Adding Value to Police Crime Data for the County Open Data Portal Using Geographic Information Systems

Figure 1: Each crime address must be geocoded twice – once using the actual address (the blue star) for assignment of polygons (such as Districts) and a second time using the hundred-block address to anonymize the point location. The red X is the location that would have determined the designation of District and other polygons if the anonymized hundred-block address that is used for displaying the point on the map had been used for the entire process.
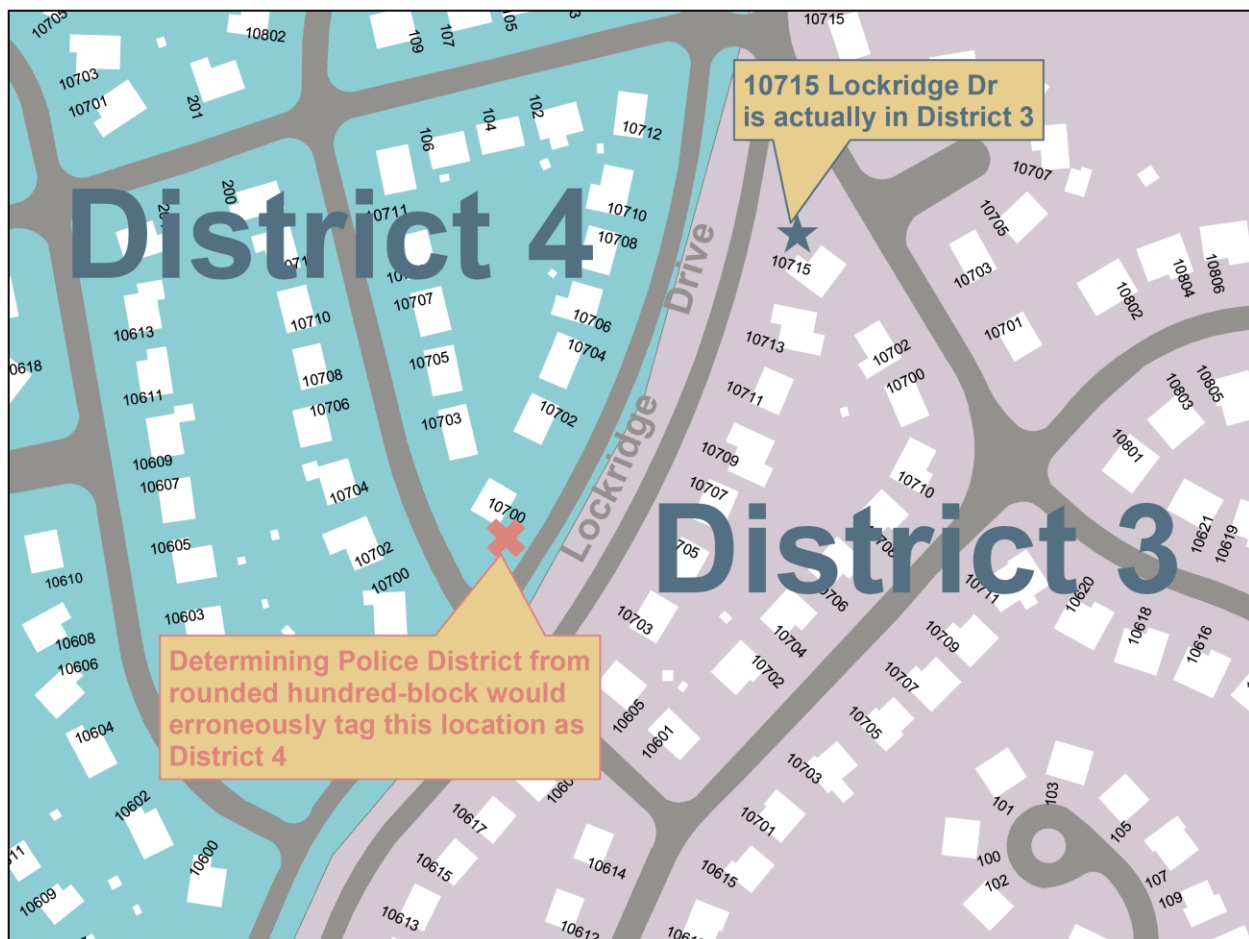
Figure 2a: *Original file based approach*

Older Process

ESB Job populate XML file and put it in the shared folder

.Net/Middle Tier Processing

File System

Read Records from the XML file

GeoCode using Address Field Value

ArcGIS Server

Log file to recording total number of records and number of records processed

GeoCoding Service Composite

Using Latitude and Longitude from GeoCoder get other information

BEAT, PRA, City, Zipcode Mapservice

Create Error file for non-geocoded records

Round the Address Field Value to Block Address and GeoCode with No Offset GeoCoder

GeoCoding Service No Off Set

New XML file with GeoCoded and Processed Data

Store new Latitude and Longitude and other information in XML File

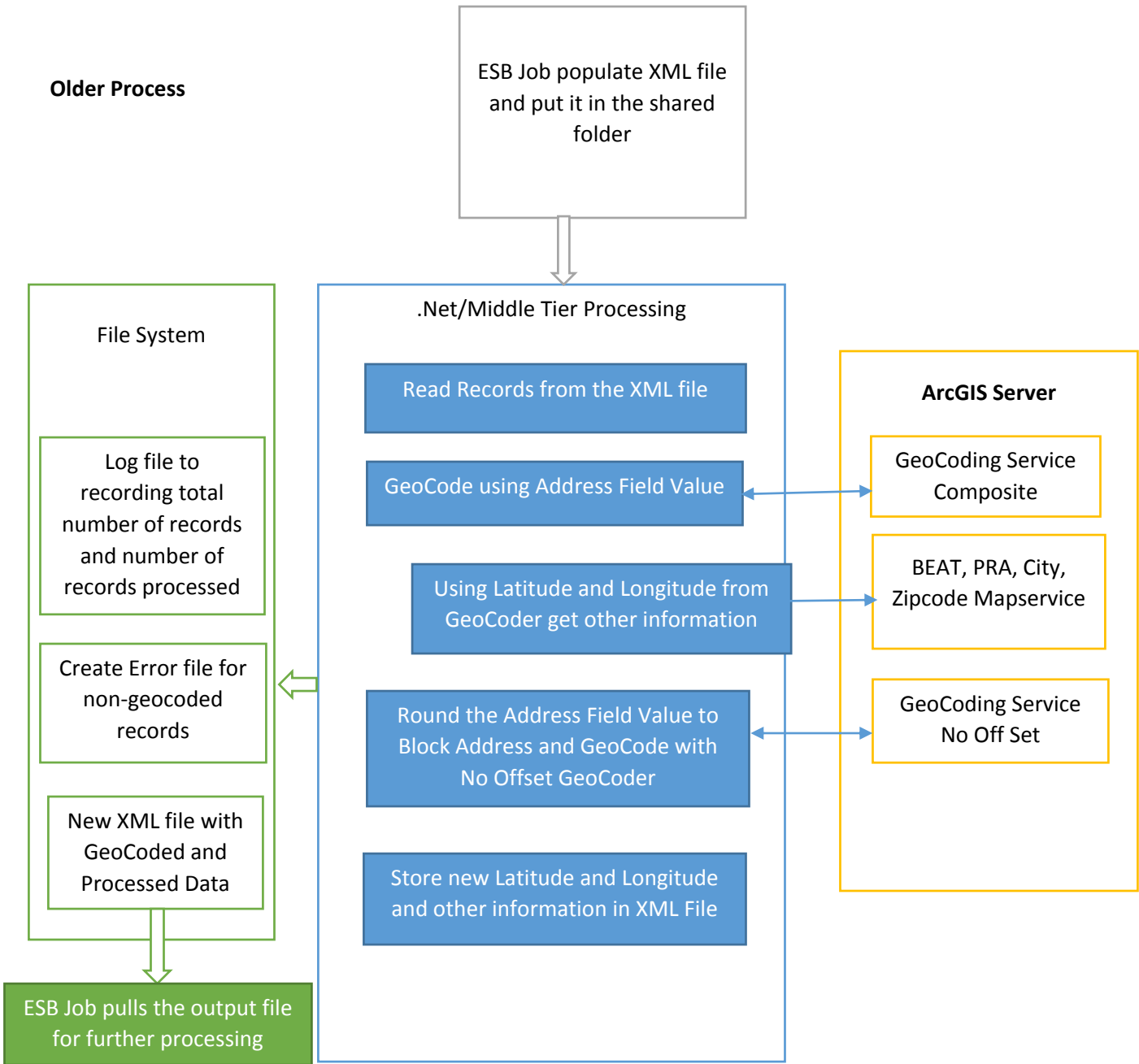ESB Job pulls the output file for further processing

Figure 2b: *New database approach that reduced processing time tenfold*

New Process

```
┌─────────────────────────┐
│                         │
│   ESB Job populate      │
│   table in the          │ ◄────────────┐
│   Oracle Database       │              │
│                         │              │
└─────────────────────────┘              │
                                         │
                                    ┌──────────┐
                                    │          │
┌─────────────┐  ┌────────────────────────────┐  │ Oracle │
│ File System │  │  .Net/Middle Tier Processing │  │   DB   │
│             │  │                              │  └──────────┘
│ ┌─────────┐ │  │ ┌──────────────────────────┐ │
│ │Log file │ │  │ │Read Records from the     │ │◄──────┐
│ │to       │ │  │ │Database table using LINQ │ │       │
│ │recording│ │  │ └──────────────────────────┘ │  ┌─────────────────┐
│ │total    │ │  │                              │  │  ArcGIS Server  │
│ │number of│ │  │                              │  │                 │
│ │records  │ │◄ │ ┌──────────────────────────┐ │  │ ┌─────────────┐ │
│ │and      │ │  │ │GeoCode using Address     │ │◄─┤ │GeoCoding    │ │
│ │number of│ │  │ │Field Value               │ │  │ │Service      │ │
│ │records  │ │  │ └──────────────────────────┘ │  │ │Composite    │ │
│ │processed│ │  │                              │  │ └─────────────┘ │
│ └─────────┘ │  │ ┌──────────────────────────┐ │  │                 │
│ ┌─────────┐ │  │ │Using Latitude and        │ │  │ ┌─────────────┐ │
│ │Create   │ │  │ │Longitude from GeoCoder   │ │◄─┤ │BEAT, PRA,   │ │
│ │Error    │ │  │ │get other information     │ │  │ │City,        │ │
│ │file for │ │  │ └──────────────────────────┘ │  │ │Zipcode      │ │
│ │non-     │ │  │                              │  │ │Mapservice   │ │
│ │geocoded │ │  │ ┌──────────────────────────┐ │  │ └─────────────┘ │
│ │records  │ │  │ │Round the Address Field   │ │  │                 │
│ └─────────┘ │  │ │Value to Block Address    │ │◄─┤ ┌─────────────┐ │
│             │  │ │and GeoCode with No       │ │  │ │GeoCoding    │ │
└─────────────┘  │ │Offset GeoCoder           │ │  │ │Service      │ │
       │         │ └──────────────────────────┘ │  │ │No Off Set   │ │
       ▼         │ ┌──────────────────────────┐ │  │ └─────────────┘ │
┌─────────────┐  │ │Update the database with  │ │  │                 │
│ESB Job pulls│  │ │the processed data        │ │  └─────────────────┘
│the data from│  │ └──────────────────────────┘ │
│Oracle       │  └──────────────────────────────┘
│database for │
│processing   │
└─────────────┘
```

File System

Log file to recording total number of records and number of records processed

Create Error file for non-geocoded records

ESB Job pulls the data from Oracle database for processing

.Net/Middle Tier Processing

Read Records from the Database table using LINQ

GeoCode using Address Field Value

Using Latitude and Longitude from GeoCoder get other information

Round the Address Field Value to Block Address and GeoCode with No Offset GeoCoder

Update the database with the processed data

ArcGIS Server

GeoCoding Service Composite

BEAT, PRA, City, Zipcode Mapservice

GeoCoding Service No Off Set