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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

EX PARTE

December 11, 1998

Ms. Magalie Roman Salas
Secretary - Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

RE: CC Docket Nos. 96-45 and 97-160

Dear Ms. Salas,

This letter is being provided as a notification of customer location data files that have been provided to the Common Carrier Bureau staff for consideration in the above referenced dockets. A CD-ROM containing these files is being submitted to the secretary's office with a request for confidential treatment pursuant to CFR 0.457 for inclusion into the record of these proceedings. The data consists of customer location files for six states (Florida, Georgia, Missouri, Nevada, North Dakota, and Washington) suitable for input to the Commission's cost proxy model. A detailed data description is attached to this letter along with a price estimate for the production of a national data set. Interested parties may obtain a copy of the data files on CD-ROM through the mail by contacting Phil Bolian of Stopwatch Maps in writing. Requesting parties should be advised that this data is the property of Stopwatch Maps, and that elements of this data are the property of other data providers, specifically licensed for use in these proceedings. This data may only be used within the context of the above referenced proceedings. Any other use of the data is prohibited. Requests for the files should be addressed to:

Phil Bolian
Stopwatch Maps
6353 N. Rosebury
Clayton, MO 63105

The original and three copies of this notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(b)(1) of the Commission's rules. If there are any questions, please call.

Sincerely,

Pete Sywenki

Attachments

Surrogate Points Input Data to HCPM

Stopwatch Maps has generated customer location files suitable for input to the HCPM Model, using data that is available per Census Block from both public and private sources. Specifically, those sources are:

- US Census Bureau 1990 housing unit statistics, estimated to the 1997 level using additional Census Bureau figures for each county (as in BCPM, which estimated to the 1995 level)
- Residential units-in-structure from US Census Bureau STF3A data, packaged by Claritas, as in BCPM (the full distribution data is available only at the Census Block *Group* level, and is applied to each Census Block of the group)
- Business firms and business lines from PNR & Associates, as in BCPM
- Wire center boundaries and switch locations from the BLR Wire Center Premium Package, as in BCPM (note that, in this package, a wire center is composed of an integral set of Census Blocks)
- Roads from US Census Bureau's TIGER95 files (we would use TIGER97, but only five of the six CDs are released as of this date)
- Terrain from the Stopwatch Maps *Terrain by Census Block* copyrighted product, derived from STATSGO data, which provides a set of terrain data common to each Census Block

The above source data is used to generate a set of discrete *customer points*, for each wire center of each state, in the form appropriate for entry into HCPM's clustering program.

In this paper we first identify the form and content of the data that is delivered. We then address some considerations in the development of that data.

Data Delivered

The data is delivered on a set of CDs. Each CD contains the data for one or more states, each state's files compressed into a .ZIP file. When unZIPped, that data is in the ASCII comma-separated-variable file format prescribed by HCPM and described in this paper.

Each ZIPped file on CD, containing all the data for a state, has a name of the form ***xx*_IN.ZIP**, where *xx* is the standard two-character state abbreviation.

Within each ZIPped file is the set of HCPM input files for that state, one input file per wire center. Each HCPM input file has a name of the form ***xxxxxxxx*.IN**, where *xxxxxxxx* is the 8-

character CLLI of the wire center. In addition, there is a file **INFILES.LST,** containing a simple name list of all the .IN files, as required for HCPM processing.

Each file is a comma-separated ASCII text file, *not* using quotation marks to bound character fields (except where the field data contains a comma, which – in this data – occurs only in the Company Name field). The HCPM documention prescribes the form and content of that file. We first reprint section 6.2 of the HCPM document, which describes that file:

6.2 Data Inputs for CLUSTER: <FILENAME>.IN

The input file, <FILENAME>.IN, is a comma delimited ascii file. Its first line contains either the word "BLOCK" or the word "HOUSEHOLD" to identify the data aggregation level. The second and fourth lines are header lines. The third line contains the wirecenter's CILLI code, the latitude and longitude of its switch, the latitude and longitude of its central point, and the name of the company that provides it service. Starting on the fifth line, there is a record for each block or household. That record contains the following data:

CBNum	State FIPS + County FIPS + Tract No. + Block No.
Lon	Longitude of record's central point
Lat	Latitude of record's central point
HH	Number of households or number of residential lines
Bus	Number of business lines
Bedrock	Bedrock depth
Hardness	Rock type
Soil	Soil texture
WaterTbl	Water table depth
MinSlope	Minimum slope
MaxSlope	Maximum slope
Area	Area in thousands of square kilometers. 0 if household level data.

An example of the first few lines of input file "WHMRMDWM.IN" follows:

```
HOUSEHOLD
Wc_code, SwX, SwY, CenX, CenY, Company
WHMRMDWM,-76.46065,39.373451,-76.4427,39.380646,BELL ATLANTIC - MARYLAND INC - MD
CBNum,Lon,Lat,HH,Bus,Bedrock,Hardness,Soil,WaterTbl,MinSlope,MaxSlope,Area
24005411302101,-76.447148416,39.377513532,1,0,57.37,,SIL,4.24,4.21,11.36,0
24005411302101,-76.453734918,39.373976651,0,8,57.37,,SIL,4.24,4.21,11.36,0
```

The first four records of each of these files have a format different from all succeeding records in the file. We describe all 5 record types here.

Record 1

The data produced here is a set of discrete points. Therefore, the first record always contains the characters **HOUSEHOLD.**

Record 2

The second record contains the field names for the content of the record that follows. These names are the character string:

Wc_code,SwX,SwY,CenX,CenY,Company

Record 3

The third record contains the field data for the wire center itself. The fields are:

- **Wc_code**: The 8-character CLLI code of the wire center. It is necessarily the same as the name of the file itself. This name is taken from the *CLLI* field of the BLR wire center source data.

- **SwX**: Longitude of the main switch of the wire center. This is derived from the V & H coordinates of the switch in the BLR product (fields *Wc_v* and *Wc_h* respectively). It is expressed in degrees with 6 fractional digits.

- **SwY**: Latitude of the main switch of the wire center. This is derived from the V & H coordinates of the switch in the BLR product (fields *Wc_v* and *Wc_h* respectively). It is expressed in degrees with 6 fractional digits.

- **CenX**: Longitude of the centroid of the wire center's area. This is taken directly from the *Lon* field for the wire center in the BLR product. It is expressed in degrees with 6 fractional digits.

- **CenY**: Latitude of the centroid of the wire center's area. This is taken directly from the *Lat* field for the wire center in the BLR product. It is expressed in degrees with 6 fractional digits.

- **Company**: Name of the operating company. This is a field of as many as 60 characters, taken directly from the *Lecname* field for the wire center in the BLR product.

Record 4

The fourth record contains the field names for the content of all the records that follow. These names are the character string:

CBNum,Lon,Lat,HH,Bus,Bedrock,Hardness,Soil,WaterTbl,MinSlope,MaxSlope,Area

All Other Records

Each remaining record for a wire center represents a *customer location point.* These are residential and business customer points that – in this set of data – are *randomly generated* along all valid roads (interior as well as exterior) of a Census Block. Details of that generation of points appear in the next major section of this paper.

The points appear in Census Block order. Within a Census Block, the points appear in *no specified order* (which is the natural result of random location generation). Each point represents either a *residential structure* or a *business firm.* Each residential structure contains a certain number of housing units. Each business firm has a certain number of telephone lines. These are allocated from the source data (see the next major section for details) and indicated in these records.

These are the fields of a customer location record:

- **CBNum**: Census Block FIPS code, always 14 or 15 characters
- **Lon**: Longitude of the customer location point, expressed in degrees with 6 fractional digits (six fractional digits represents precision to *within 4 inches*, which is a precision finer than any true accuracy that can be achieved)
- **Lat**: Latitude of the customer location point, expressed in degrees with 6 fractional digits
- **HH**: Number of *housing units* in the structure represented by the point ... zero if a business location point
- **Bus**: Number of business lines for the business firm located by the point ... zero if a residential location point
- **Bedrock**: Minimum depth to bedrock for this Census Block (taken from the Stopwatch Maps product), expressed in inches as a whole number
- **Hardness**: Rock hardness for this Census Block (taken from the Stopwatch Maps product) ... **HARD** or **SOFT** or empty for normal hardness
- **Soil**: Soil surface texture for this Census Block (taken from the Stopwatch Maps product) ... See attached table for possible values
- **WaterTbl**: Minimum water table depth for this Census Block (taken from the Stopwatch Maps product), expressed in feet with 2 fractional digits
- **MinSlope**: Minimum slope for this Census Block (taken from the Stopwatch Maps product), expressed in degrees with 2 fractional digits
- **MaxSlope**: Maximum slope for this Census Block (taken from the Stopwatch Maps product), expressed in degrees with 2 fractional digits
- **Area**: As prescribed by HCPM for discrete point data, this field is always 0 (zero)

Considerations

There are several considerations in the generation of this data that should be called out. The remainder of this paper addresses those considerations.

Road Types Used

Just as in BCPM, we limit the roads along which we generate customer points to those we consider people may live and work along (eliminating, for example, limited access highways and their on/off ramps, but not eliminating the service roads that run beside many of them). Specifically, the *CFCCs (Census Feature Classification Codes)* of the road types, and whether we use or ignore each, are summarized here:

- **A1*x***: Limited access highway segments ... *Ignored*
- **A2*x***: Primary roads without limited access ... *Used* except for *A22, A23, A26,* and *A27*, in tunnels or underpasses, which are *ignored*
- **A3*x***: Secondary roads without limited access ... *Used* except for *A32, A33, A36,* and *A37*, in tunnels or underpasses, which are *ignored*
- **A4*x***: Neighborhood roads without limited access ... *Used* except for *A42, A43, A46,* and *A47*, in tunnels or underpasses, which are *ignored*
- **A5*x***: Vehicular trail (not usable by cars) ... *Ignored*
- **A61**: Cul-de-sac ... *Used*
- **A62**: Traffic circle ... *Used*
- **A63**: Access ramp ... *Ignored*
- **A64**: Service road ... *Used*
- **A65**: Ferry crossing ... *Ignored*
- **A7*x***: Alleys, driveways, and walkways ... *Ignored*

Allocation Along Roads

The customer points are allocated randomly along all roads (of the types used) of each Census Block. Each customer point is set back 50 feet (perpendicularly) from the road segment along which it is generated, on whatever side of the road it is generated. For *boundary* roads, only the side of the road that belongs to the subject Census Block is used (if there is another Census Block on the other side of the road, as almost always there is, the other side is used in connection with that other Census Block.) For interior roads, both sides are used.

The distance along each road against which random offsets are allocated is really a "side-of-the-road" distance. Boundary roads have only a single side (in this Census Block), while interior roads have two sides. Thus, if a Census Block has – just for example – one mile of boundary roads and one mile of interior roads, the random allocation of points to road locations for *this* Census Block is *twice* as likely to place a point along those interior roads (because they have two sides) as along the boundary roads (which have only one side in *this* Census Block).

We point out also that the *distance* along a road against which random offsets are allocated is the true curved length of that road.

Random Number Distribution

We generate pseudo-random numbers, for the purpose of allocation, that will have – over a very large number of random generations – a uniform (an "unbiased") distribution. That does not mean that in any Census Block the distribution will be uniform (it will not, it will be random), but it does mean that the random allocations will not be *deliberately* clustered in a Census Block.

Census Blocks with No Roads

Although these are uncommon, we encounter some Census Blocks with one or more customers but *no* roads of the eligible types. For example, in Maryland, restricting ourselves to the types of roads listed above, $1/6^{th}$ of 1% of the *populated* Census Blocks (99 Census Blocks) have no roads of the eligible types. When this occurs, we must have a basis under which to randomly allocate customer points.

In this circumstance, we generate the appropriate number of points randomly along *other* road types or, if somehow even those are not present, along the periphery of the Census Block. In every case, these are set back 50 feet.

Housing Units vs. Households

Please note that in this data *housing units* (not households) are the units of residential allocation. A point record may represent one or more *housing units* (the number is the the value in the 4^{th} field of the record).

Granularity of Terrain Data

Note that the terrain data we use is averaged for each *Census Block.* This is finer than what HCPM currently uses. The terrain data that appears in current HCPM examples is *less* granular ... It is averaged across a whole Census Block *Group.*

We would note further that this terrain data is copyrighted by Stopwatch Maps. If and when this data is to be *widely* distributed, we wish to discuss procedures for the protection of our data.

Soil Surface Texture Values

The following are the soil surface texture values used. These typically appear individually, but two *may* appear together in the form ***xxxx-xxxx,*** where each *xxxx* is one of these values:

Abbr	*Meaning*	*Abbr*	*Meaning*
BY	Bouldery	CBA	Angular Cobbly
BYV	Very Bouldery	CBV	Very Cobbly
BYX	Extremely Bouldery	CBX	Extremely Cobbly
C	Clay	CE	Coprogenous Earth
CB	Cobbly	CEM	Cemented

CIND	Cinders
CL	Clay Loam
CN	Channery
CNV	Very Channery
CNX	Extremely Channery
COS	Coarse Sand
COSL	Coarse Sandy Loam
CR	Cherty
CRC	Coarse Cherty
CRV	Very Cherty
CRX	Extremely Cherty
DE	Diotomaceous Earth
FB	Fibric Material
FL	Flaggy
FLV	Very Flaggy
FLX	Extremely Flaggy
FRAG	Fragmental Material
FS	Fine Sand
FSL	Fine Sandy Loam
G	Gravel
GR	Gravelly
GRC	Coarse Gravelly
GRF	Fine Gravelly
GRV	Very Gravelly
GRX	Extremely Gravelly
GYP	Gypsiferous Material
HM	Hemic Material
ICE	Ice or Frozen Soil
IND	Indurated
L	Loam
LS	Loamy Sand
LVFS	Loamy Very Fine Sand
MARL	Marl
MK	Mucky
MPT	Mucky Peat
MUCK	Muck
PEAT	Peat
PT	Peaty
RB	Rubbly
S	Sand
SC	Sandy Clay
SCL	Sandy Clay Loam
SG	Sand and Gravel
SH	Shaly
SHV	Very Shaly
SHX	Extremely Shaly
SI	Silty
SIC	Silty Clay
SICL	Silty Clay Loam
SIL	Silt Loam
SL	Sandy Loam
SP	Sapric Material
SR	Stratified
ST	Stony
STV	Very Stony
STX	Extremely Stony
SY	Slaty
SYV	Very Slaty
SYX	Extremely Slaty
UNK	Unknown
UWB	Unweathered Bedrock
VAR	Variable
VFS	Very Fine Sand
VFSL	Very Fine Sandy Loam
WB	Weathered Bedrock

HCPM Surrogate Customer Points Input Data
Stopwatch Maps - Data Price Estimate

Creation of data for all states, Wash D.C., and Puerto Rico	$125,000
Distribution of Stopwatch Maps terrain data	$ 30,000
Total	$155,000