DC GIS Steering Committee

September 15, 2005

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The Training Report

Tim Abdella

Geospatial Education Director

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Objective

- Improve the quality and lower the cost of GeoSpatial Education provided by the District of Columbia to its personnel

- Fulfill DC GIS Service Line Mission

Meeting the Objective

- Custom Classes
- Center for Workforce Development
- Marketing
- Web Site
- Online Training
- e-Newsletter
- Student Registry
- Doctors Office
- Semi-Annual Report

Custom Classes

- ## The Center for Workforce Development (CWD)
  - 3 GIS Courses offered for FY 2006
  - CWD coordinates training programs and activities for District government agencies and employees, including senior executives, middle managers, supervisors, and front line employees.

- ## Agency & Programs
  - Specific training classes to meet the needs of end users utilizing GIS Centric Applications in their daily Business Process.

- ## General Workshops
  - Focused half day training sessions
  - 1 Offered weekly - *hopefully*
  - Intended for moderate – advanced users
  - Always looking for suggestions

CWD Classes

Introduction to DC GIS using ArcGIS I

– Customized introduction to ESRI ArcGIS 1 focused on DC data and applications, the foundation for becoming a successful ArcView®, ArcEditor™, or ArcInfo™ user. This course covers fundamental GIS concepts as well as how to query a GIS database, manipulate tabular data, edit spatial and attribute data, and present data clearly and efficiently using maps and charts.

Offered:
» October 26-27
» November 9-10
» January 30-31
» February 27-18
» May 25-26
» June 21-22
» July 27-28

DC GIS Tools for Professional Analysts

– The course is a boot camp for professional GIS analysts focuses specifically on how the District of Columbia applies the technology. Students are expected to be proficient in ArcGIS software.

Offered:
- » October 20
- » December 9
- » January 10
- » February 1
- » May 16
- » June 7
- » July 18
- » August 15
- » September 12

CWD Classes

Managers Overview of DC GIS Services and Applications

– The course is aimed at DC government managers who want a better understanding how the programs they supervise can utilize the DC GIS, but are themselves not hands on users of the system

Offered:
- » October 18
- » November 30
- » December 8
- » January 26
- » February 16
- » May 4
- » June 28
- » July 20
- » September 14

CWD

Important Notes:

- Opportunity to go mainstream
- Must keep classes 75% full

http://www.dcop.in.dc.gov

Click on:

Training and Development

Course Registration:

- Select Classes
- Get Supervisor Approval
- Complete the Standard Training Authorization Form 1
- E-mail to Training Coordinator for his/her review and signature
- Confirmation of enrollment in the course will be emailed to you
- Notify CWD if you can not attend within 3 days of the class
- For more information about CWD, call (202) 727-1523
- All Information will be on DC GIS Training Website

Agency & Programs

- **Introduction to GIS using the VPM Maintenance Application**
  - Focused on the business process
  - Including fundamental GIS Theory
  - With real-world example exercises
  - Deliverable through small classes or on-line tutorials
  - Sensitive to AutoCAD terminology and work-flow process

- **Introduction to GIS using the MAR Maintenance Application**
  - Similar goals as above

- **Using GIS for Analysis in the Public Safety Sector**
  - How to use ArcGIS in conjunction with Spatial Analyst
  - Focused on the needs of: Police, Fire, EMA, etc.

General Workshops

Potential Classes – Any Ideas?

- Advanced Geocoding - using the MAR
- Customizing the interface:
  - DCGIS extensions
  - Adding Tools and Developer Samples
- Enhancing Analysis using:
  - Data Queries & Definitions
  - Symbology
- Enhancing Analysis using Spatial Analyst
- Enhancing Analysis using Model builder and Geoprocessing
- Advanced Cartographic Design
  - Templates
  - Layer Tips and Tricks
  - Labeling & Annotation
- DC GDB Defined
  - Federated data model & Standards
  - feature IDs and MAR IDs
- A Comprehensive review of the DC's Vector Property Map

Marketing

- **CWD Course Flyer**
  - Single page
  - GIS Courses with descriptions
  - Schedules
  - How to register
  - Use to keep enrollment up

- **Online Training Flyer**
  - Single Page
  - Highlighted ESRI Virtual Campus Classes
  - How to get Credits
  - DC GIS On-line tutorials

Additional Notable Items

- **Web Site**
  - Dedicated training section

- **Online Training**
  - ESRI Virtual Campus Credits
  - DC GIS Class Material for download

- **e-Newsletter**
  - Monthly publication
  - Archived on the Web Site

- **Student Registry**
  - Data Base of Official Record

- **Doctors Office**
  - Weekly Forum for User Q&A

- **Semi-Annual Report**
  - Progress and Goals

Q&A

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Thank you

DC GIS News and Demos

News Items

- Specifications for DC GIS Web Services now online
  - Demo 1: www.dcgis.dc.gov
- Master Address Repository in production
- New Mobile Video Web Service (Thank you OTR!)
  - Demo 2: www.dcgis.dc.gov
- New DCGIS.DC.GOV coming soon
  - Demo 3: http://dcgis.dev.dc.gov/dcgis/guestaccount/login.asp
- DC GIS Shirts

News Items

- Quarterly sub meter resolution satellite imagery
  - Vendors: SAIC/Digital Globe
  - Satellite: Quick Bird
  - Coverage: DC boundary plus 500 feet
  - Mission Windows
    - October - November 05 (Natural Color)
    - February - March 06 (Natural Color)
    - June - July 06 (Color Infrared)
    - September - October 06 (Natural Color)

News Items

- OP Tools
  - Significant progress has made
  - Why so important
    - Everybody uses the same datasets.
    - Map symbolology consistent.
    - User does not need to know where to find the data.
    - No need to create an SDE account for every CITRIX user.
    - No need to manually connect to database.
    - Easy to use
    - Tim will teach your staff how to use it!
  - Demo 4

The Data Report

Mario Field

DC GIS Data Team Lead

Mario.Field@dc.gov

Updated DC GIS Data

- **Zoning (OZ)**
- **Overlay Zoning (OZ)**
- **Planned Unit Development (OZ)**
- **Existing Land Use (OP)**
- **Generalized Land Use (OP)**
- **Senior Service Network**
- **Correctional Halfway House**
- **D&B Business**
- **University**
- **DC Quadrant**
- **Public Housing**
- **Address Point**

Emergency Data Committee
(in process)

- **FCC Tower (AM, FM, Cellular, etc.)**
- **FAA Airport**
- **FAA Heliport**
- **Fire Service Area**
- **Underground Storage Tank**
- **Leaking Underground Storage Tank**
- **Above Ground Storage Tank**
- **NCR Land Cover**
- **NCR Elevation**

Emergency Data Removed

- **Controlled Intersections**
- **EMA Hospitals, Schools, Nursing Homes, Hospitals, Recreation Facilities and Senior Centers**
- **Military Areas**
- **DC Atlas Emergency Module Offline**
- **EMA does not support some layers**
- **Others replaced by more accurate and up-to-date layers**
- **Archived**

Current DC GIS Data Update

- **Recreation Area**
- **Red Light Camera**
- **Street Tree**
- **Street Centerline**
- **Routing**
- **Metro Line**
- **Metro Station**
- **Street Trees**
- **School Attendance Zone**
- **Collaborative Area**
  - » **September 2005 publication**

DC GIS Planimetric Update Project

Mario Field, DC GIS Data Team Lead
Andrew Freckman, Earth Data Maryland

Planimetric Update

Ortho Photo 2002
Buildings 1999
Buildings Since 1999
Demolished Buildings Since 1999

- **Planimetric layers created from 1999 photography.**

- **Missing key buildings and streets**

- **Missing new and expanded residential housing**

- **Latest complete Orthophoto from 2002**
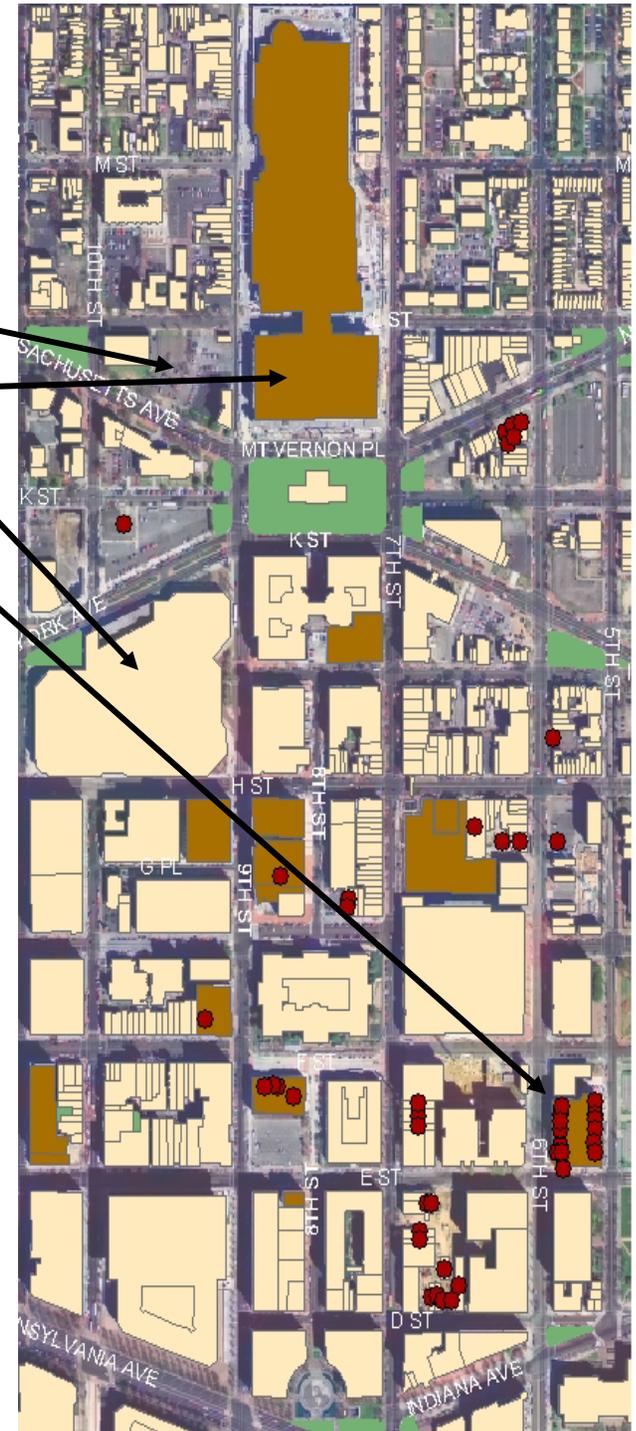
Planimetric Update

Map updates
are needed
citywide

Building Change
Detection - 2004

Visual comparison of 2002 building polygon
planimetrics file with 2003 orthophotography
(Pictometry)
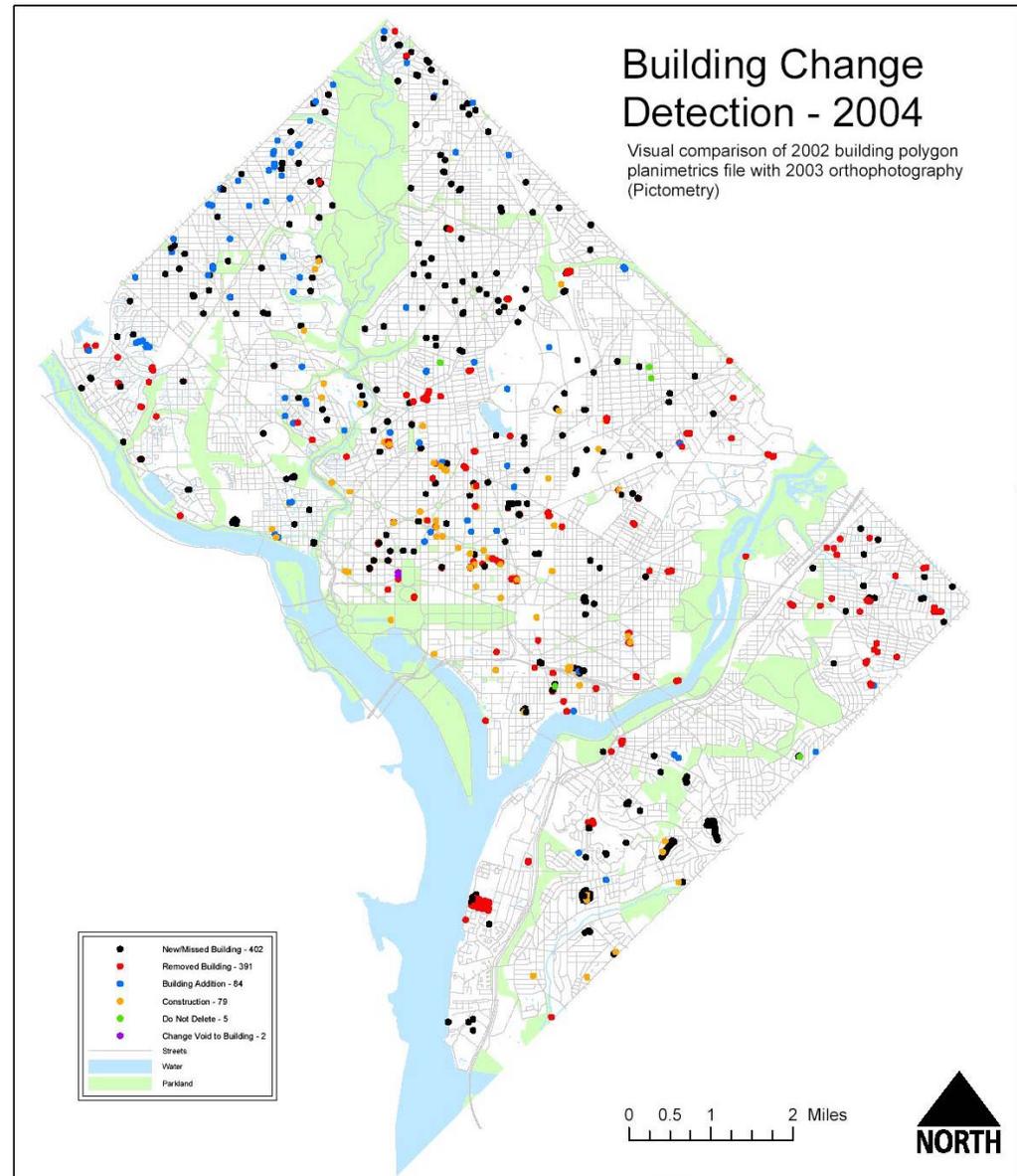
Planimetric Update

- **Establishment of geodetic control**
- **Acquisition of new color aerial photography**
- **Aerial triangulation**
- **Photogrammetric mapping of select planimetric layers**
- **Production of true color digital orthophoto imagery**
- **Quality Assurance and Quality Control**
- **Metadata development**

Planimetric Update

Schedule:

Geodetic Control and Report	6/2005 – 7/2005
Scanning	7/2005 – 9/2005
Aerial Triangulation	8/2005 – 10/2005
Pilot Area	10/2005
Mapping Planimetric Features	11/2005 – 3/2005
QA/QC Planimetric	1/2006 – 4/2006
Digital Color Orthophotos	9/2005 – 12/2005
MrSID Orthophoto	12/2005 – 1/2006

Planimetric Update

Layers:
- Building
- Bridge and Tunnel
- Curb
- Hydro Centerline
- Metro Station Entrance
- Obscured Area
- Railroad
- Street Centerline
- Road
- Sidewalk
- Wooded Area
- Geodetic Control

- Orthophoto

Planimetric Update

Deliverables:

- Aerial Photography
- Project Work Plan
- Aerial Acquisition Plan
- Ground Control Report
- Aerial Triangulation Report
- Planimetric Data
- Metro Station Entrance
- Digital Color Orthophotos
- Digital Color Orthophoto MrSID mosaic
- Metadata

DC GIS
Review of 2005 and Outlook for 2006

Barney Krucoff

GIS Director

DC GIS Mission and Goals
Established December 2004

The OCTO GIS groups helps agencies improve the delivery of services by efficiently utilizing Geographic Information System technology.

FY 2005 Goals:

- Institutionalize Success
- Provide foundation geospatial services
- Expand support for emergency management
- Continue to improve the Districts geospatial databases
- Expand GIS support for schools and social services

Review of 2005 DC GIS Goals

Institutionalize success

Objective	Status	Comment

Develop and maintain a master plan including inventories of:
 	
       - Data
 	
       - Hardware
 	
       - Software
 	
       - Applications
 	
       - Projects
	Published *Strategic Plan for DC GIS FY 2005-2006*
	
	- revitalized catalog
	
	- have systems plan
	
	- incomplete
	
	- incomplete
	
	- incomplete
		Will publish updated version by December 2005.

Clarify responsibilities among departments	- Federated model adopted - Private streets initiative helping workflow	Not yet fully realized now works in slow motion

Review of 2005 DC GIS Goals

Goal Institutionalize success (cont.)

Objective	Status	Comment
Establish an operating budget for OCTO GIS	- Remains an issue for OCTO overall	-Plan to ask for 2007 increase - Reorganization of OCTO is likely
Enhance role of GIS steering committee Establish an annual review of the plan	- More meetings - Regular reports - Agency presentations	- Detailed plan review in December - DCGIS.DC.GOV will have presentations and minutes
Standardize operating procedures for data and application maintenance	- Federated model - Data, systems, development teams in place	-More worked is need in this area - Standard editing tools

Review of 2005 DC GIS Goals

Goal Institutionalize success (cont.)

Objective	Status	Comment
Expand training program and hire a full time training director	- Tim Abdella, onboard - CWD course schedule established	- Think about the customized training your agency needs.

Review of 2005 DC GIS Goals
Provide foundation geospatial services

Objective	Status	Comment
Formalize the enterprise architecture	- Plan is in place	- Implementation FY 2006
Deploy OpenGIS Services	- In process in conjunction with WACOG	- Most important for use outside DC Government
Metadata Service	- In process	- Working with DOH

GIS services
   - Address Lookup (MAR)
   - Locator Map
   - Report by polygon
   - Point in Polygon
   - Nearest
	
	- In production
	- In production
	- In production
	- In production
	- Not started
		http://dcgis.dc.gov/webservices.shtm

Review of 2005 DC GIS Goals

Provide foundation geospatial services

Objective	Status	Comment
Consolidate backend systems to point where there is one production database running ArcSDE 9+ and one running Oracle Spatial	- Not started	- Still an important goal
Employ ArcGIS 9 data integrity rules	- Not started	
Move to enterprise licensing of GIS software	- In negotiations with ESRI	- October 28 deadline for FY 2006

Review of 2005 DC GIS Goals

Expand support for emergency management

Objective	Status	Comment
Hire a full time GIS Manager for EMA	- Joshua Jack	
Assemble and check critical infrastructure data	- Underway	
Clarify EMA on-call support and adequately equip and train staff	- Ongoing	

Review of 2005 DC GIS Goals

Expand support for schools and social services

Objective	Status	Comment
Hired GIS analyst to support the DCPS facilities office	- Jeng Funtanilla	
	Assisted Department of Human Services	
	Good working relationship with HSMP	

Review of 2005 DC GIS Goals
Major Data Projects and Acquisitions

Objective	Status
Planimetric Update	- Underway
Public land inventory with GSA, NPS	- In negotiations
Master Address Repository	- In production, (tools for DCRA still to be deployed)
Vector Property Map	- Delayed, due December 2005
Street Spatial Database (Centerlines and more)	- In production (DDOT) with: -Turn restrictions - Updated theoretical address ranges - Maintenance tool under development
Acquisitions - Oblique images - Building images - Elevation (DEM) - Regional base map - Satellite images - Businesses	 - Pictometry (in production) - Mobile Video OTR (in production) - LIDAR from NGA (available) - Navtech (in production) - Ongoing SAIC/Digital Globe (coming) - Dun and Bradstreet (under review)

FY 2006 Data Acquisition?
Major Geospatial Datasets Not In DC GIS Inventory

Objective	Status
Address Units (apartments, bays, suites)	- Possible for FY 2006, not scoped
Public Lands and Parcels Outside of Squares	- In negotiations, research well underway, targeted for FY 2006
DC Facilities (owned and leased) and DC Functions	- Possible for 2005, not scoped
DDOT Assets	- Work with DDOT
Rights of way	- Work with DDOT
Utilities (Conduits) - Electric - Gas - Communications - Sewer - Steam (Underway) - Water	- Discuss

FY 2005 Development Projects
What we and doing

Objective	Status
MAR Web Services	- In production, ArcGIS Geocoder in development
Mapping Web Services	- Some in production
Map making: OP Tools to DC GIS Tools	- Nearing production
Vector Property Map Maintenance and Query Tools	- Final changes
MAR Maintenance Tool	- Final changes
Neighborhood Notification Tool for EMA	- Final changes
Improvements to the Emergency Information Center	- Final changes
Integration of ARCGIS with service request center (DPW)	- On going
Standard editing tools	- Not scoped

ESRI Enterprise License

- In negations no better than 50/50 chance of a deal
- Would cover:
  - Desktop Software
  - Server Software
  - Some professional services
  - Some training credits
  - User conference registrations

DC GIS Additional Goal
For Fiscal 2006

- **Significantly increase the user base of the DC GIS**
  - Train 300 New DC GIS users
  - Equip those users with
    - Standard software (ESRI enterprise license)
    - Standard tools for map production and simple data creation. (DC GIS Tools)
    - Make it easier for them to find the data they need (DCGIS.DC.GOV / Geospatial Portal)

Agency Presentation

Metropolitan Police Department
Diana Havlin

Geographic Profiling Analysis
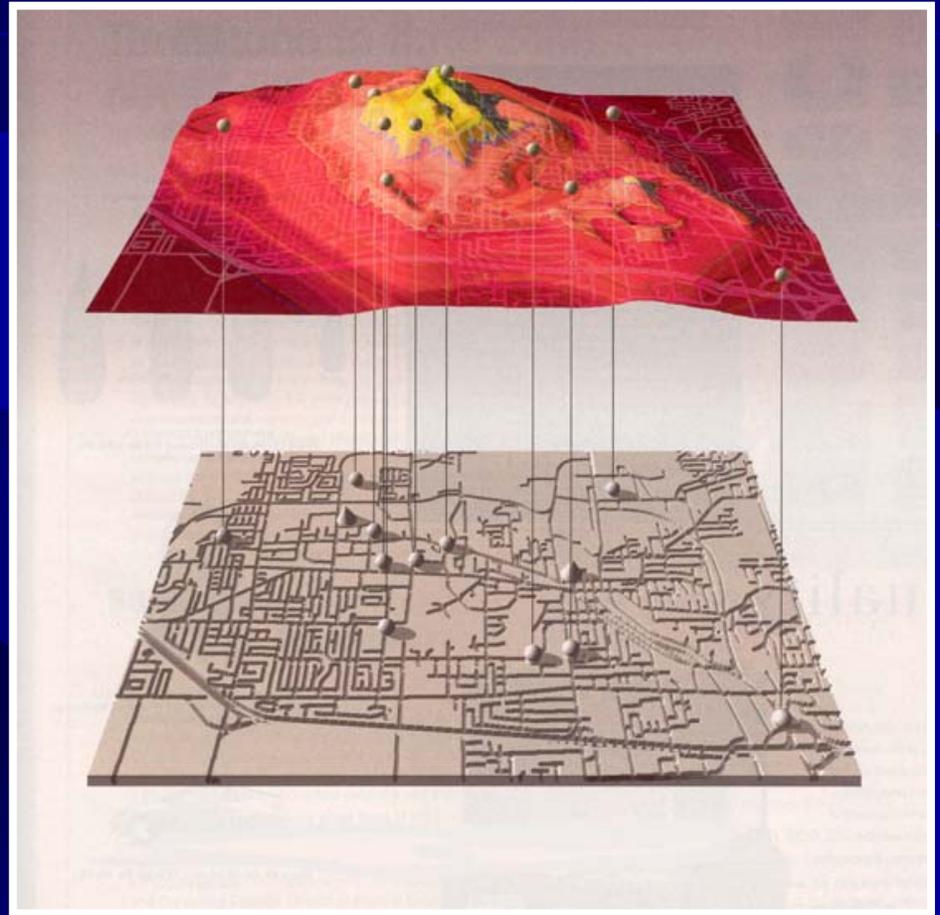
Metropolitan Police Department

◆ Office of the Superintendent of Detectives

◆ Special Investigations Branch

◆ Criminal Intelligence and Tactical Crime Analysis Unit

◆ ASSISTANT CHIEF

◆ Commander

◆ Captain

◆ Civilian Supervisor

Diana M. Havlin

- ◆ Senior Crime Analyst, Criminal Intelligence and Tactical Crime Analysis Unit
  - ◆ Responsible for intelligence analysis, tactical crime analysis, geospatial analysis
- ◆ We have 9 civilian crime analysts and several sworn analysts working at MPD HQ and in each district station
- ◆ One contract GIS Analyst
- ◆ One intern

- ◆ Diana.Havlin@dc.gov
- ◆ 202-727-8013 (direct)

Definition of Terms

◆ **Tactical Crime Analysis** – systematic analytical processes that assist in police operations. Involves identifying and tracking crime series', crime trends, analyzing geospatial patterns of criminal behavior.

◆ **Crime Pattern** – a set of crimes containing similar patterns in MO, target, or geospatial location.

◆ **Crime Series** – a set of crimes determined to be related.

◆ **MO vs. Signature** – MO is the practical method an offender uses to increase the likelihood of success. Signature is the behavioral aspect of the crime not necessary for completion of the offense.

◆ **GP vs. GPA** – GP used in all types of serial cases. GPA used in serial property crimes only.

Geographic Profiling Analysis

◆ Investigative methodology that uses the locations of a connected series of crimes to determine the most probable area of offender residence.

◆ Based on theories of environmental criminology and social psychology

◆ Underlying spatial structure – buffer zone theory, least effort principle.

Suitable Crimes

◆ Serial property offenses

robbery, arson, burglary, auto theft, vandalism

◆ Multiple location crimes

telephone calls, credit and ATM cards

◆ Valid link analysis

◆ Valid geographic modeling of the travel distance to crime sites for a particular type of crime, criminal, and geographic area
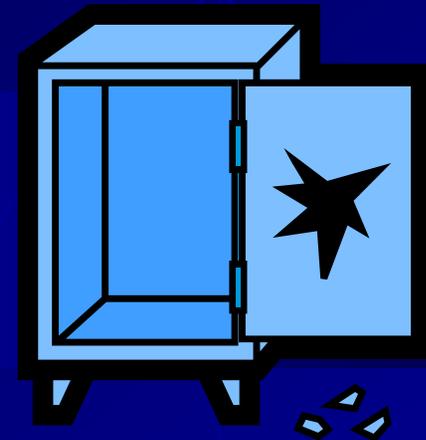
Performance Results
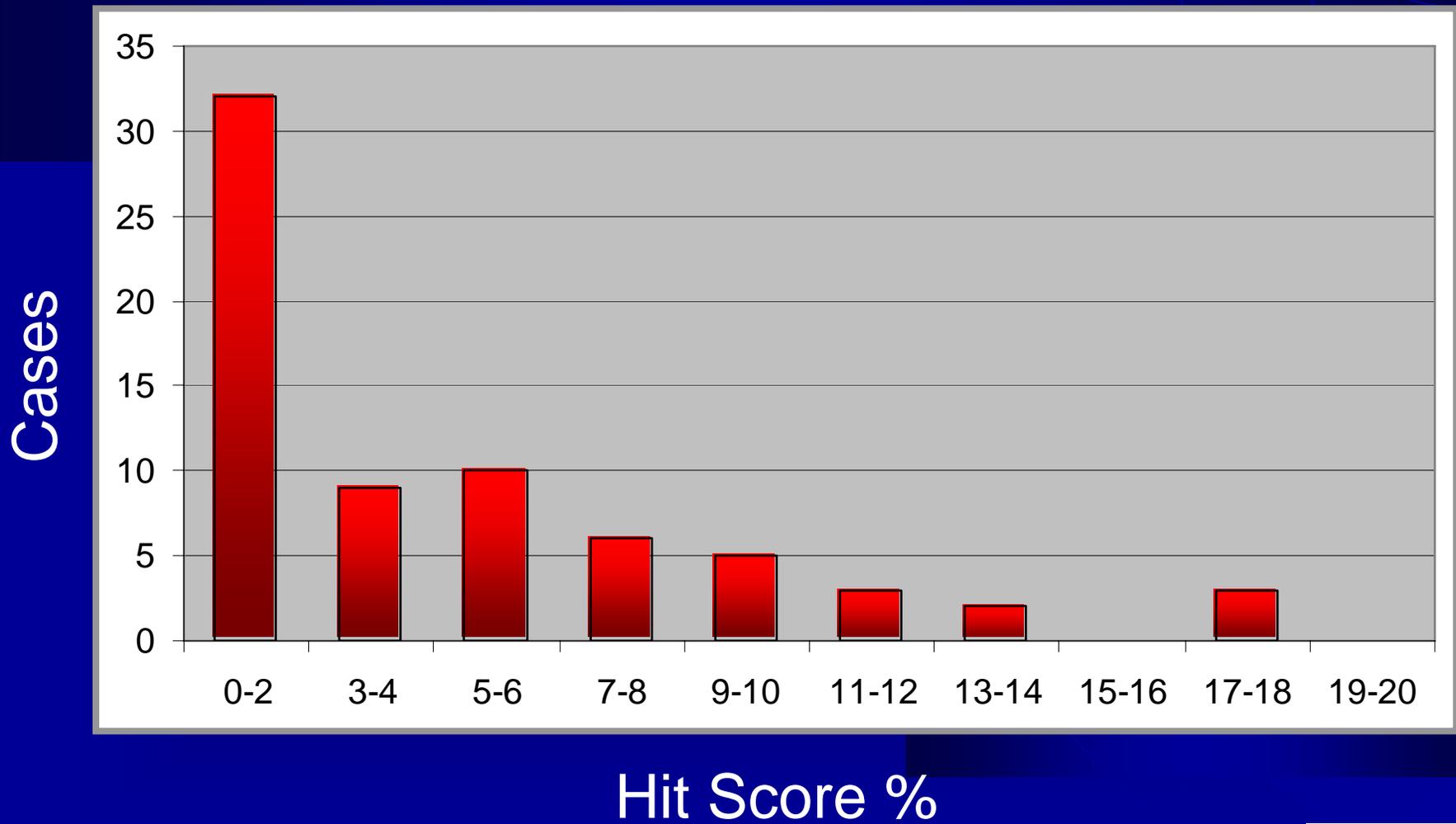
Winter 2004: The Central Crime Analysis Unit submitted a grant proposal to obtain funding for geographic profiling software and training

Grant includes funding for:

◆ Two week training course provided by ECRI

◆ RIGEL Analyst software

◆ Additional computers

Geographic Profiling Analyst Training Program – Week One
(Geography of Crime and Serial Crime)

Monday	Tuesday	Wednesday	Thursday	Friday
Environmental Criminology	Geography of Crime	Geography of Crime	Linkage Analysis	Geographic Profiling
Administration; Introduction; Course and Student Expectations	Geography of Crime - Aggregate Offender Patterns and Hot Spots	Search Exercise	Linkage Blindness and Analysis	Geography and Criminal Investigation; Questions to Consider
Behavioral Geography; Mental Maps; Awareness and Activity Spaces (Exercise)	Crime Attractors and Generators	Search Exercise Debriefing	Crime Linkage Variables (Exercise)	Body Disposal; Child Abduction Murder (Exercise)
Environmental Criminology - Rational Choice Theory (Exercise)	Learning and Displacement	Journey-to-Crime	Matrix Crime Linkage Method	Geographic Profiling
Environmental Criminology - Routine Activity Theory (Exercise)	Crime Location Types	Serial Crime; Investigative Difficulties	Crime Linkage (Individual Exercise)	Geographic Profiling
Environmental Criminology - Crime Pattern Theory	Hunting Methods	Serial Murder and Rape	LinkageCalc Spreadsheet	Final Examination
Place, Space, and Time	Criminal Hunting Grounds and Target Backcloth	Serial Arson, Robbery, and Burglary	Crime Linkage (Group Exercise)	Course Evaluation; Information on Week Two Training Program

Why geographic profiling?

- ◆ Abandons use of offender motive as the factor driving the investigative process
- ◆ Assist in tactical operations. In order to be useful, a geoprofile must….

Investigative Strategies

- Patrol and surveillance
- Police record databases
- Task force suspect lists
- Sex offender registries
- DNA dragnets

Need for geographic profiling at MPD:

- ◆ Major function of the Criminal Intelligence and Tactical Crime Analysis Unit (CITCAU) is to identify, track, and assist in solving serial crimes.

- ◆ CITCAU recently moved from OOD to SIB/OSD and hired 9 civilian crime analysts.

- ◆ As a result, the number of crime series' identified will increase, as will the need for a tool to assist in crime series investigations.

Mask Robbery Series
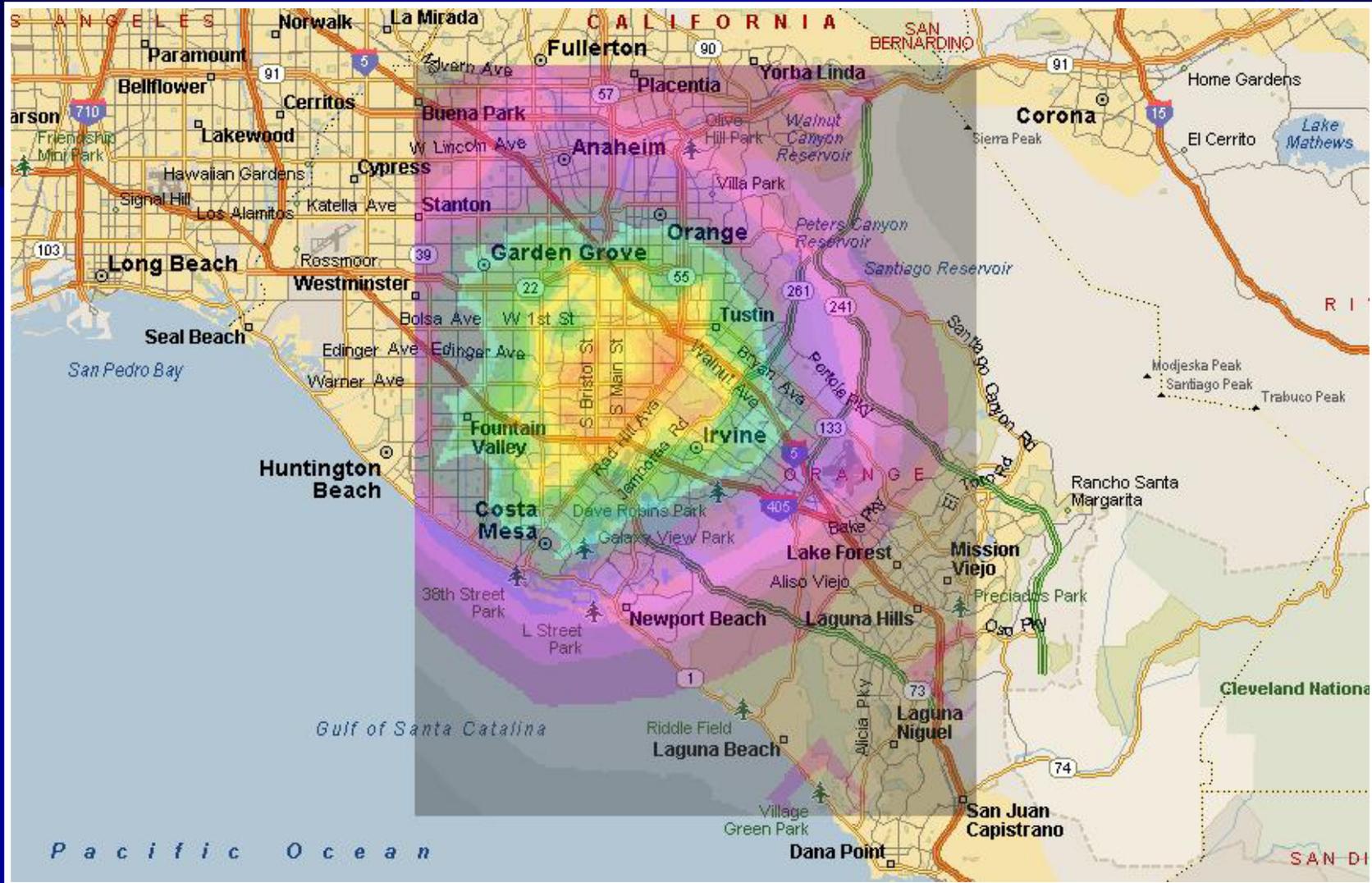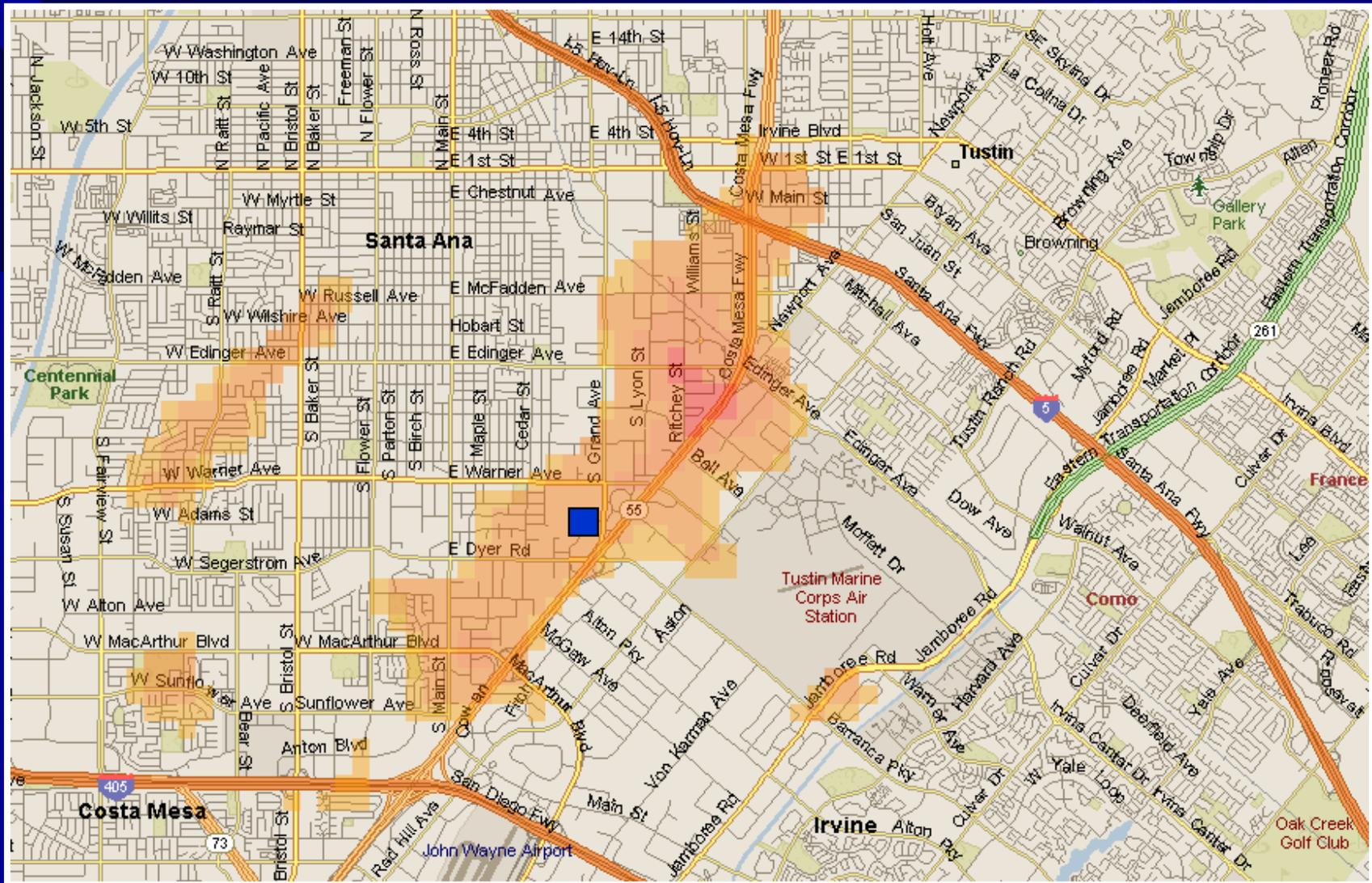
Freeway Phantom Serial Murders

- ◆ Six victims, linked by MO and fiber
- ◆ At first glance, spatial analysis not apparent

Freeway Phantom Victims
Home, Abduction, and Body Recovery

Victim Three – Brenda Faye Crockett

Geoprofile – All Sites
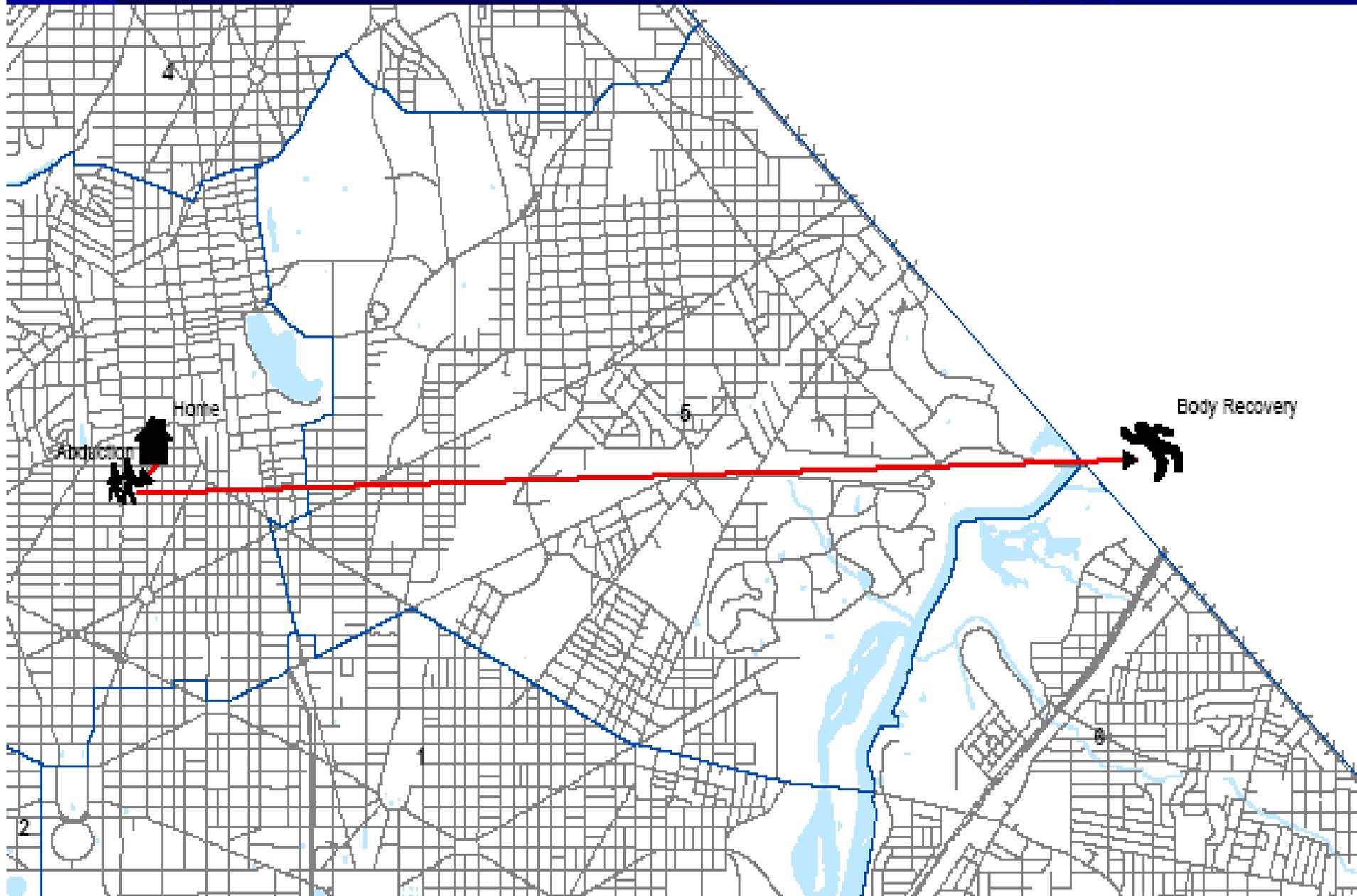
Geoprofile – All Sites -Top 4%

Round Table Discussion