finish 7,599
			- New Style 103,198
			- Parking 104,433
			- Grade 44,409
			- Condition <u>29,011</u>
	403,937		331,294

Data Entry and Processing

Resolution of Field and Sketch Review Parcels

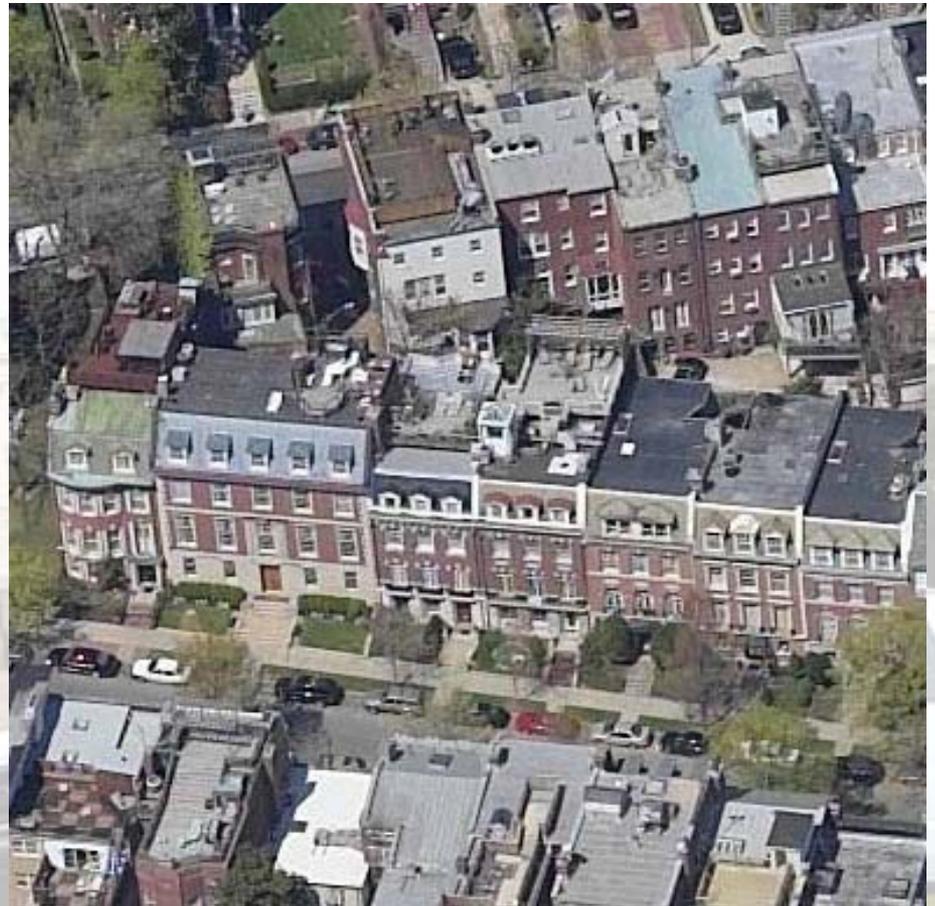
Appraisal staff can investigate and resolve data exceptions at the desktop with software applications. Data exceptions are linked to GIS or Pictometry through address x,y points.

Office Action

<u>Count</u>	<u>Description</u>
2,932	Building Razed
2,948	Minor Addition (deck/porch/garage)
1,064	Correct Sketch Measurements/Labels
<u>308</u>	Verify Use
7,252	

Field Action

<u>Count</u>	<u>Description</u>
664	Additional Sq. Ft. Not on Sketch
509	New Construction
<u>1,774</u>	Field Verify (significant variation)
2,947	



Appraisal Data Verification Process

What We Learned

- Appraisal staff was more productive due to data:
 - Consistency
 - Accuracy
 - Timeliness
- Appraisal staff was able to focus on valuation work – not data collection
- The use of the best available qualified mass appraisers yielded a higher level of confidence in resulting data and final values
- There was a substantial reduction in the amount of field work during final review

Appraisal Data Verification Process

What We Learned

- Traditional data collection techniques are not necessary on *most* properties
- Dramatically reduces cost, while improving the quality and timeliness of property valuation data
- High tech alternative to “walk around” data collection methods used in past
- Win-Win for the Office of Tax and Revenue and taxpayers
 - Provides a quality data review at a reasonable cost

Appraisal Data Verification Plus (ADV+)

How Long Did It Take

- May 1, 2004 Project Start
- June 1, 2004 Begin Field Work
- October 27, 2004 Field Work Completed
- April 1, 2005 Project Completion



What Did It Cost?

- Approximately \$8.00 per parcel
 - Picture
 - X,Y Coordinate
 - Address Verification
 - Data Review
 - Appraisers
 - Software
 - Quality Assurance
- Cut Cost by Using Your Own Appraisers
- \$8 Vs. \$30 Using Traditional Methods

What Is the Payoff?

Return on Investment

	<u>DC</u>	<u>Other</u>
Total Parcels	125,000	40,000
Market Value Discovered	\$948M (1)	\$89M (2)
Effective Tax Rate	.91%	1.4%
Tax Revenue	\$8,729,900	\$1,372,635
Contract Amount	\$800,000	\$200,000
ROI (minimum)	11:1	7:1

NOTE:

- (1) From only three data elements (parking, grade and condition)
- (2) Figure does not include effective age changes

New Enhancements to the Process

- Predicting Results Ahead of Time with AEP Feedback
- Personal Property Identification
- HouseDiff (Change Detection)
- Properties in Correct Tax Districts
- Mobile Office

