MARKET MONITORING AND VALUATION IN ECONOMIES WITH SCARCE SALES DATA: THE CASE OF POLAND AND RUSSIA

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Introduction

Some of the most important changes in the United States in assessment administration in the last decade are the result of improvements in information storage, manipulation and analysis due to improvements in computer and software technology. In the United States these new information technologies have made it possible to judge more accurately the highest and best use of property, create and maintain an advanced property database and mapping system, provide for statistical quality control, improve public access to real estate information, and develop mass valuation systems for use in property tax administration.

These same technologies can help establish property markets in developing economies and for the privatization process in Eastern Europe. They can also be the basis of an automated and efficient property tax system. This paper will summarize the technical advances that have been made in the automation of assessment and land record systems over the past several years and then show how these new technologies can be used in countries emerging from socialism, using data from Krakow, Poland, and Moscow, Russia as examples.

Elements of Changing Technology (Table A)

Hardware such as powerful mini- and micro-computers and specialized work stations, linkable horizontally by network technology and vertically to larger computers by emulation technologies, have revolutionized the way computers can be used. No longer does computer access have to be controlled by a central computer facility.

Computer technology has had a dramatic history of rapid innovation. Developments can be roughly divided into four phases, or generations.

Computers were introduced for commercial use in the early 1950s. First-generation machines were characterized by vacuum tubes and were very large. Large air conditioners were needed to dissipate the enormous amounts of heat they generated. By modern standards, first-generation computers were very slow, with the time to perform arithmetic operations measured in milliseconds (thousandths of a second). Moreover, they failed frequently, typically "going down" after only two hours of use. By today's standards they were also expensive. Several thousand of these machines were produced.

The second generation, in the early 1960s, used transistor technology. Transistors were much smaller, produced less heat, and were more reliable than vacuum tubes. Processing speed was measured in microseconds (millionths of a second), meaning that these machines were a thousand times faster than first-generation computers. Cost/performance ratios also improved.

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The third generation, beginning in the mid-1960s, used solid-state integrated circuits. This new technology again dramatically improved storage capacity, processing speed, and reliability. Processing speeds were measured in nanoseconds (billionths of a second). Multiprocessing, which allows several programs to operate simultaneously, was introduced. Unlike their predecessors, third-generation computers enjoyed an abundance of software and support services.

The fourth generation emerged in the mid-1970s and is characterized by very large-scale integrated circuits and yet another quantum leap in operating speeds and cost/performance ratio. The speed of modern mainframe computers is measured in picoseconds (trillionths of a second). Minicomputers were introduced in the mid-1970s and microcomputers in the early 1980s, accompanied by a new generation of low-cost, high-performance software.

The software developed for general-purpose database management, statistics and modeling, high resolution graphics, computer-assisted drafting, spreadsheets, word processing and planning, and fourth generation applications development has made it possible for appraisers and planners to use the enhanced computer power to the fullest.

General-purpose software has been programmed to accommodate a wide variety of users. This is accomplished by isolating the various program functions and giving users the means to customize without modifying the program itself. Only basic system and data management functions are hard-coded; application-specific processes are left to be defined by the user and stored in tables or files where they can be modified as needed. In essence, general-purpose software is a program, usually compiled, that lets a user write application code that will be interpreted each time the program is run.

General-purpose software can be either horizontal or vertical. Horizontal is written for a general function such as word processing, data management, spreadsheets, and statistics. Vertical is written for a particular industry, business, or application, such as accounting, hospital management, or assessment administration.

Excellent general-purpose software is available for all types of hardware and at low cost for microcomputers.

Applications of Hardware and Software Advances in Appraisal (Tables B and C)

In the last few years powerful new applications have resulted from combining the enhanced computer power with some or all of the emerging software options. Combining database, statistical, modeling, word processing, planning and drafting software with mini- or micro-computer technology has produced computer-assisted mass appraisal (CAMA) and automated mapping (AM).

Modern CAMA systems typically provide for several broad functions: data management, sales analysis, valuation (Table C).

In a related development in land use planning (see Table D), combining mini- or micro- and work station computer technology with database, computer-assisted drafting, modeling, and graphic software has produced an application called geographic information systems (GIS). These systems were originally developed for spatial analysis needs such as natural resource and land record planning. GISs can completely integrate spatial data and attribute data among different layers. The GIS approach is ideal for multipurpose users.

In a GIS, database data are combined in a variety of ways and presented visually. Each layer in the GIS is like a single map overlay. The geodetic survey control is usually the first layer, and a grid reference system such as the state plane coordinate system is usually the second. Additional base map information, such as the transportation network and other planimetric features, could be next. Other layers might be sewers, zoning, utilities, land use, soil types, topography, property lines, geologic structure, political boundaries, communication networks, streams and bodies of water, and so on. Attribute information for each of these layers is also stored and available for manipulation and analysis (see figure I).

Different layers can be compared. Additional layers and related new data can be generated. For example, the assessment office could create a new map layer by combining the property line, political boundary, and zoning layers. Then the system could select all parcels between one and five acres zoned single-family residential that are in a certain school district but outside the city limits. Accessing the attribute data files could further refine this by requesting, for example, those non-vacant parcels meeting the above criteria in which the houses are less than twenty years old, more than 2,000 square feet, and assessed at less than $100,000. An output map could be printed or plotted with the selected parcels shown by color code or symbols. Specific information on each parcel could also be printed out.

The integration of CAMA and GIS (Table E) has improved the mass appraisal process considerably. Neighborhoods can be defined and neighborhood analysis conducted. Sophisticated spatial research can be used in sales studies. By using information from other databases (such as zoning, soils, flood plains, airport "nuisance" zones, school districts, political jurisdictions, and other physical, social, governmental, and economic divisions) with a GIS, it is possible to develop sophisticated CAMA models. It is also possible to add distance analysis to the models by including such variables as distance to work, schools, shopping, churches, recreation, and other attractive or unattractive features. These models can then be used to produce estimates of value for a wide variety of property types over a large geographic area.

CAMA/GIS Applications in Transition Economies

The management of a real estate data base within a CAMA/GIS environment provides a powerful tool to aid the development of rational real property markets. For real property markets to develop, major market participants need to get information about economic trends and actual transaction prices as soon as they occur. The ability of GIS systems to create customized maps that depict changing economic trends in population and incomes, and track property sales, can help potential developers determine the highest and best use of land. The ability of CAMA technology to use limited sales data to create valuation models that can be used to provide suggested prices for unsold parcels of land, whether vacant or improved, can be useful to municipal officials responsible for privatizing municipal land properties or property tax officials interested in creating a value-based property tax system. In addition to specific valuation estimates, rent and sale price gradients for various uses of property can be easily created and displayed on a map. This information can be made available to brokers, developers and the general public on a regular basis.

Information of this type can be exceptionally helpful in establishing rational markets that reflect well-known economic principles based on special location theory. For example, a rent gradient for storefronts that varies depending on distance from the commercial areas of the city can help shop owners know what rents to pay and landlords what to charge.

As more data on actual transactions are added to the database, then, valuation models can quickly be updated. The reliability of the rent and sale price gradients gradually becomes better and more encompassing. CAMA/GIS technologies can therefore speed up the process of creating rational land markets better than informal methods of communication about the operation of markets. In the United States the multiple listing services that provide transaction data to brokers have acted to stabilize and rationalize real estate markets for years.

Application of CAMA/GIS Technologies to Krakow, Poland, Real Estate Data

The author and two colleagues visited Poland in October of 1991 for a study as part of two USAID grants. The first visit was to develop an appraisal method that could be used to determine the highest and best use of properties that municipalities had inherited from the state. Both missions concentrated their activities in Krakow, the former capital of the country. Krakow has a population of 750,000.

The first mission concentrated its efforts on investigating the infrastructure that would need to be in place in order to make any kind of appraisal work possible. The mission investigated the state of the land records system and found that the maps, planning documents and ownership records were in reasonably good shape. The mapping system and the legal and fiscal cadastre were modeled on the German/Austrian model

and as a consequence parcel information and title information was tied together by a common identification number. In addition, the Department of Geodesy and Land Management of the Voivodship had created the software to implement a GIS system and had automated the maps and legal and fiscal cadastral information in about 20 percent of Krakow by the time of our visit. (See Maps 1, 2, and 3 as examples.)

Given the infrastructure we found in place, the mission was able to collect market information on a range of property types on the initial visit. Data were collected on about seventy properties. We were able to get sales information on residential homes, single apartments, vacant land, small factories, retail stores, and apartment houses, as well as rental information for retail stores, offices and apartments. In addition, both distance measures from central Krakow and information on size were obtained. For single apartment sales we obtained the geographic coordinates of the buildings, and for residential sales, a complete description of the improvement. Table G summarizes the main features of the database.

The following usage codes apply to that table:

Usage Codes	
2	Single Apartment Sales
3	Land Sales
4 - 7	Commercial and Industrial Sales
41	Commercial Rents
21	Apartment Rents

Based on these data it was possible to investigate how well the real estate market appeared to function. Looking at simple relationships like the relationship between size and value or between value and location allowed us to determine how well organized the market had become. For instance, Graph 2 shows a strong relationship between size and value for apartment sales. Likewise, Graphs 3 and 4 show that value expressed in total dollars and price per m^2 is inversely related to distance from the center of the city. Graph 5, for example, shows that there is a rational rent gradient for storefronts in Krakow.

On the segment of the data that was the largest, the apartment sales (Table H), we were able to investigate, using GIS technology, the spatial distribution of price per square meter. Using the three-dimensional graphics and contour mapping capacity of our GIS software we were able to examine the relation of prices per square foot, distributed spatially across Krakow. Graph 6, for instance, shows that price per square foot rises as you approach the center of Krakow, known as Rynek Gloway, and then falls as you move away. Graph 7 shows the same information expressed as ISO value curves. These are similar to contour elevation lines on a base map. Each line is representative of an equal value area. The value of this simulation is that it is possible to build value gradients for different property types that could be used as references

for municipal officials making development decisions or for individual buyers and sellers who are interested in making bids or ask offers for a particular property. As more information is added to the database, more accurate grids can be created that will enhance the information about values by location. This too can become available to the market makers. A formal market monitoring project was started during our second visit to Kracow in December of 1992. During that visit we established a formal market monitoring unit centered at the Kracow Real Estate Institute. A data collector and computer expert was hired to support the project. Data listing sheets were developed for apartments, land, and non-residential building and the process of collecting data for market transactions of these property types was begun. (See Appendix 1 for data listing sheets and data base definitions.)

The first data from the project are now available, detailing about 150 recent land sales. Graphs 7A, B, and C show the land price gradient developed from these sales (in two and three dimensions). The price gradient shows a 10 to 1 ratio for land value from the center of the city to 20 km out. This is an exciting finding because it indicates that location is being capitalized into the value of the land and the magnitude of the capitalization effect is close to international standards.

We were also able to develop from the data a very good land valuation model using multiple regression analysis, that had 13 factors and explained 75 percent of the variation in sales prices. This model could be used to price land for tax purposes or as the basis of land value estimation as part of a development project.

The analysis we can do with these data is also useful in identifying what data should be collected on a mass basis to support valuation. In the Kracow land case, 39 factors were collected for the test and analysis shows that only 13 are related to market value.

Application of CAMA/GIS to Moscow, Russia, Real Estate Data

In June of 1992, I was part of a World Bank Mission to look at local finance issues. One of its mandates, for which I was responsible, was to suggest an administrative structure for the property tax and investigate the viability of creating a Real Estate Information System that could be part of a GIS system. To accomplish this, I visited the existing institution that had property-related information.

Moscow currently has one property inventory agency, the Bureau of Technical Inventorization (BTI), and three separate registration agencies, one for land and one each for residential and non-residential building; these three agencies are responsible for the privatization of property. Physical information about all three types of property is kept in the BTI, ownership information is stored in the three registration agencies. Unfortunately, at the present time, ownership and market price information on re-sold property (residential privatizations are done at no cost) are not being relayed back to the BTI. Appendix IV describes the agencies in the current system.

The records of the BTI are extremely detailed and mostly manual. Two of the thirteen BTI offices are computerized using networked PC equipment; the land registration agency has not started privatizing yet, as legislation is still pending. The residential property registration agency (the most active of the three) has privatized 135,000 dwellings since it started recording in 3/92; the current rate is 2,000 privatizations per day. They have a flat file database system that is hard coded.

BTI produces a value estimate, based on the cost of construction for each piece of property in its files; this value has not been indexed since 1984, so it is of relatively little use for assessing the market value of property. Actual transaction prices of sales are filed by the privatization agency. However, they may be inaccurate, as they are under-reported by owners to avoid a 20 percent notarization tax.

In order to remedy the situation and get more accurate reporting of sales data, several mission members started a market monitoring program that used real estate brokers as primary sources of data. The arrangement with brokers was based on a simple trade. They would provide us with sales information and we would organize the sales and give them back value maps for apartment prices and a land price index on a regular bases. (See Graphs 9 and 10.)

Using Moscow data we developed a model that required information on living area, kitchen size, number of floors in the building and the building's distance from Red Square. The model was developed from a sales file we were given that contained about 2,000 sales from the secondary apartment market. Each sale had 34 characteristics including price (see Table L for available list). This model produced acceptable predictions on a subset of the sales that were withheld from the modeling process. The coefficient of dispersion on the test sample was about 20 percent.

Mass appraisal techniques are useful for estimating land values even where there are no land sales. In the United States, econometric techniques have been developed to model prices that include land and improvements in such a way that the contributory value of each can be allocated and in many states separately taxed.

Russia does not sell land, yet the price of an improved parcel of land includes the capitalized value of the land. The situation is no different than in many western cities where there is little or no vacant land and consequently most parcel prices must be decomposed into land and building components using econometric techniques. Using the Moscow data, for instance, we were able to create a land price index that can be used to adjust the base rate for the land tax for location differential from the center of the city. Prior to our analysis their adjustments were just guessed at (see Graph 10 for index). The index is also an indicator of the development of the land market. Currently in Moscow the index is flat. This indicates that the value of location is not being fully capitalized into land values as yet. The ratio is about 1.5 to 1 as compared to 10 to 1 in Kracow.

Institutional Comparisons Between Poland and Russia

In creating real estate information systems to aid the development of real estate markets, no one solution or model will work everywhere. In Poland, for instance, the land records and maps are in good shape and the legal cadastre is well maintained. Selling prices are fairly accurate because they are monitored by the treasury department. Data from brokers and appraisers are also available as a cross check. Poland's weakness is the building registry. Some characteristics are available on size and construction type, but more data will be needed to construct accurate valuation models as the market develops. In addition, in Poland not all buildings are recorded on the land register. A discovery program is needed to ensure that all the property that can be taxed is discovered.

In contrast, in Russia the building registry is complete and very accurate, and the land records are incomplete. The titling process is fragmented and the legal cadastre has no central depository. In the long run this will cause major problems if some uniform method of recording titles is not put in place. Likewise, in Russia land is not sold as yet so there is no way to have a value-based land tax. Getting building values is also a problem, for two reasons. First, they are part of the total price of the parcel, and second, the total parcel price is not reported accurately to the various titling committees. The first problem can be addressed because there are econometric techniques that can decompose prices that include both the value of land and building into separate parts. The second problem must be addressed by using informal sources of data.

Valuation Issues in Poland and Russia

One of the interesting findings associated with valuation for both countries is that market approaches using mass valuation techniques will probably be preferred, at least in the short run, because capital, resources and land markets are not efficient as yet. Income and cost approaches are not feasible, yet market prices for various types of improved land are becoming available.

In Poland it is possible to get information from the legal cadastre managed by the courts, as transactions are monitored by the state treasury department and sales are not allowed to be completed if the prices are judged to be too low. In Russia, the information at the titling agencies is not accurate, but information we were able to get from brokers was reliable.

Conclusions

There are two main findings that can be made from the examination of institutional structures in both Poland and Russia. First, the land and building records are in fairly good shape and mapping and planning documents have been kept up to date. Second,

the markets are already beginning to work for many types of land uses. Once a system of mass valuation is established, it can be used to support many types of value-based taxes as well as provide all the players in real estate markets with information about how the market is developing. This information could greatly accelerate the rate of privatization as well as the functioning of an effective secondary sales market.

Table A

Key Elements of Changing Technology

Hardware

1. Powerful mini and micro computers
2. Network technology
3. Work stations

Software

1. Generic Data Base Management Software
   - A. flat file structure
   - B. tree structure
   - C. network structure
   - D. relational structure
2. Generic Statistical and Modeling Software
3. High Resolution Graphics Software
4. Computer-Assisted Drafting Systems
5. Word Processing Software
6. Project Planning
7. 4th Generation Application Development Software Languages

Table B

Applications of Technological Elements in Property Tax Administration

Technological Elements

1. Data Base Software
2. Statistical Software
3. Modeling Software
4. Word Processing Software
5. Project Planning Software
6. Computer Assisted Drafting
7. Mini/Micro Computer Hardware

Application - Computer-Assisted Mass Appraisal (CAMA)
- Computer-Assisted Mapping

Assessment Functions Supported

1. Assessment records management
2. Sale Analysis
3. Valuation
4. Quality Control (sales ratio studies)
5. Management reports and public information

Impact on Tax Policy and Administrative Efficiency

Supports:

1. market value assessment
2. short assessment cycles
3. up to date land and improvement data records and maps
4 statistical quality controls

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Table C

CAMA Systems Capabilities

* Importing Data
* Selection of Data Items
* Logical Ordering of Data and File Structure
* Security
* Data Editing and Manipulation
* Creation of Specialized Files
  (Sales file, Permit file, Tax Delinquent file)
* Maintenance
* Data Display and Tabulation
* Statistical Testing
* Valuation Modeling
* Project Planning
* Form Generation
* Ad hoc Inquiry and Reporting

Table D

Application of Technological Elements in Land Use Planning

Technological Elements

1. database
2. computer-assisted drafting
3. modeling
4. high resolution graphics
5. mini/micro workstation technologies

Application – geographic information systems (GIS)

Planning Functions Supported

1. public information
2. updating maps
3. monitor growth and development
4. aggregate data in subareas
5. perform/display professional analysis

Impact on Land Use Planning

1. improved policy formulation
2. system-wide analysis
3. horizontal and vertical forecasting
4. multiple WHAT IF scenarios

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Table E

CAMA/GIS Synthesis

Benefits -- Property Tax

1. access to demographic, environmental, and topographic data (improved valuation)

2. access to integrated data base mapping capacity (improved mapping capacity)

3. access to integrated data base graphic display capacity (improved quality control)

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Table F

Multi-Use Database

Data Report

	PROPERTY	USAGE	LOCATION	AREA	PRICE	TRANBDTN	CURRENCY
1	2	2	5	27	13640	0	0
2	2	2	11	42	20910	0	0
3	2	2	13	47	27270	0	0
4	2	2	10	47	21820	0	0
5	2	2	13	35	16360	0	0
6	2	2	2	136	67270	0	0
7	2	2	3	90	55000	0	1
8	2	2	4	38	20000	0	1
9	2	2	2	110	54550	0	0
10	2	2	3	98	53640	0	0
11	2	2	2	80	40910	0	0
12	2	2	2	92	50000	0	0
13	2	2	9	73	36360	0	0
14	2	2	3	70	32000	0	1
15	2	2	16	28	12730	0	0
16	2	2	3	38	20450	0	0
17	2	2	9	50	25450	0	0
18	3	3	7	750	15000	0	1
19	3	3	13	1090	7270	0	0
20	3	3	13	330	3180	0	0
21	3	3	16	2350	6800	0	0
22	3	3	16	8350	10640	0	0
23	3	3	13	2400	15000	0	1
24	3	3	15	1000	6500	0	1
25	3	3	9	1600	20360	0	0
26	3	3	15	700	38180	0	0
27	3	3	14	5900	214550	0	0
28	3	3	15	1500	5450	0	0
29	3	3	15	2000	16360	0	0
30	3	3	10	1000	12000	0	1
31	3	3	2	5700	54550	0	0
32	3	3	14	600	6360	0	0
33	3	3	15	1500	81820	0	0
34	3	3	12	2000	109090	0	0
35	4	4	1	140	63640	0	0
36	4	72	30	2700	318000	0	0
37	4	73	10	840	70000	0	1
38	4	2	3	660	105000	0	1
39	4	2	1	450	250000	0	1
40	4	5	2	65	50000	0	1
41	4	5	1	140	68730	0	0
42	4	41	2	60	1090	1	0
43	4	41	3	50	1360	1	0

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Table F

Multi-Use Database

(cont.)

Data Report

	PROPERTY	USAGE	LOCATION	AREA	PRICE	TRANSDTN	CURRENCY
44	4	41	3	20	91	1	0
45	4	41	1	50	450	1	0
46	4	41	2	32	58	1	0
47	4	41	1	48	390	1	0
48	4	41	2	34	200	1	0
49	4	41	2	202	1470	1	0
50	4	41	6	110	400	1	0
51	4	41	4	137	500	1	0
52	4	41	7	80	255	1	0
53	4	41	4	600	2180	1	0
54	4	41	11	45	82	1	0
55	4	41	10	20	55	1	0
56	4	41	5	240	327	1	0
57	4	41	0	400	2180	1	0
58	4	41	1	250	795	1	0
59	2	41	2	110	727	1	0
60	2	41	1	150	1150	1	0
61	2	21	1	110	600	1	1
62	2	21	1	55	250	1	1
63	2	21	1	60	318	1	0
64	2	21	1	200	727	1	0
65	2	21	7	110	455	1	0
66	2	21	5	140	455	1	0

Table G

Apt. Database

NCSS Editor (Data List)
C:\poland\apsales

Row	Label	Row	PROPERTY	USAGE	LOCATION	AREA	PRICE	C14	C1
Prokocim		1	2	2	5	27	12640	250	30
os. Nisped		2	2	2	11	42	20910	180	50
os. Na Ska		3	2	2	13	47	27270	500	50
os. Strusi		4	2	2	10	47	21820	500	10
os. Na Ska		5	2	2	13	35	16360	100	10
Zulawskiego		6	2	2	2	136	67270	200	15
Krolewska		7	2	2	3	90	55000	300	15
Olsza		8	2	2	4	38	20000	200	25
Lobzowska		9	2	2	1.5	110	54550	200	30
Lea St.		10	2	2	3	98	53640	270	31
Grzegorzeck		11	2	2	2.5	80	40910	150	30
Slowackiego		12	2	2	2	92	50000	150	25
os. Oswiaj		13	2	2	9	73	36360	100	25
Wroblewska		14	2	2	3	70	32000	400	25
os. Na Sko		15	2	2	16	28	12730	300	30
Falata St.		16	2	2	3.5	38	20450	270	20
os. Wyslou		17	2	2	9	50	25450	500	25
nowe huta		18	2	21	8	29	13000	350	35
nowe huta		19	2	21	6.6	37	16500	350	30
nowe huta		20	2	21	9	44	21000	350	35

Enter ' to continue, or ESC to quit —

19

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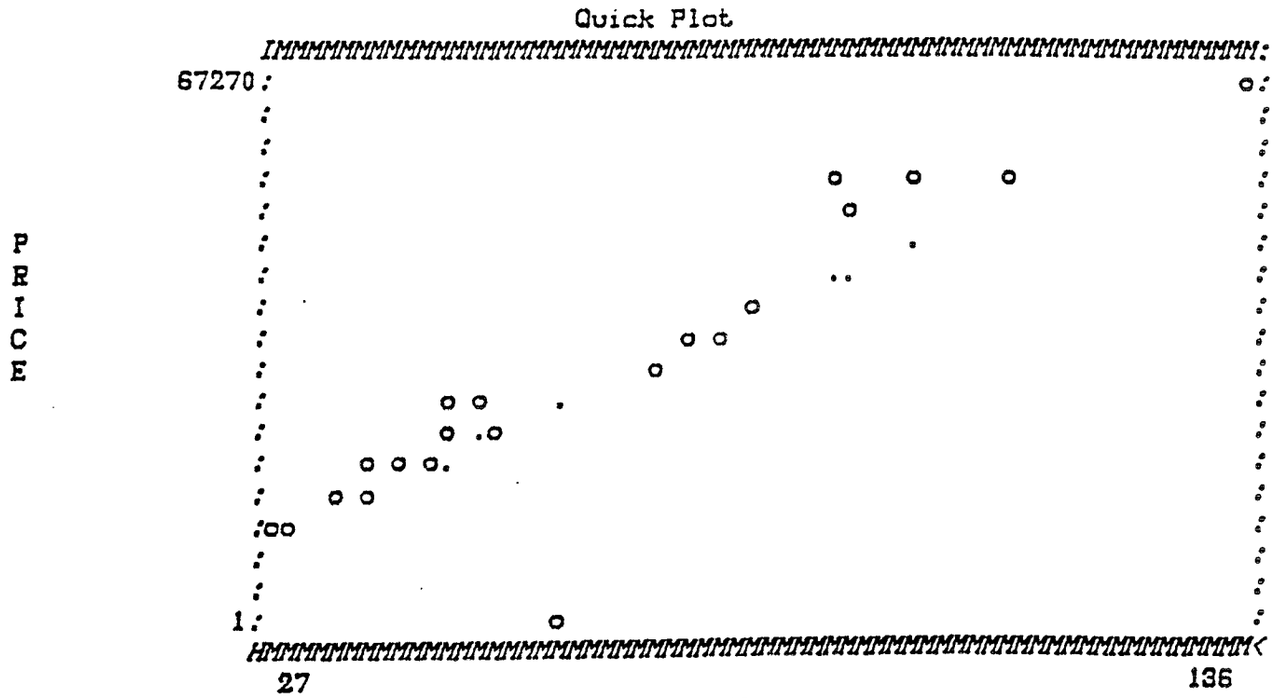
Table H

Simulation of Increased Tax Yield

GRAPH 2

Apartment Sales



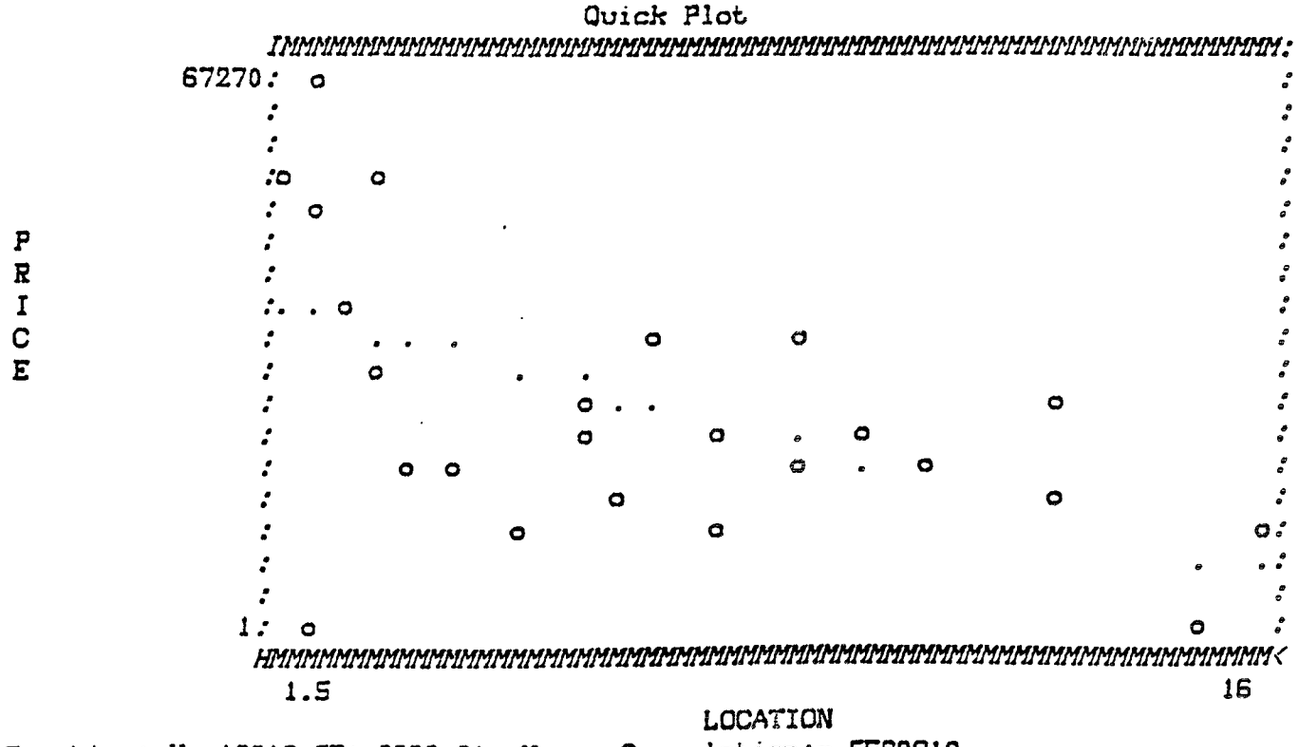
Equation: Y=-3554.24+ 526.8287* X: Correlation: .8589476
Enter *DY* to continue, or ESC to quit —

140.718

GRAPH 3

Apartment Sales

Sales Gradient



Equation: Y= 43219.57+-2222.61* X; Correlation:-.5592912
Enter *DY* to continue, or ESC to quit —

28

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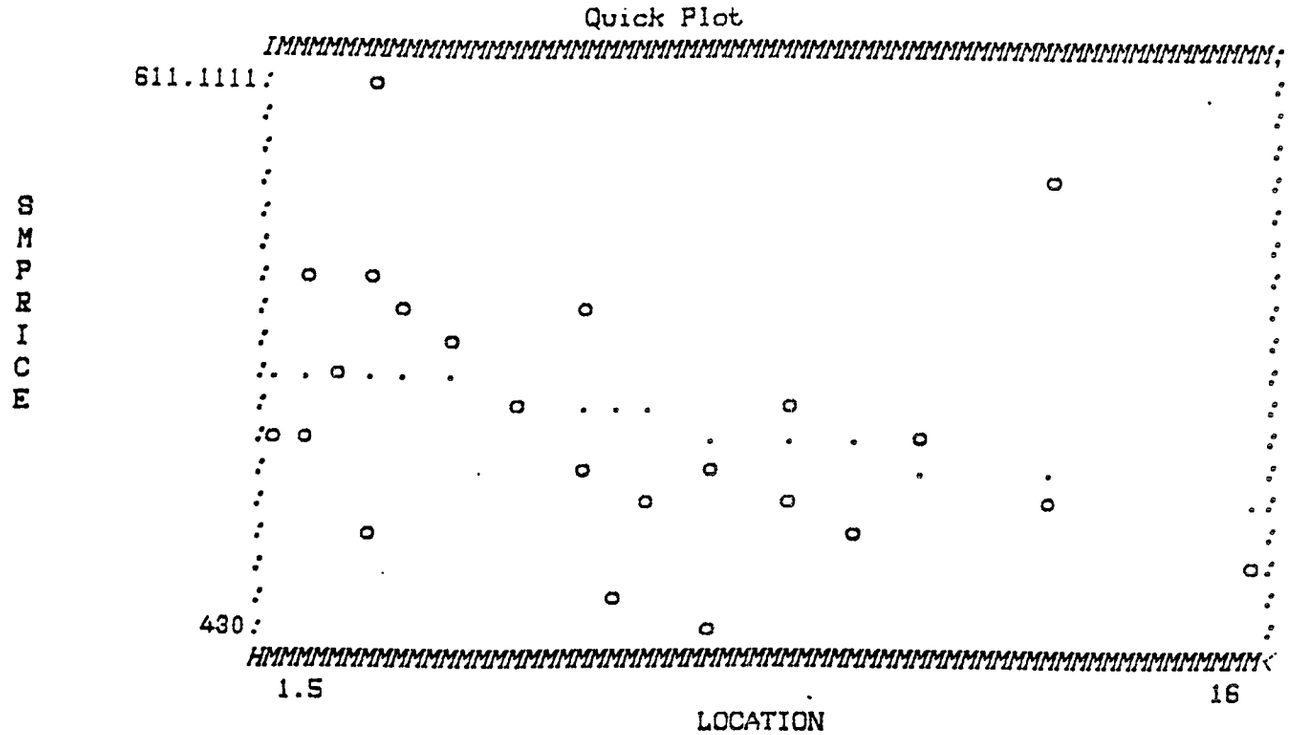
GRAPH 4

Apartment Sales

PSQM GRADIENT



Equation: Y= 523.7057+-3.419019* X; Correlation:-.315078

Enter *DY* to continue, or ESC to quit --

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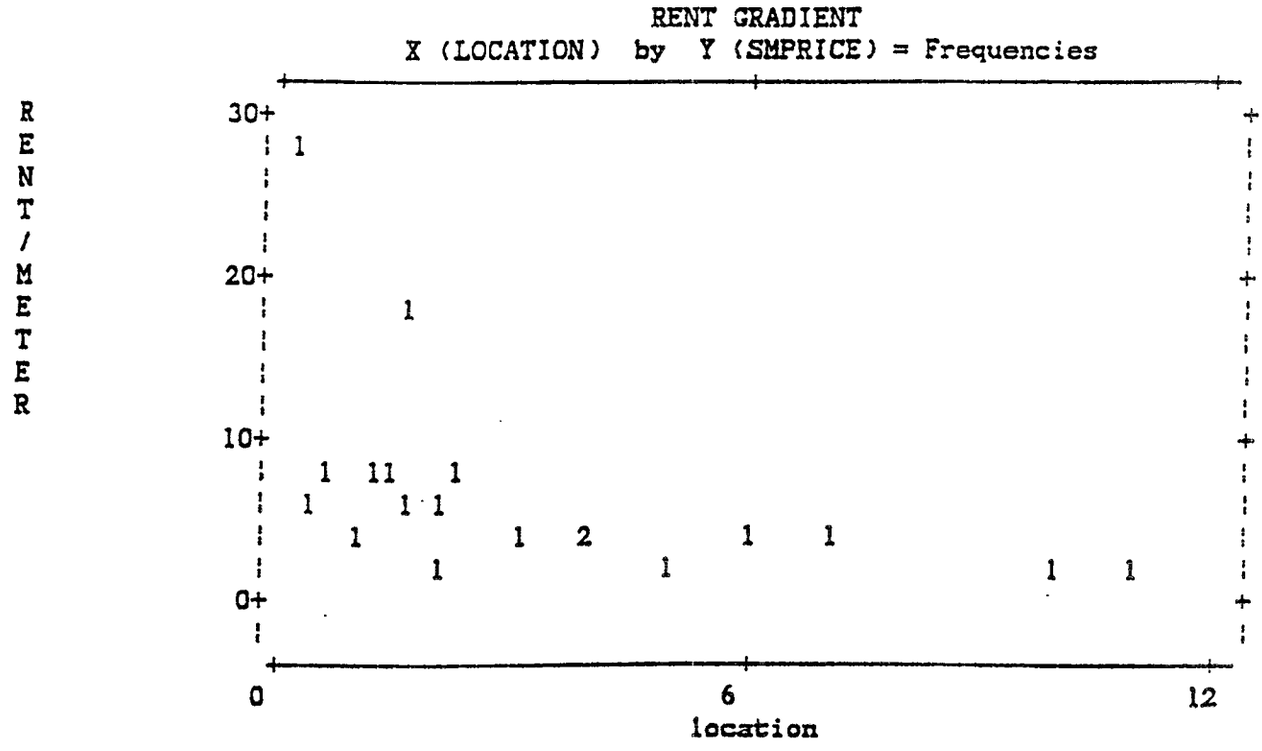
GRAPH 5

Stores

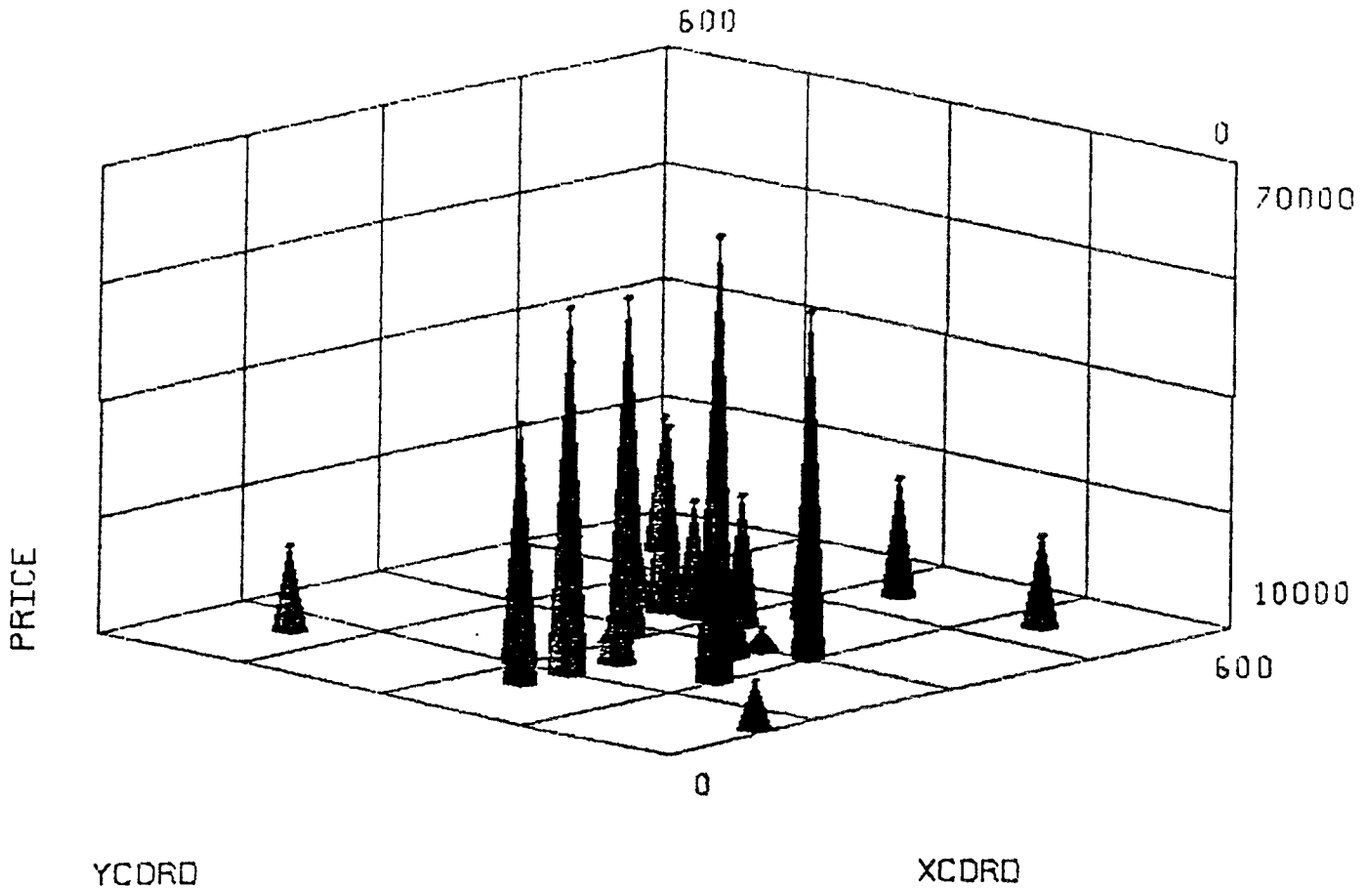
Rent Gradient



Enter *DY* to continue, or ESC to quit —

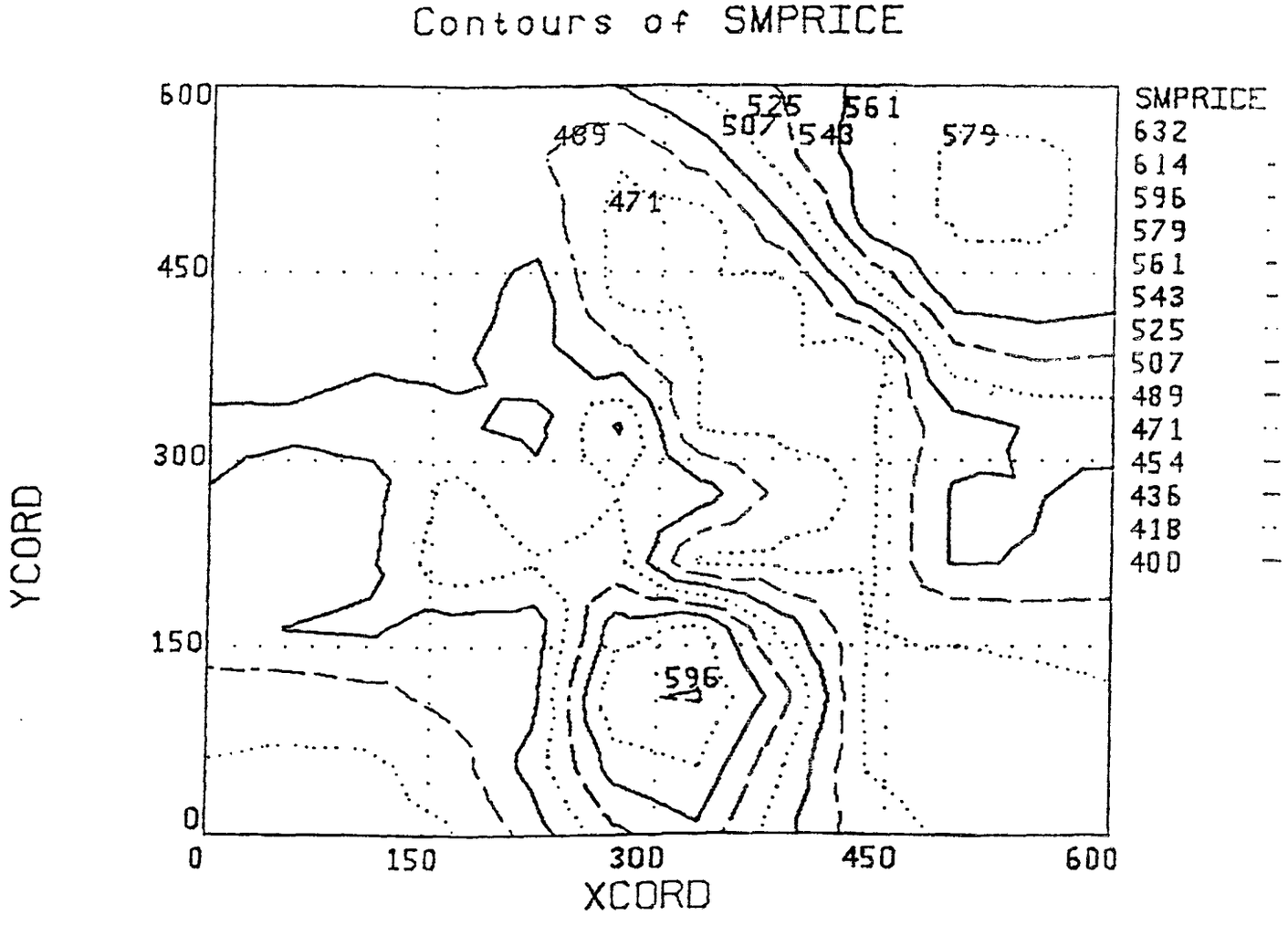
3DGRAPH 6

$/M² by X, Y Coordinate



GRAPH 7

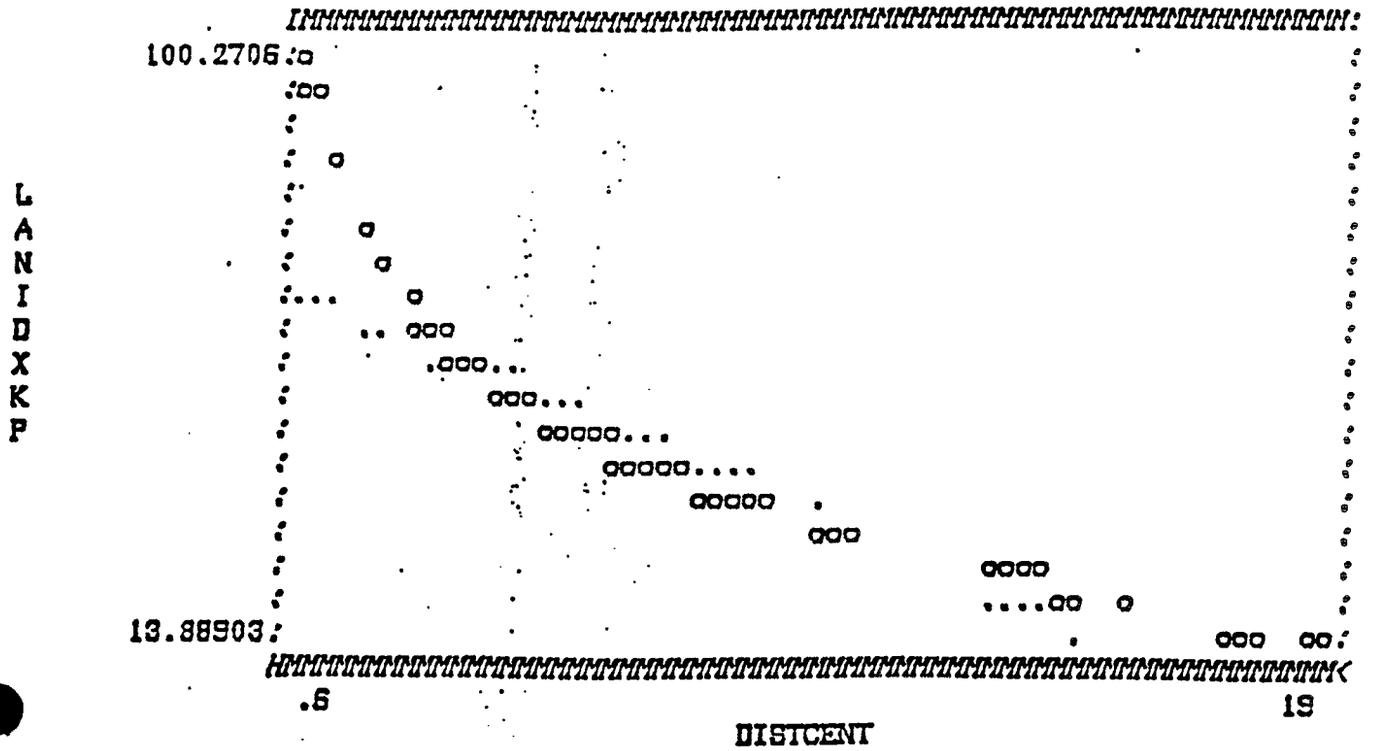
P/M² Isocurves



T45 723

GRAPH 7A

Quick Plot

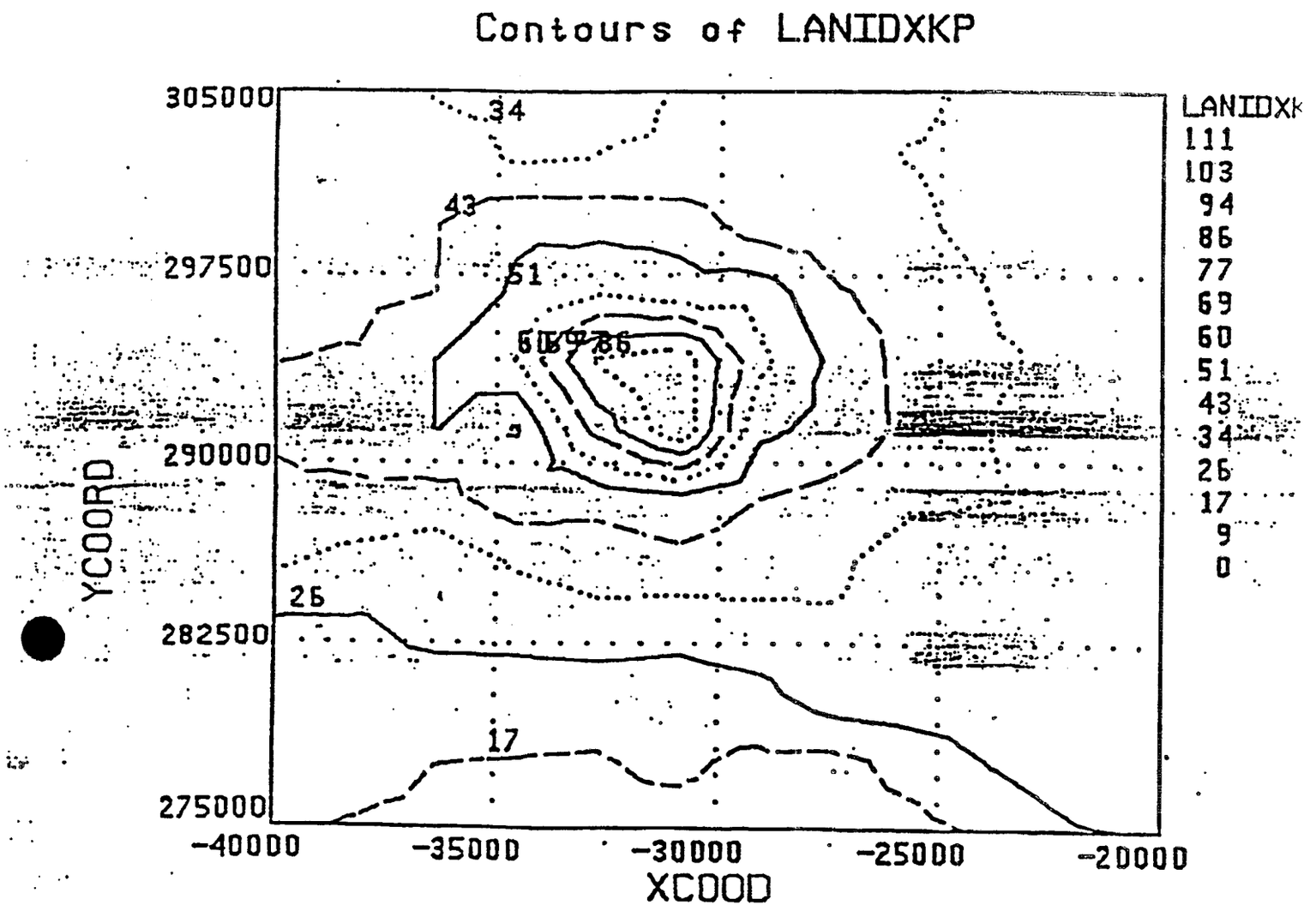


Equation: Y= 67.91079+-3.599598* X: Correlation:-.9101867

Enter *DY* to continue. or ESC to quit —

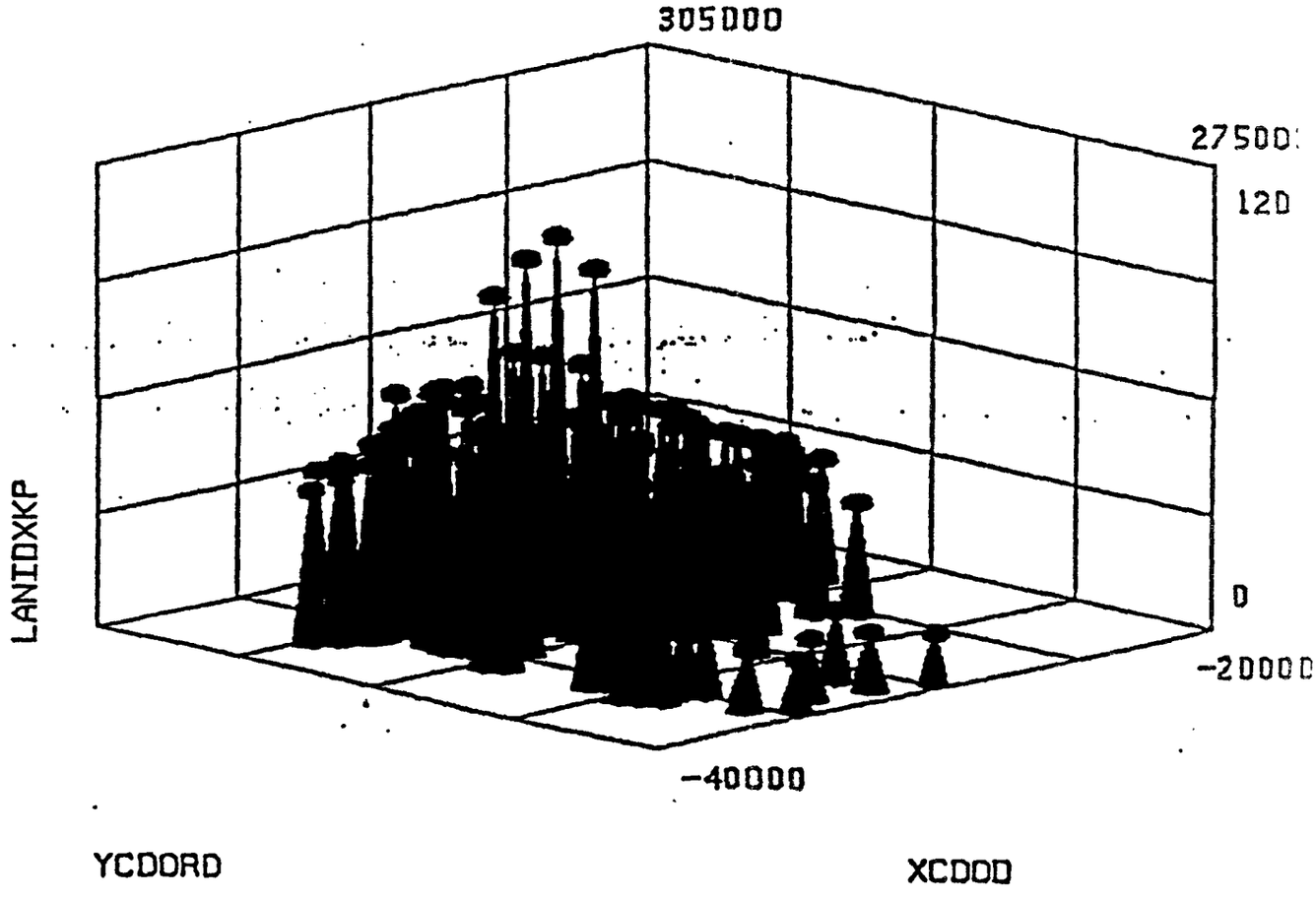
T46 724

GRAPH 7B



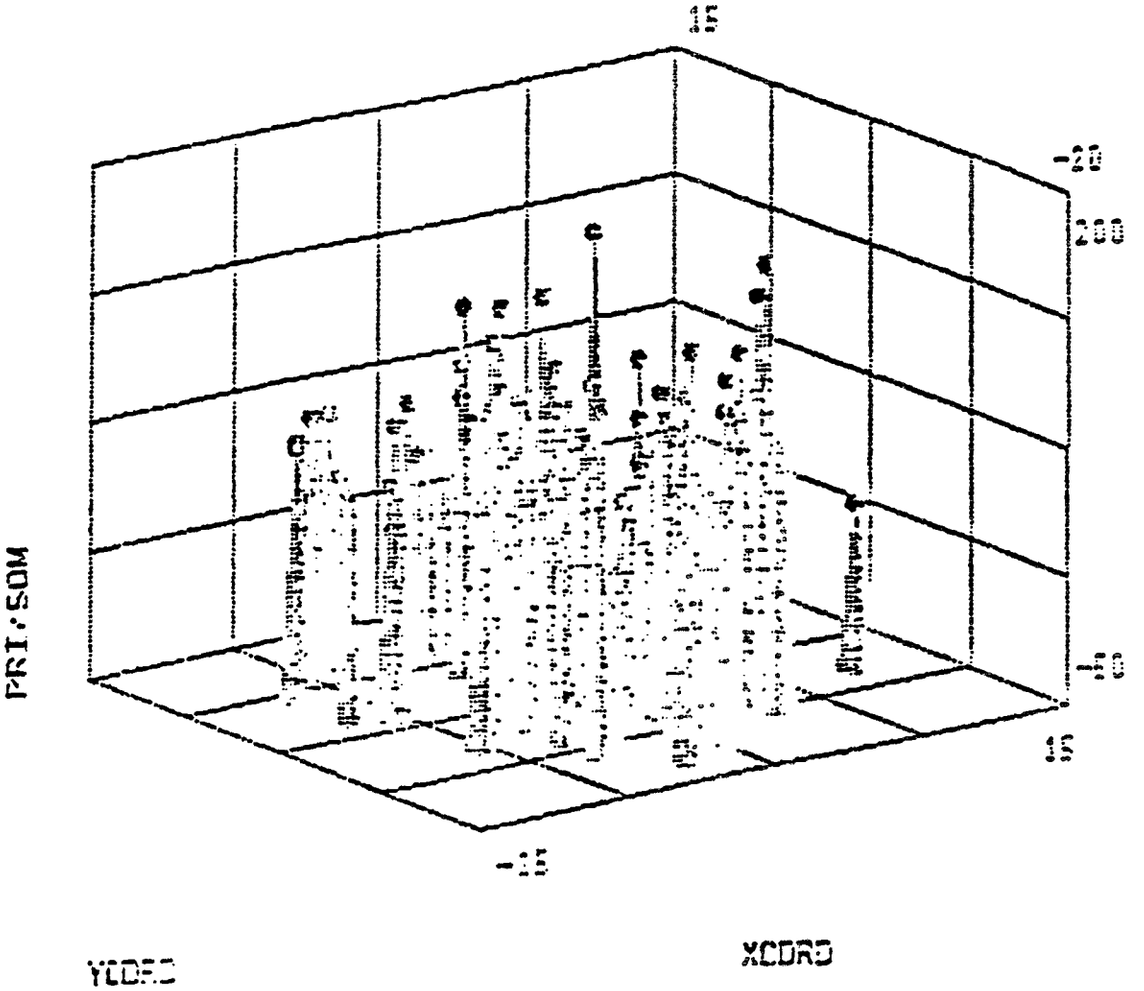
747 725

GRAPH 7C



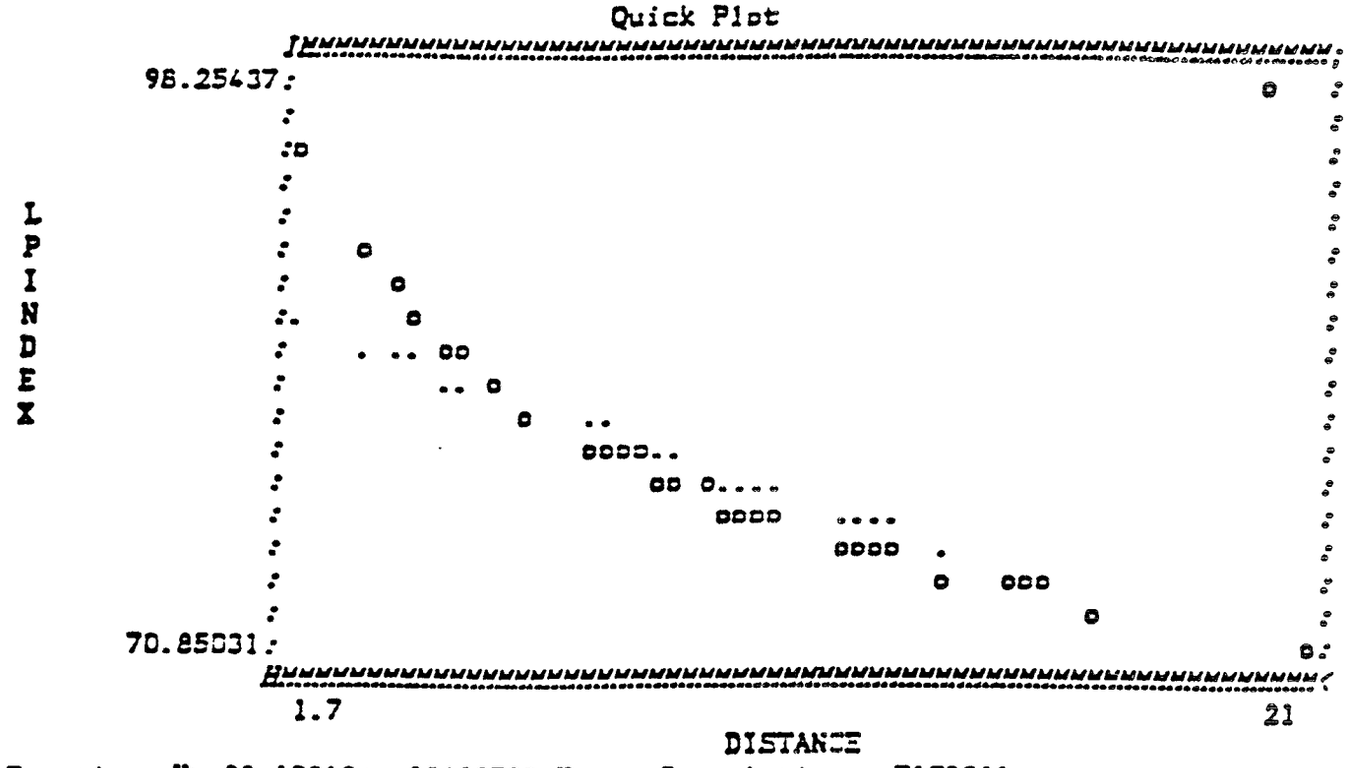
THR 726

GRAPH 9



+49.727

GRAPH 10
Land Area Index

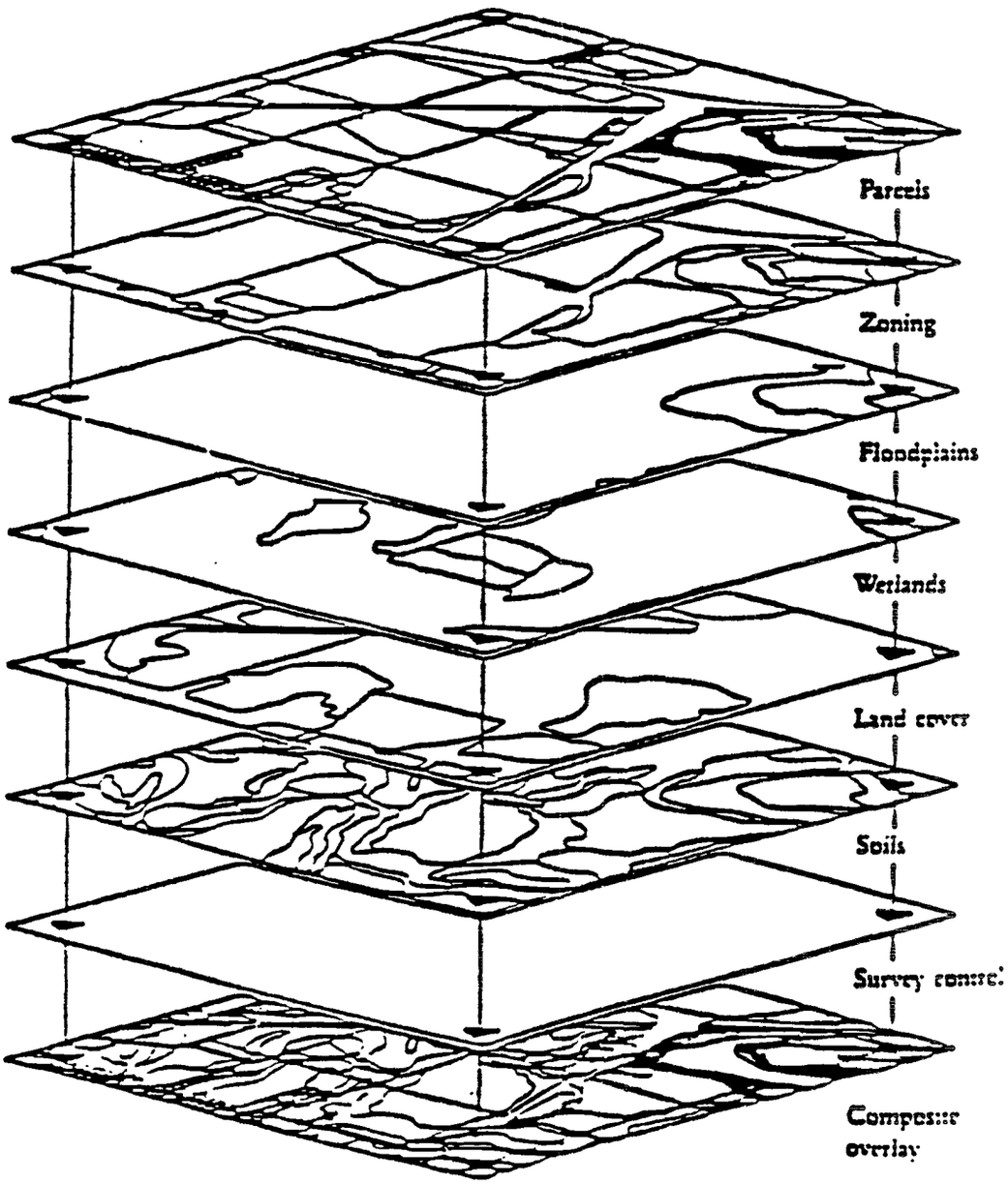


Equation: Y= 88.10818+-.8863672* X; Correlation:-.7658311
Enter *DY* to continue, or ESC to quit —

+50 789

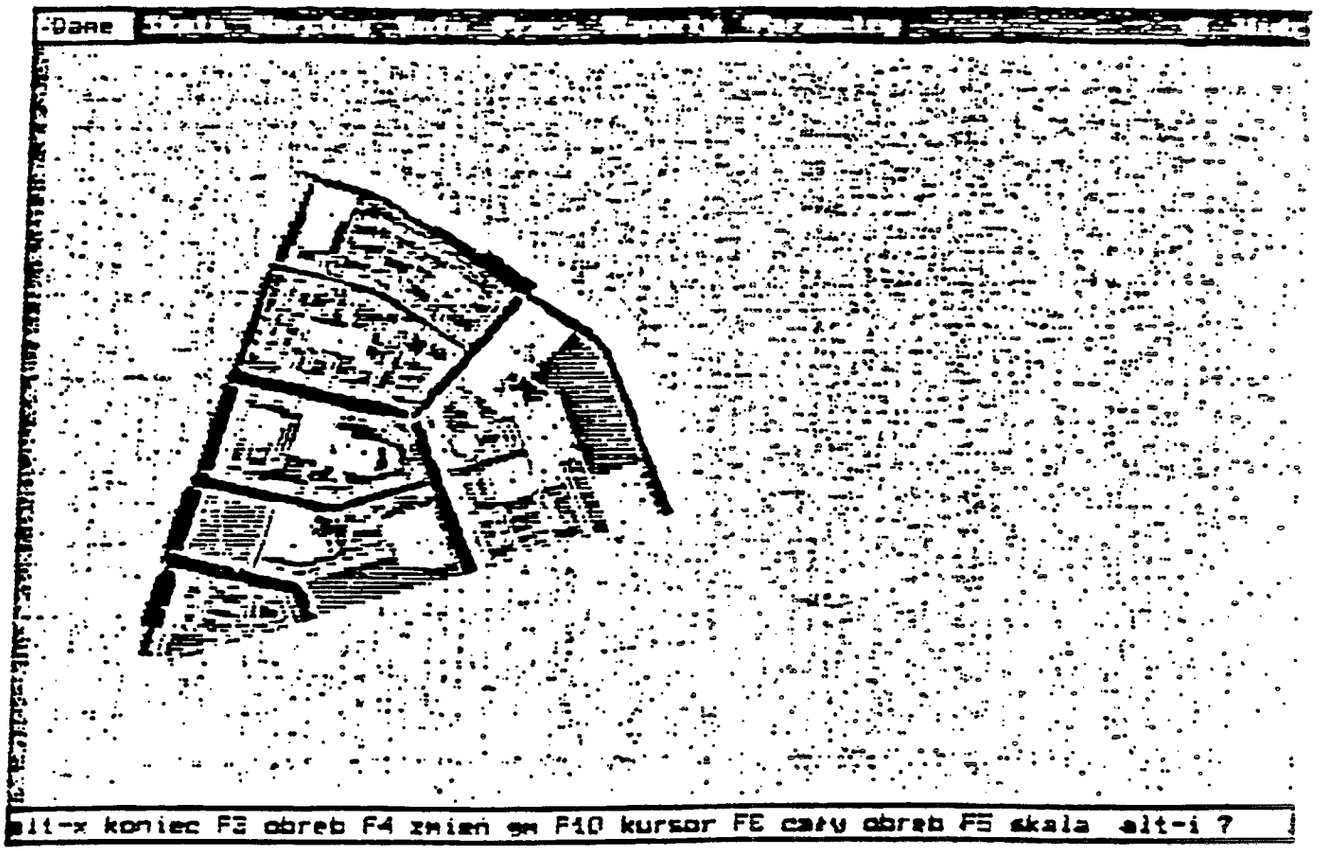
FIGURE 1

Multiple Layers in a Geographic Information System



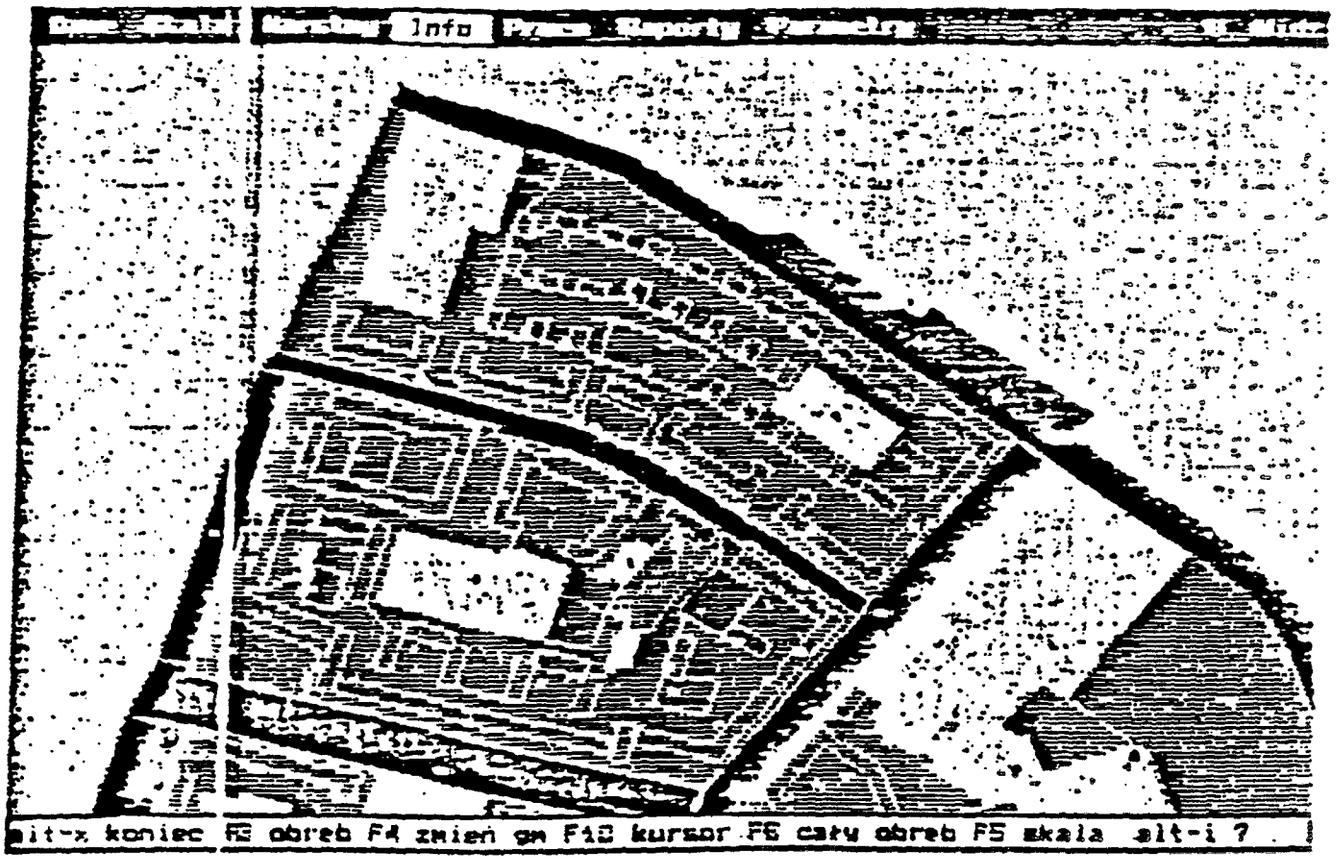
+5+729

MAP 1


Dane
alt-x koniec F3 obreb F4 zmień F10 kursor F8 cały obręb F5 skala alt-i ?

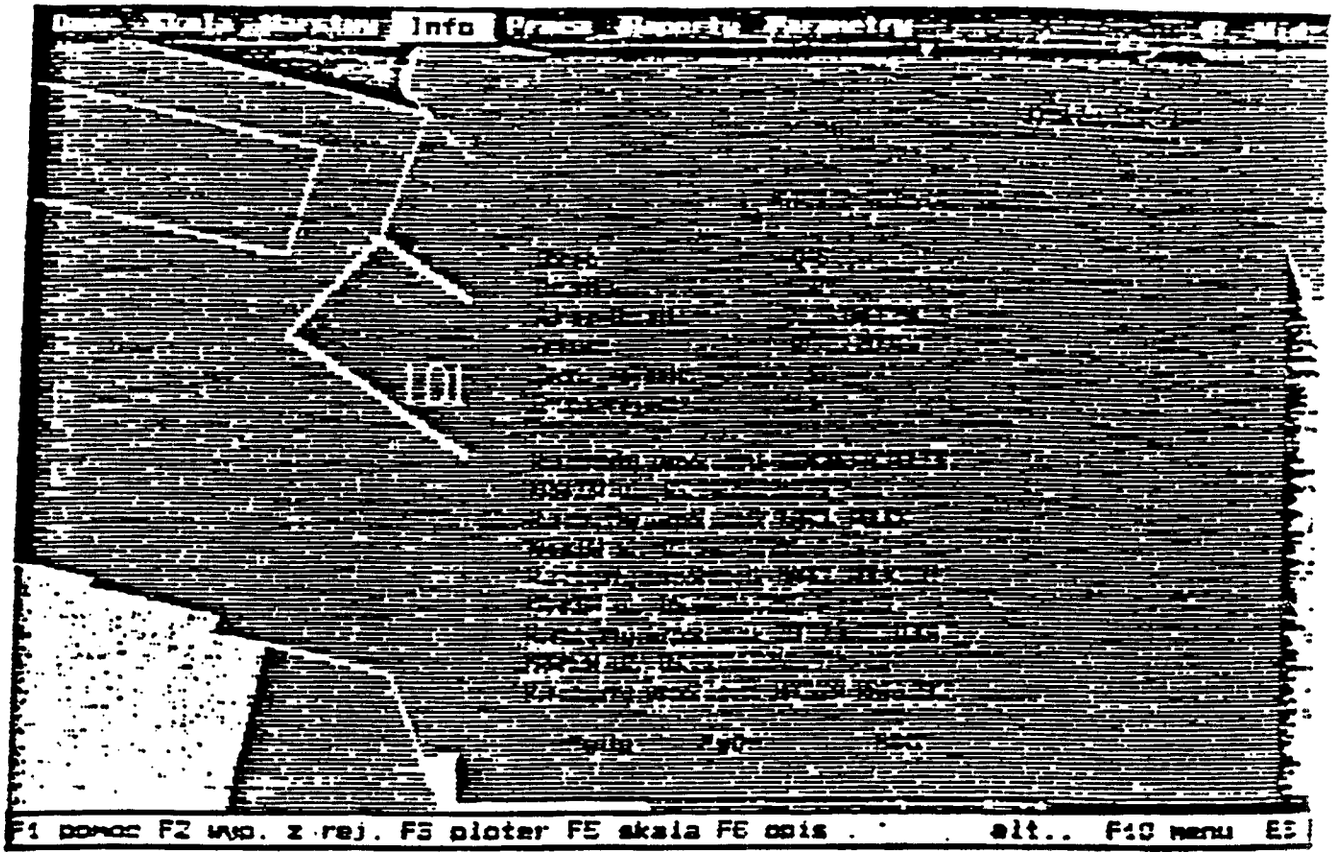
+52 730

MAP 2


Info
alt-x koniec F3 obreb F4 zmien gm F10 kursor F6 caly obreb F5 skala alt-i ?

153 731

MAP 3


Info
101
F1 pomoc F2 wsp. z rej. F5 ploter F6 skala F8 opis
alt.. F10 menu

464 732

APPENDIX 1

This appendix describes the results of the data investigation project that was carried out to determine which data elements should be collected about land, apartments, and buildings to support the valuation process necessary to implement an ad valorem property tax.

To date the market monitoring team has completed its work on the vacant land class. The team collected data on 49 different vacant land elements. The lot sheet that follows and the attached data base dictionaries show these factors.

A multiple regression analysis was carried out on the data. The sale price of the lot was the dependent variable in the model. The remaining 48 factors were the independent variables. The analysis suggests that only 13 of the 48 variables contribute to the explanation of value. The model variables explaining 75% of the variation in sales prices are factors C9, C12, C19, C20, C23, C25, C26, C30, C35, C37, C39, C40 and C44 (see data dictionary for definitions). It is recommended that only these data elements need be collected in the mass data collection process.

The data also allowed us to compute a land price index. The results show that the relative value per square meter of land in the center of the city is 10 times greater than that of land 20 km out. This result is consistent with international standards.

The two analyses taken together indicate the market for land is working efficiently.

LOT SHEET

Identification No.					
Locality		District/Quarter		Section	
Lot No.		Perpetual book No.			
Coord. of centre	X =		Y =		
Lot adress					
Owner					
Administrator					

Appraised value		Appraisal date	
Offert value		Offert date	
Transaction value		Transaction date	
Tax		Mortage liabilities	

Outline:

Area	
Front/depth	
Distance from center	
Azimuth from center	N NE E SE S SW W NW
Kind of crop	B R P S Iz Lz Tr
Soil class	I II III IV V VI

Perpetual lease		Use		Easment		Lease	Lending for use

Geotechnical conditions		Topography
Very good	*1*	*Flat*
Good	*2*	*Slightly sloped, easy to build*
Moderate	*3*	*Steep, difficult to build*
Poor	*4*	*Impossible to build*
View from the lot		**Exposed to**
Nice	*1*	*South*
Average	*2*	*East*
Awkward	*3*	*West*
		North

Small architecture		Acces		Fencing
Good	*1*	*Good*	*1*	*Permanent*
Average	*2*	*Moderate*	*2*	*Non-permanent*
Poor	*3*	*Poor*	*3*	*No fencing*

Current use		Planed land use		Restriction of use
Single family	*1*	*Low density housing*	*1*	*Protection zone*
2-4 family	*2*	*High density housing*	*2*	*Protected landscape*
Multifamily	*3*	*Industrial building*	*3*	*Nature reserve*
Commercial	*4*	*Vacation houses*	*4*	*Nature protection zone*
Industrial	*5*	*Commercial*	*5*	*Other*
Other	*6*	*Farm buildings*	*6*	*No restrictions*
Free from any use	*7*	*Farms*	*7*	
		Other	*8*	

Electricity		Employment opportunities	
Water supply		Access to supplies	
Sewer		Access to public transport	
Gas supply		Access to scools	
District heating network		Access to recreations facilities	
Telephone network		Access to public	
Other infracture (1)		Access to healthcare facilities	
Other infracture (2)		Police protections	
1. On lot 2. Reachable 3. Lacking		*1. Good 2. Moderate 3. Low 4. Poor*	

Ecological hazards		Subsidence from mining		Threat of natural disasters

Location	*1. Commercial center 2. Town center 3. Transitional 4. Peripherral 5. Suburban 6. Rural*
Density	*1. Scattered 2. Loose 3. Compact*
Demand	*1. Increasing 2. Stable 3. Decliming.*
Supply	*1. Increasing 2. Stable 3. Decliming*

37

456734

BUILDING SHEET

Identificator No					
Locality		District/Quarter		Section	
Lot No.		Building No.		Perpet. book No.	
Coord. of center	X =		Y =		
Adress					
Owner					
Administrator					

Appraised value		Appraisal date	
Offert value		Offert date	
Transaction value		Transaction date	
Tax		Mortage liabilities	

Year construction		Year of last overhaul	
Number of floor		Capacity	
Footprint area		Total floor area	
Living area		Living area	
Front / Back	Front	Back	Historic building	Yes	No
Scope of last overhaul			

Kind of building		Technology		Generel assesment of techn. cond.	
Detached singlefamily	*1*	*Traditional*	*1*	*Good*	*1*
Semidetach	*2*	*Elp slab*	*2*	*Satisf.*	*2*
Row house	*3*	*Wood*	*3*	*Average*	*3*
Multifamily	*4*	*Steel*	*4*	*Poor*	*4*
House of many appart.	*5*	*Other*	*5*		
Commercial	*6*				
Industrial	*7*				
Special purpose	*8*				

Basement	No	Partia	Full

Construction	Stan	
-Foundation		*1. Good (0-15% rest maint)*
-Basement		*2. Satisf. (16-30% rest maint)*
-Supp. walls		*3. Average (31-50% rest maint)*
-Ceilings		*4. Poor (51-70% rest maint)*
-Stairs		
-Roof		
-Roofcover		
-Outside plastere		
-Inside plaster		
-Windows/doors		

Standard of interior	High	Moderate	Low

Installation		
-Sewers		*1. Present*
-Water supply		*2. Easy to connect*
-Gas		*3. Difficult to connect*
-District heating network		*4. No connection possible*
-Local heating network		
-Hot water		
-Electricity 220V		
-Electricity 360V		
-Telephone		
-Cable TV		
-Other		

No. of garage		No. of island roofs for cars	

~~38~~

date and signature

~~67~~ 735

APARTMENT SHEET

Identification No.					
Locality		District/Quarter		Section	
Lot No.		Building No.		Apartament No.	Perpet. book No.
Coord. of center	X =		Y =		
Adress					
Owner					

Appraised value		Price 1m2 L.A.		Appraisal date	
Offert value		Price 1m2 L.A.		Ofert date	
Transaction value		Price 1m2 L.A.		Transaction date	
Rate	*Market*	*Preferential*	Tax	Mortage liabilities	

Year of construction			Year of last overhaul		
Number of floors			Floor of the appartament		
Living area			Appartament living area		
Type of building	*Stanjelamnir*	*Multilamnir*	Legal status	*Separate*	*Cooperation*
Front/Back	*Front*	*Back*	Historic building	*Yes*	*No*
Scope of last overhaul					

Construction		Layout		Kitchen	
Traditional	*1*	*Good*	*1*	*Full*	*1*
Elg-slab (technology	*2*	*Partially good*	*2*	*Annex*	*2*
Wood	*3*	*Walring-through rooms*	*3*	*Absence*	*3*
Steel	*4*				
Other	*5*				
No. of rooms		Bathroom		WC	
	1	*Separate*	*1*	*Separate*	*1*
	2	*With WC*	*2*	*With bathroom*	*2*
	3	*No bathroom*	*3*	*No WC*	*3*
	4	Use		Use	
	5	*Individual (separate)*	*1*	*Individual (separate)*	*1*
		Join	*2*	*Join*	*2*

Balcony		Loggia		Terrace		Garage		Garbage shute		Elevator	

Installations	Network	Own
-Sewers		
-Water supply		
-Gas		
-District heating		
-Hot water		
-Electricity 220V		
-Electricity 380V		
-Telephone		
-Cable TV		
-Other		

1. Present
2. Easy to connect
3. Difficult to connect
4. No connection possible

Floor		Floor tiels		Windows/doors	
Wood planes	*1*	*Ceramic tiels*	*1*	*Indiv. design*	*1*
Wood parquet	*2*	*Terazzo*	*2*	*Typical design*	*2*
PCV	*3*	*Other*	*3*		
Other	*4*				

General technical assesment condition	*Good*	*Satisfactory*	*Average*	*Poor*

date and signatur

MULTIPLE REGRESSION REPORT

DDDDC:\NCSS\usa4DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
Filter: ROB WTSC >.2
Dependent Variable: PRICESLT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.1220E+09	0.0000	.3601E+08	3.39	0.0010		
SQMETERL	44249.67	0.8214	2724.909	16.24	0.0000	0.5625	0.5625
DISTCENT	-.121E+08	-0.4245	2308915	-5.22	0.0000	0.6929	0.0404
AMENITES	.1675E+08	0.0742	.1151E+08	1.46	0.1486	0.7009	0.0147
ACCES	-.112E+08	-0.0807	6965382	-1.60	0.1124	0.7097	0.0077
FT USE	-2239693	-0.0498	2374867	-0.94	0.3478	0.7135	0.0135
ELETRIC	-.129E+08	-0.0740	.1097E+08	-1.17	0.2429	0.7194	0.0077
WATER	-.123E+08	-0.0708	.1027E+08	-1.20	0.2333	0.7219	0.0049
TELPHONE	-.196E+08	-0.1132	9364548	-2.09	0.0391	0.7301	0.0515
PUBTRANS	.1532E+08	0.0993	.1121E+08	1.37	0.1747	0.7445	0.0017
REC AREA	.1067E+08	0.0618	9816558	1.09	0.2795	0.7470	0.0109
HEATH SV	-.162E+08	-0.1158	.1282E+08	-1.26	0.2093	0.7472	0.0028
POLICE	.2275E+08	0.1656	.1198E+08	1.90	0.0604	0.7579	0.0009
LOCATION	6833207	0.0630	9441663	0.72	0.4708	0.7591	0.0063

Enter DY to continue, or ESC to quit —

****
DATABASE USA3
****

PLOTS

C1 - VALUE OF PLOT ACCORDING TO APPRAISAL [zl]
C2 - VALUE OF PLOT ACCORDING TO OFFERS [zl]
C3 - VALUE OF PLOT ACCORDING TO TRANSACTION [zl]
C4 - TAX
C5 - DATE OF APPRAISAL [ddmmyy]
C6 - DATE OF OFFER[ddmmyy]
C7 - DATE OF TRANSACTION [ddmmyy]

C9 - AREA [sq. m.]
C10 - FRONTAGE
C11 - WIDTH/LENGTH RATIO
C12 - DISTANCE FROM THE CENTRE [km]
C13 - AZIMUTH FROM THE CENTRE [km]
N Data C14 - FORM OF OWNERSHIP [glossary 1] 9
C15 - GEOTECHNICAL CONDITIONS [glossary 3] 4
C16 - TYPE OF DEVELOPMENT [glossary 4] 4
C17 - VIEW FROM THE PLOT [glossary 5] 3
C18 - FRONTAGE (DIRECTION OF SLOPE) [glossary 6] 4
C19 - COMMUNITY AMENITIES [glossary 7] 3
C20 - ACCESS TO PLOT [glossary 8] 3
C21 - FENCE [glossary 9] 3
C22 - PRESENT USE [glossary 10] 7
C23 - FUTURE USE IN LAND DEVELOPMENT PLAN [glossary 11] 8
C24 - RESTRICTIONS TO USE [glossary 12] 6
C25 - ELECTRICITY LINE [glossary 13] 3
C26 - WATER SUPPLY [glossary 13] 3
C27 - SEWAGE SYSTEM [glossary 13] 3
C28 - GAS SUPPLY [glossary 13] 3
C29 - CENTRAL HEATING [glossary 13] 3
C30 - TELEPHONE LINE [glossary 13] 3
C31 - ADDITIONAL (OTHER) INFRASTRUCTURE 1 [glossary 13] 3
C32 - ADDITIONAL (OTHER) INFRASTRUCTURE 2 [glossary 13] 3
C33 - EMPLOYMENT OPPORTUNITIES [glossary 14] 4
C34 - ACCESS TO SHOPS [glossary 14] 4
C35 - ACCESS TO PUBLIC TRANSPORT [glossary 14] 4
C36 - ACCESS TO SCHOOLS [glossary 14] 4
C37 - ACCESS TO REACREATIONAL AREAS [glossary 14] 4
C38 - ACCESS TO PUBLIC UTILITIES [glossary 14] 4
C39 - ACCSESS TO HEALTH SERVICES [glossary 14] 4
C40 - POLICE PROTECTION [glossary 14] 4
C41 - ENVIRONMENTAL HAZARDS [glossary 15] 2
C42 - MINING DAMAGE [glossary 15] 2
C43 - NATURAL THREATS (NATURAL DISASTERS [glossary 15] 2
C44 - LOCATION [glossary 16] 6
C45 - DENSITY OF BUILDINGS [glossary 17] 3
C46 - DEMAND [glossary 18] 3
C47 - SUPPLY [glossary 18] 3
C48 - COORDINATE X
C49 - COORDINATE Y

****

DICTIONARY 1:
1. N
2. NE
3. E
4. ES
5. S
6. SW
7. W
8. WN

DICTIONARY 2:
1. PERPETUAL USUFRUCT
2. USUFRUCT
3. EASEMENT
4. LEASE
5. RIGHT TO USE

DICTIONARY 3:
1. VERY FAVOURABLE
2. FAVOURABLE
3. AVERAGE
4. POOR

DICTIONARY 4:
1. LEVEL
2. MILD SLOPE, EASY TO DEVELOP
3. STEEP SLOPE, HARD TO DEVELOP
4. IMPOSSIBLE TO DEVELOP

DICTIONARY 5:
1. NICE
2. AVERAGE
3. UGLY

DICTIONARY 6:
1. SOUTHERN
2. EASTERN
3. WESTERN
4. NORTHERN

DICTIONARY 7:
1. GOOD
2. AVERAGE
3. POOR

DICTIONARY 8:
1. GOOD
2. AVERAGE
3. POOR

DICTIONARY 9:
1. DURABLE
2. UNDURABLE
3. NO FENCE

DICTIONARIES

DICTIONARY 10:
1. SINGLE-FAMILY HOUSES
2. 2-4-FAMILY HOUSES
3. MULTIFAMILY HOUSES
4. TRADE, SERVICES
5. INDUSTRY
6. OTHERS
7. FREE SPACE

DICTIONARY 11:
1. SINGLE-FAMILY HOUSES
2. MULTIFAMILY HOUSES
3. INDUSTRIAL FACILITIES
4. HOLIDAY RESORT FACILITIES
5. TRADE, SERVICES
6. CONSTRUCTION AND AGRICULTURE
7. AGRICULTURE
8. OTHERS

DICTIONARY 12:
1. PROTECTIVE ZONE
2. LANDSCAPE PROTECTION ZONE
3. NATURAL RESERVE
4. NATURE CONSERVATION ZONE
5. OTHERS
6. NO RESTRICTIONS

DICTIONARY 13:
1. ON THE PLOT
2. ACCESSIBLE
3. NO ACCESS

DICTIONARY 14:
1. GOOD
2. AVERAGE
3. UNDER AVERAGE
4. POOR

DICTIONARY 15:
1. YES
2. NO

DICTIONARY 16:
1. URBAN CENTRAL
2. CITY CENTRE
3. URBAN INTERMEDIATE
4. URBAN PERIPHERAL
5. SUBURBAN
6. VILLAGE

DICTIONARY 17:
1. SCATTERED
2. SPARSE
3. DENSE

DICTIONARY 18:
1. INCREASE
2. STABILITY
3. DECREASE

APARTMENT
DATABASE USA5

****

PLOTS

C1 - APPRAISED VALUE [z1]
C2 - OFFERT VALUE [z1]
C3 - TRANSACTION VALUE [z1]
C4 - RATE [glossary 1]
C5 - APPRAISED PRICE m2 L.A. [z1]
C6 - OFFERT PRICE m2 L.A. [z1]
C7 - TRANSACTION PRICE m2 L.A. [z1]
C8 - YEAR OF CONSTRUCTION
C9 - NUMBER OF FLOORS
C10 - LIVING AREA [m2]
C11 - TYPE OF BUILDING [glossary 2]
C12 - FRONT/BACKROM [glossary 3]
C13 - YEAR OF LAST OVERHAULT
C14 - FLOOR OF THE APPARTAMENT
C15 - APPARTAMENT LIVING AREA
C16 - LEGAL STATUS [glossary 4]
C17 - HISTORIC BUILDING [glossary 5]
C18 - CONSTRUCTION [glossary 6]
C19 - LAYOUT [glossary 7]
C20 - KITCHEN [glossary 8]
C21 - NO. OF ROOMS
C22 - BATHROOM [glossary 9]
C23 - WC [glossary 10]
C24 - BATHROOM USE [glossary 11]
C25 - WC USE [glossary 11]
C26 - BALCONY
C27 - LOGGIA
C28 - TERRACE
C29 - GARAGE
C30 - GARBAGE SHUTE
C31 - ELEVATOR
C32 - SEWERS [glossary 12]
C33 - WATER SUPPLY [glossary 12]
C34 - GAS [glossary 12]
C35 - DISTRICT HEATING [glossary 12]
C36 - HOT WATER [glossary 12]
C37 - ELECTRICITY 220V [glossary 12]
C38 - ELECTRICITY 360C [glossary 12]
C39 - TELEPHONE [glossary 12]
C40 - CABLE TV [glossary 12]
C41 - OTHER INSTALLATIONS [glossary 12]
C42 - FLOOR [glossary 13]
C43 - FLOOR TIELS [glossary 14]
C44 - WINDOWS/DOORS [glossary 15]
C45 - GENERAL TECHNICAL ASSESMENT CONDITION [glossary 16]
C46 - COORDINATE X
C47 - COORDINATE Y

DICTIONARIES

DICTIONARY 1:
1. MARKET
2. PREFERENTIAL

DICTIONARY 2:
1. SINGLEFAMILY
2. MULTIFAMILY

DICTIONARY 3:
1. FRONT
2. BACK

DICTIONARY 4:
1. SEPARATE
2. COOPERATION

DICTIONARY 5:
1. YES
2. NO

DICTIONARY 6:
1. TRADITIONAL
2. BIG-SLAB TECHNOLOGY
3. WOOD
4. STEEL
5. OTHER

DICTIONARY 7:
1. GOOD
2. PARTIALLY GOOD
3. WALRING-THROUGH ROOMS

DICTIONARY 8:
1. FULL
2. ANEX
3. ABSENCE

DICTIONARY 9:
1. SEPARATE
2. WITH WC
3. NO BATHROOM

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DICTIONARY 10:
1. SEPARATE
2. WITH BATHROOM

DICTIONARY 11:
1. INDIVIDUAL (SEPARATE)
2. JOIN

DICTIONARY 12:
1. PRESENT
2. EASY TO CONNECT
3. DIFFICULT TO CONNECT
4. NO CONNECTION POSSIBLE

DICTIONARY 13:
1. WOOD PLANKS
2. WOOD PARQUET
3. PCV
4. OTHER

DICTIONARY 14:
1. CERAMIC TIELS
2. TERAZZO
3. OTHER

DICTIONARY 15:
1. INDIV. DESIGN.
2. TYPICAL DESIGN.

DICTIONARY 16:
1. GOOD
2. SATISFACTORY
3. AVERAGE
4. POOR

APPENDIX 2
Institutions Responsible for the Administration of Property in the City of Moscow

List of Agencies and their functions:

1. Moscow Geotrust: mapping, 1:2000 scale map used in hard copy by all institutions in the system.

2. BTI (Bureau of Technical Inventorization): physical inventory of property and land, detailed records on all residential, non-residential and land parcels in Moscow

3. Moscow Committee on Land Use: currently, advising on regulation for land use (not yet concluded); eventually, privatization and registration of land parcels

4. Moscow Committee of Housing: privatization and registration of residential property (excludes land parcels)

5. Moscow Committee on Property: privatization and registration of non-residential property (excludes land parcels)

6. Administration for Architectural and Historical Buildings: clearing privatization and sale transactions to prevent possible destruction of historical heritage

7. Institute of the Master Plan of Moscow: planning and zoning

8. State Tax Service: (federal agency) collecting property tax

Figure 1 depicts the major information flows between these agencies.

Description of current processes:

The following is a description of these agencies, whose functions are all related to the administration of urban property in Moscow. The very definition of property is not yet clear in Moscow and the terminology used in this report requires some clarification. "Objects of rights" are improvements such as houses, apartments, or shops (but not land itself, over which only use rights--as opposed to outright ownership--are defined at this time). "Subjects of rights" are individuals, firms, or corporations that exert "rights," such as "lease," "long term occupation," or "ownership" over the objects. These rights may exist de facto or may be explicitly defined by means of a "contract." Objects of rights can be "residential" or "non-residential."

AT

1. Geotrust

Geotrust is the institution responsible for all Moscow mapping and geological data. Its staff of 600-800 professionals includes surveyors, geologists, cartographers and information technology specialists. It has no role in titling, but provides source information to BTI.

The main map of Moscow was done manually to the scale 1:2000 and contains 1200 master planchettes, specially stored to protect them from deformation, humidity, etc. The original date on a planchette shown was 1959; its periodic updates were recorded in the back of the panel.

This map is the source distributed, in hard copy, to all users of geographical information in the city. A digital version of this map is in process. Geotrust technicians, working with staff of a private Russian consulting company, are applying locally developed computerized techniques to increase the contrast, correct the geometric deformation of digitized planchettes and convert raster to vector images. The software separates lines, numbers and other elements into different layers.

In the next step, human operators, using menu-driven software and standard graphics editing procedures to guarantee consistency, identify all structures and enter their detailed description as attributes. About 20% of the main Moscow map has been processed at this time. They use Autocad, which could be replaced by any graphics software that can accept attributes.

A graphics retrieval system that uses standard graphics file formats (PCX, DXF) is under development to facilitate distribution to users. Distribution plans include hard copy, telecommunications (modem), and magnetic media.

Geotrust plans to produce a digital map to the scale 1:500, which will require 65,000 planchettes; resources for this project are not currently available. One planchette of this map, showing all utilities and underground networks, was produced as evidence that their staff has the required skills and information; a copy was provided to the mission.

2. Bureau of Technical Inventorization (BTI)

The Bureau of Technical Inventorization is responsible for the physical inventory of objects of rights. It has collected detailed physical information on 3 million objects; of 70,000 buildings recorded, having a total space of 230 million m2, 30,000 are residential, having 163 million m2.

BTI stores little information about the subjects that hold rights over these objects. There is no information about the rights that the subject holds, or about the contract that may record these rights.

BTI estimates a "balance value" of the objects it inventories, based on cost and depreciation; it is indexed to a 1984 price level and therefore is not useful as an estimate of current market value. BTI is trying to establish a way of updating these prices to 1992 levels.

BTI records information about both residential and non-residential objects. It is loading records on residential objects onto a computer system; only two of its 14 regional offices are even partially computerized. BTI holds records for 70,000 buildings in Moscow, about 3,000,000 dwellings in all. At the present time, records on non-residential objects are not being loaded onto a computer system.

BTI contains no mapping information on the objects it records, though it has a detailed drawing of the object itself; the location information is the address of the object. BTI assigns city blocks (which have fairly irregular shapes) a unique number each. Within each block, buildings are assigned a number based on date of construction.

3. Property Committee

This Committee, a part of the Government of the City of Moscow, was formerly the "Privatization Committee." It is responsible for registering contracts on rights of subjects over non-residential objects only. Transactions are initiated by subjects requesting registration of their rights.

To avoid issuing double contracts on the same object, the Property Committee is loading subjects, objects and contracts into a Clipper (Dbase) database, which currently contains information on 30,000 objects (keyed by address), 20,000 subjects, and 50,000 contracts. The Committee has no graphic or mapping information.

Information on objects is from BTI (key is "standard BTI," has no postal address), information on subjects is either from the police passport for individuals, or from the Moscow Registering Office for firms or corporations. Information on contracts is provided by applicants requesting registration of their rights. Contract information includes the terms of the contract and the BTI "balance value."

Information is received from BTI in paper form, as BTI is not currently entering non-residential objects into its database. The Property Committee does not send the information keyed into its database back to BTI in electronic form.

With respect to residential buildings, the buildings themselves (excluding the residential spaces) are considered non-residential objects and may have contracts issued about them.

The Property Committee does not perform on-site verification of the information on rights that is contained in the subject's request for registration.

4. Moscow Government Committee of Housing.

Also know as "Residential Affairs Committee," it is responsible for registering contracts on residential objects only. Initially contracts were issued for a price, but the Council decided to grant rights free of charge except for a small fee. Transactions are initiated by subjects requesting registration of their rights.

Registration is performed by a private organization, "Mosprivatization" (see below); all contracts registered by Mosprivatization are automatically accepted by the Committee of Housing.

Three types of residential objects are handled by the Committee: Municipal, Cooperative and Private.

5. Mosprivatization.

This is a "self-accounting organization" (i.e., a private company) responsible for the registration of contracts of rights of subjects over residential objects only. Transactions are of two types: "privatization" is the first-time registration of a contract over an object, "subsequent transactions" are contracts relating to an object previously privatized (e.g., sales, inheritances).

Object information is received from BTI, subject information is taken from passports, contract information is entered into separate databases. There were 135,000 privatizations as of end-June '92 (started recording in 3/92), and they are proceeding at the rate of 2,000 per day, some 5,500 subsequent transactions. No graphic or mapping information is recorded.

Privatization transactions were previously done at a price calculated with a formula that used the BTI "balance value"; currently they are done free of charge. Subsequent transactions include the price (reported as) paid for the rights. Contracts for which a bank was used as an intermediary reflect the real price paid; contracts for which cash was paid may not accurately reflect that price. There is no indication whether a bank was used. Registration occurs only after payment has cleared the banking system.

Apparently these transactions are an accepted means of legitimizing funds; in those cases the price of the transaction is accurately reported.

To avoid double contracts on the same object, the postal address (road names taken from menus) is used as a key. To avoid granting two privatizations to the same subject or to members of the immediate family, the names of all family members that reside in the same household are recorded and checked at registration time.

All registered transactions are accepted with no further control by the Moscow Government Committee of Housing.

A service charge of R350 (about 3 US dollars) is payable to the registering organization. As this is not enough to cover expenses, the organization is allowed to privatize some objects for its own use and obtain income from these objects.

6. Land Committee.

The Land Reform Committee is part of the Government of the City of Moscow and is responsible for granting rights (which do not at present include ownership) to the use of land resources and for recording the rights, conditions and contracts relating to the use of each parcel.

Formerly the granting of land use rights included a survey of the boundaries of parcels performed and registered by the geodesic service of Geotrust (see below). This survey and registration standard was abandoned in 1937. The Land Reform Committee is responsible for the survey and registration of land parcels whose use rights were granted after 1937. Geotrust provides the professionals for this service.

The Committee is also responsible for an inventory of land resources and for establishing a policy for land valuation. At present several valuation methods have been proposed, but none has been accepted. There is an economic valuation of land performed by the Committee.

7. Genplana or Master Planning Institute.

This institution is responsible for planning the development of the city. In this function it keeps track of land usage.

Reporting to Genplana are the Architects Offices of the 10 Prefectures (formerly of the 33 Raions). Genplana's signature is one of four on the land "passport" (the other three: enterprise, prefecture/raion, and local architect's office). This passport does not grant ownership of land, only permission to build.

Genplana is digitizing into Autocad the approximately 1200 planchettes of the 1:2000 map of Moscow provided by Geotrust, the official mapping agency. They are inputing BTI-provided information as attributes on a related Dbase database. The graphic information is not up-to-date.

They have separate databases for residential and non-residential objects, and use as keys the planchette number, the street code, and the block code.

On residential buildings they record the total living areas by number of rooms in the apartment (e.g., 5600 m2 of 2-room apts., 3500 of 1-room apts.).