IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
GREENBELT DIVISION

*

PATRICIA FLETCHER, *et al.*,

*

Plaintiffs,

*

v. Civil Action No: 8:11-cv-03220-RWT

*

LINDA H. LAMONE, *et al.*,

*

Defendants.

*

* *

DECLARATION OF KARL ARO

I, Karl Aro, being competent to testify, hereby affirm on my personal knowledge as follows:

1. I am the Director of the Department of Legislative Services. The Department of Legislative Services ("DLS") serves as the staff agency to the Maryland General Assembly.
2. DLS is involved in the state and congressional redistricting process. DLS drafts congressional and state redistricting plans for members of the General Assembly and prepares the legislation for congressional and state redistricting.
3. DLS contracted with Caliper Corporation ("Caliper") to complete the final step in determining the placement of incarcerated individuals within the appropriate Census block to implement the "No Representation Without Population Act" of 2010 ("Act").

4. Caliper is the maker and distributor of redistricting software, Maptitude for Redistricting, that was used by DLS and the Maryland Department of Planning ("MDP") during congressional redistricting. DLS contracted with Caliper to perform the final adjustment to the population as required by the Act.
5. Attached is the final report of Caliper that describes the actions taken by Caliper to adjust the population that was received by DLS on May 4, 2011.
6. The adjusted population database was delivered to DLS and MDP during the week of March 14, 2011 for release in the Report of Maryland Precinct Data. This report is found at http://planning.maryland.gov/redistricting/2010/precinct.shtml.
7. I declare under the penalty of perjury that the forgoing is true and correct.

Executed on November 28, 2011

Karl Aro

Caliper Corporation 1172 Beacon Street • Suite 300 • Newton, MA 02461 • Tel. 617-527-4700 • www.caliper.com

March 23, 2011

Karl S. Aro, Executive Director
Office of the Executive Director
Department of Legislative Services
90 State Circle, Suite 200
Annapolis, MD 21401-1991
(301) 970 5200
(301) 970 5205 (Fax)
karl.aro@mlis.state.md.us

RECEIVED
MAY 04 2011
By_____

Dear Mr. Aro:

Enclosed please find our final report for the Maryland 2010 Census Prisoner Adjustment project.

Sincerely yours,

Robert Freimer, Ph.D.
Director of Database Development

MARYLAND 2010 CENSUS PRISONER ADJUSTMENT

FINAL REPORT

Prepared for the Maryland Department of Legislative Services

March 23, 2011

Prepared by:

Caliper Corporation
1172 Beacon Street Suite 300
Newton, MA 02461-1146

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This document constitutes the final report for the work performed by Caliper Corporation for Maryland 2010 Census Prison Adjustment. The goal of this project was to adjust the 2010 Census PL 94-171 data for Maryland to account for the prison population as required by Maryland State Law.

This adjustment was made for the inmates housed by the Maryland Department of Corrections (DOC). In-state prisoners with good home addresses were moved from the Census Block containing their prison to their home Census Block. In-state prisoners with unusable home addresses were left at their prison Census Block. Out of state prisoners were dropped from their prison Census Block.

No adjustment was made for Federal inmates at the facility in Cumberland at this time pending the State's appeal of the FOIA denial by the Federal Bureau of Prisons. Prisoners under the responsibility of Maryland Division of Pretrial Detention and Services were not included in the adjusted population because they are not considered to be "incarcerated" due to their pre-trial status.

Inputs

The following inputs were used for this project:

- *Redistricting Data TIGER/Line 2010 with 2010 PL 94-171 Data* from Caliper – This contains the boundaries for various levels of Census geography in a format compatible with Maptitude for Redistricting. Each boundary file contains all the 2010 PL data comprised of the following tables:
    - P1: Race
    - P2: Hispanic or Latino, and Not Hispanic or Latino by Race
    - P3: Race for the Population 18 Years and Over
    - P4: Hispanic or Latino, and Not Hispanic or Latino by Race for the Population 18 Years and Over
    - H1: Occupancy Status
- DOC file.shp – The addresses and point locations of the 22,064 DOC inmates. The locations of in-state prisoners were geocoded by the Maryland Department of Planning (MDP) with the Esri ArcGIS 10 software to the 2010 Census TIGER/Line streets, using a 20 foot offset from the street centerline. MDP followed strict rules for the geocoding to comply with the state regulation.
- XYcorrection_to_DOC_file.shp – An errata list of six in-state prisoners that should not be moved from their assigned facility due to invalid home addresses.
- Facility.shp – The addresses of the 47 DOC facilities.

Outputs

PL 94-171 Tables P1: Race and P3: Race for the Population 18 Years and Older were adjusted for Maryland. The data were created in two formats to support use with different redistricting software packages:

- An updated version of *Redistricting Data TIGER/Line 2010 with 2010 PL 94-171 Data* with additional data fields containing the adjusted P1 and P3 counts. This data DVD works with Maptitude for Redistricting. The new fields are added to the following Census geographic layers:
    - Census Blocks
    - Census Block Groups

  - Census Places
  - Census Tracts
  - Combined Statistical Areas
  - Congressional Districts
  - Core Based Statistical Areas
  - Core Based Statistical Area Divisions
  - Counties
  - County Subdivisions
  - State
  - State House Districts
  - State Senate Districts
  - Unified School Districts
  - Voting Districts
- The above geographic layers were also provided as Esri File Geodatabases.

DOC Inmates

Caliper received a list of DOC prisoners that had been processed by MDP. The list originated from a file provided by DOC as of February 4, 2011.

It was necessary to handle in-state and out of state prisoners separately for this project. The goal was to adjust the PL 94-171 counts so that in-state prisoners are counted at their last known home address and out of state prisoners are excluded so that they are not counted at all. It was only possible to reassign in-state prisoners when a good home address was provided that could be geocoded to a location. The remaining in-state prisoners were left at their DOC facility.

The file provided by MDP had sufficient information to separate the prisoners into three categories for this project:

1. In-state prisoners with good geocoded home addresses: These could be identified with a blank CATEGORY field and a STATUS other than "U". MDP geocoded their addresses with the Esri ArcGIS 10 software to the 2010 Census TIGER/Line streets, using a 20 foot offset from the street centerline. MDP followed strict rules for the geocoding to comply with the state regulation. The point geographic coordinates are in meters, using the 1983 Maryland State Plane Coordinate System. 17,146 prisoners met these criteria, but some of them were moved to category 2 for reasons explained later.
2. In-state prisoners without a good geocoded home address: These were geocoded to the DOC facility and cannot be moved. They can be identified with a "CORRECTIONAL FACILITY", "INCOMPLETE ADDRESS", "NO ADDRESS", "PO BOX" or "RR BOX" value in the CATEGORY field. They were excluded from our adjustment process. 3,592 prisoners met these criteria.
3. Out of state prisoners: These could be identified with an "OUT OF STATE" value in the CATEGORY field and will be removed from their assigned facility and from the population totals. 1,326 prisoners met this criterion, but a few of them were moved to category 2 for reasons explained later.

Six prisoners listed the MDP errata file, XYcorrection_to_DOC_file.shp, were reassigned from category 1 to category 2, since they do not have good home addresses.

All category 1 prisoners were assigned a home Census Block by tagging their home location with the Census Block that contains the point. This was performed by using Maptitude with the 2010 Census TIGER/Line files. All coordinates were converted to longitude-latitude (NAD83). One prisoner located in Capital Heights, MD was manually assigned to Census Block 240338029011036, since the 20 foot offset placed him into the District of Columbia, but he clearly should be located in that Census Block. One prisoner located in Havre de Grace was manually assigned to Census Block 240253061002011 as directed by MDP, since he had been geocoded to the Susquehanna River (Census Block 240253061002000).

All prisoners assigned to the Central Home Detention Unit were excluded from the adjustment by placing them in category 2 because reassigning them would result in double counting. These prisoners are restricted to their own homes and are presumed to have been counted there. The facility address is an office building within a Census Block 245101204002015 with zero population, so there was no adjustment required. This reclassified 160 prisoners from category 1 and one from category 3.

Prisoners assigned to DOC Headquarters are not housed at that office building, which lies within Census Block 245102801012000 with zero population. These prisoners are in protective custody and housed at other undisclosed locations. Most of them are in-state prisoners that still need to be assigned to their homes. The 29 prisoners in category 1 were adjusted in the same fashion as other DOC facilities, creating a negative population in the DOCHQ Census Block. The four out-of state prisoners were reassigned to category 2 and not processed.

After the recategorization for these special cases, there were 16,988; 3,755; and 1,321 prisoners respectively in categories 1-3

Both category 1 and 3 prisoners were assigned a facility Census Block. The next sections details how that block was assigned to each active DOC facility.

In order to adjust the racial components in the PL 94-171 tables, each prisoner was assigned to one of five races:

- American Indian (RACE "I")
- Asian (RACE "A")
- Black (RACE "B")
- Other (RACE "U")
- White (RACE "W")

The prisoners with a RACE code of "U" have an unknown race. Caliper was directed to treat these as having the Other race classification that Census uses. No prisoners were assigned to either Hawaiian or any of the multi-racial Census categories.

All prisoners were assumed to be of voting age (18+) for this adjustment.

DOC Facilities

Caliper received a list of 47 DOC facilities that had been processed by MDP. The list originated from a file provided by DOC as of February 4, 2011.

The number of DOC prisoners assigned to each facility was tallied, matching the FACILITY_C field in the Facility file against the FACILITY field in the prisoner file. The following codes in the prisoner file had to be adjusted to match those used in the facility file.

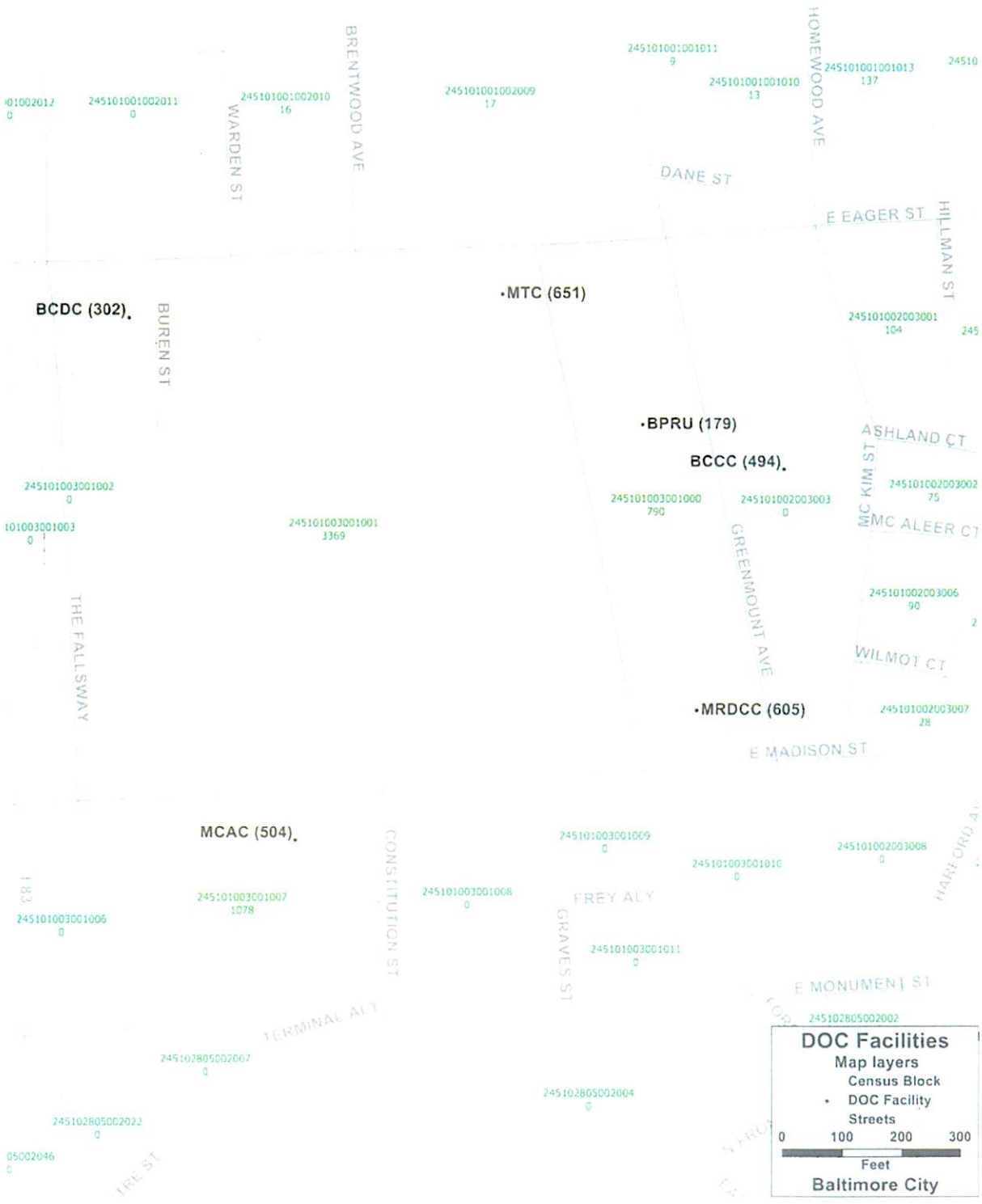
DOC File	Facility File
PATX	PATXNT
PATX-A	PATXA
PATX-AW	PATX-W
PATX-MH	PATXNT
PATX-Y	PATXY
PHRU	PHPRU

Since all the Patuxent prisoners are at the same geographic location, the exact code was not important for the PATX and PATX-MH prisoners.

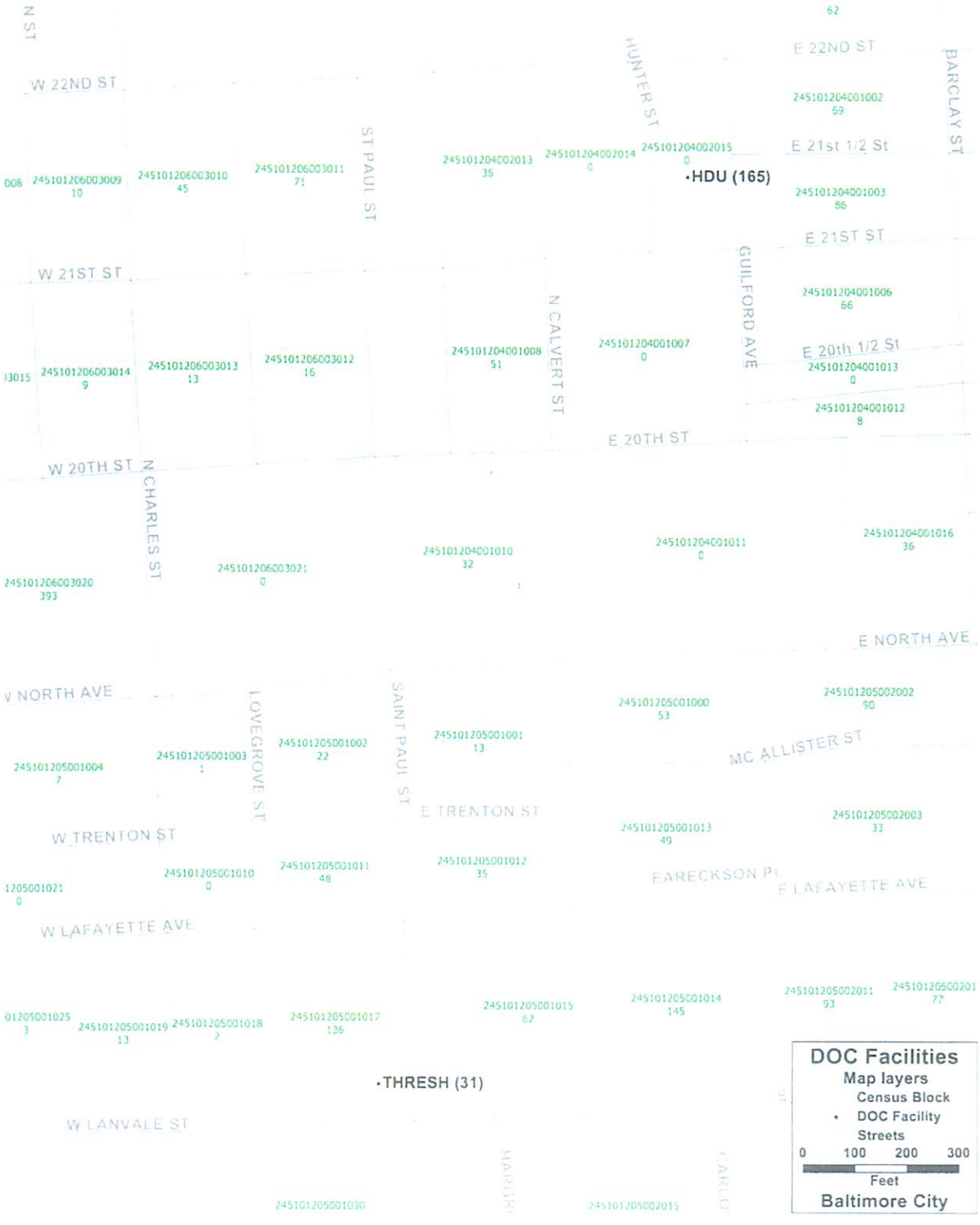
Only the 33 active facilities with prisoners were carefully located. The remaining 14 were not used by this project. For each of the active DOC facilities, MDP provided a geographic coordinate geocoded from the address provided by DOC. This was used by Caliper as a starting point to figure out the location of the facility using the best available public sources.

Each facility was moved using Maptitude to an appropriate location that was off the street centerline and close to a building shown in aerial imagery available in Google Maps. The 2010 Census Block boundaries with populations were also used as a reference. The goal was to have a good location that could be manually associated the appropriate Census Block. It was not necessary to have an exact location as long as it was in the correct Census Block. In several cases, the prison population was placed by Census in a nearby block. In such situations, we left the facility in the correct block, but manually associated it with the block with the prisoner population.

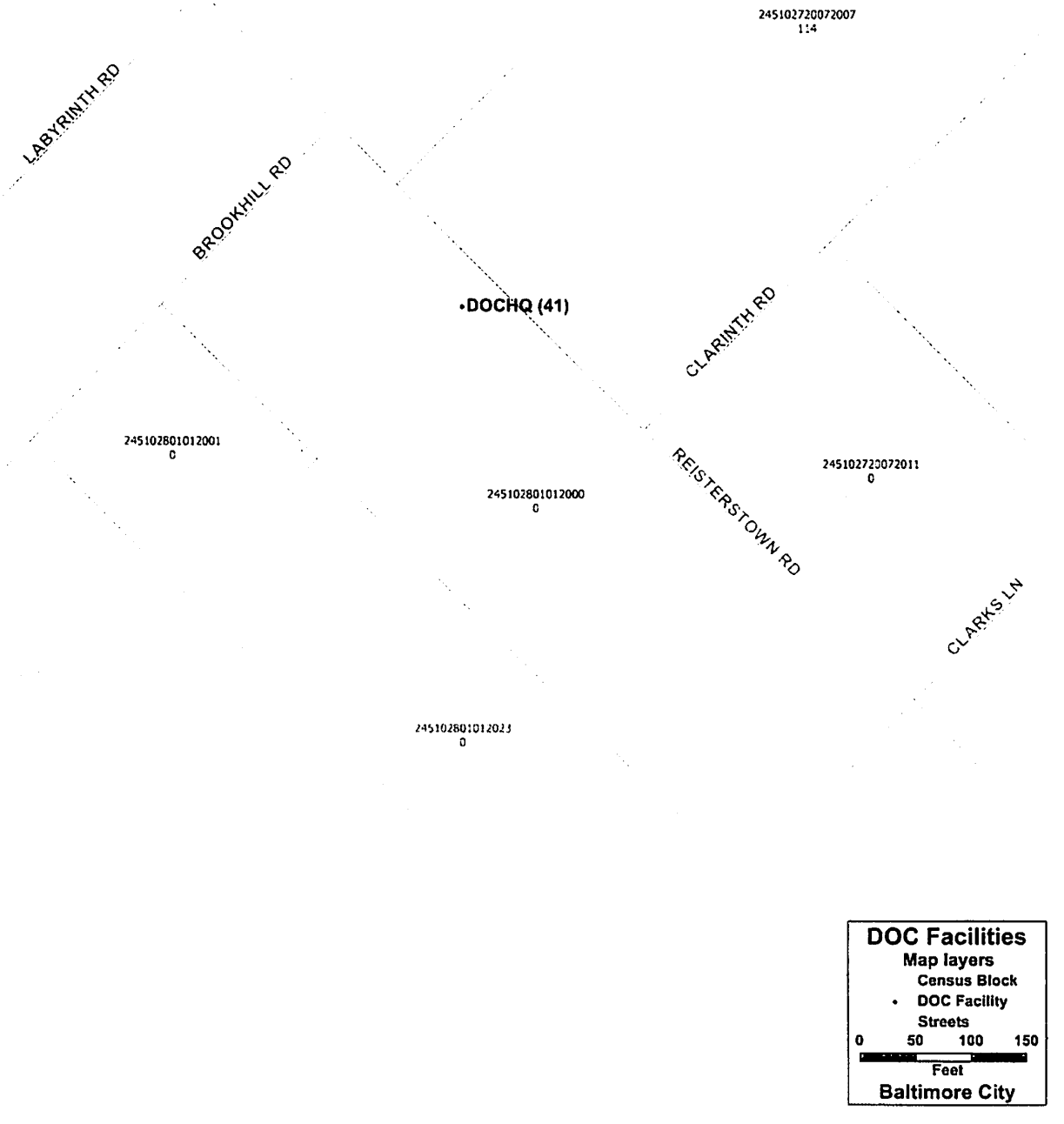
The following maps show the active DOC facilities along with their prisoner populations. Their prison Census Blocks are shown in a pale yellow. Processing notes are also included where appropriate.



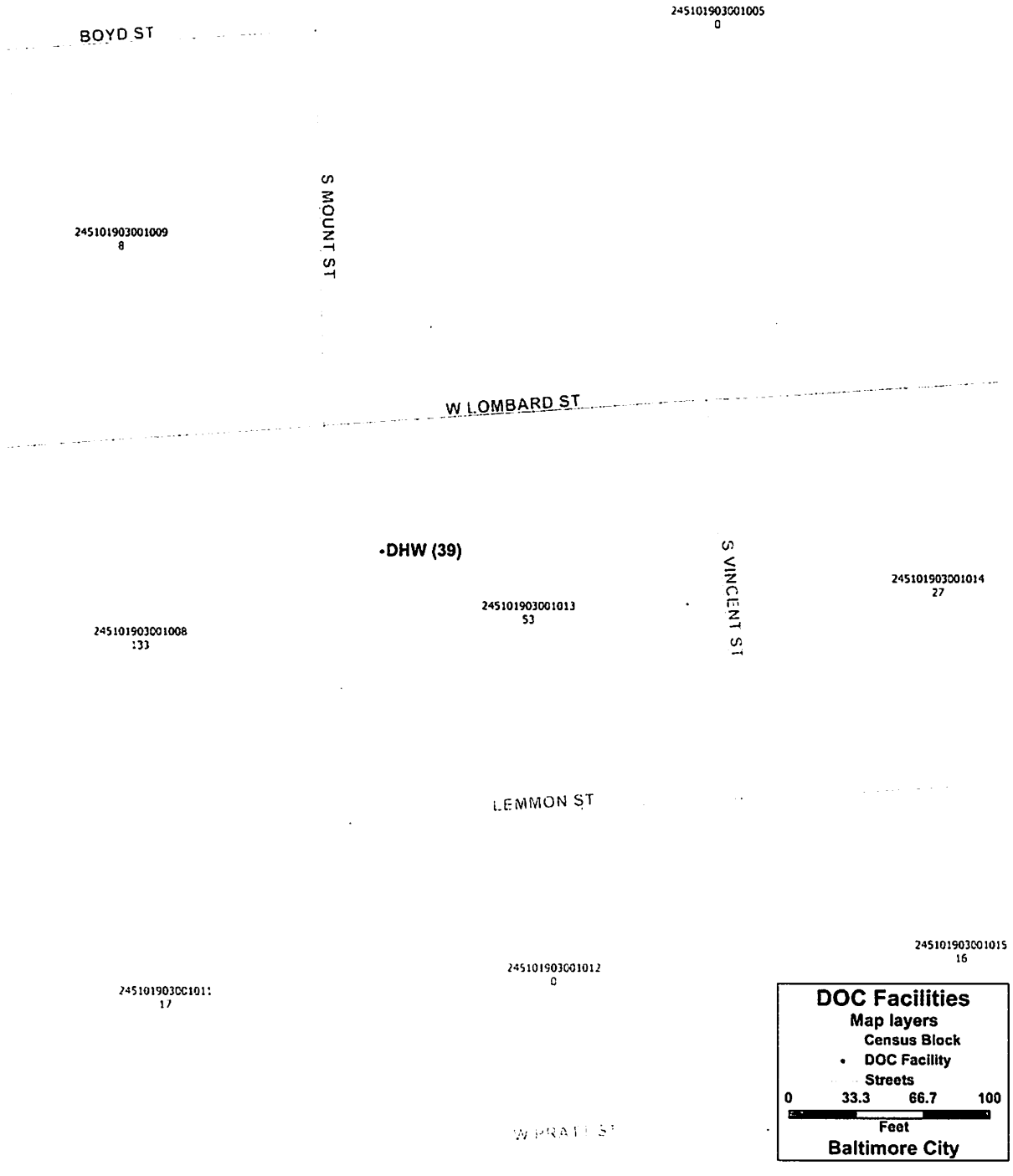
BCCC was assigned to Census Block 245101003001007, since its own block had zero population.

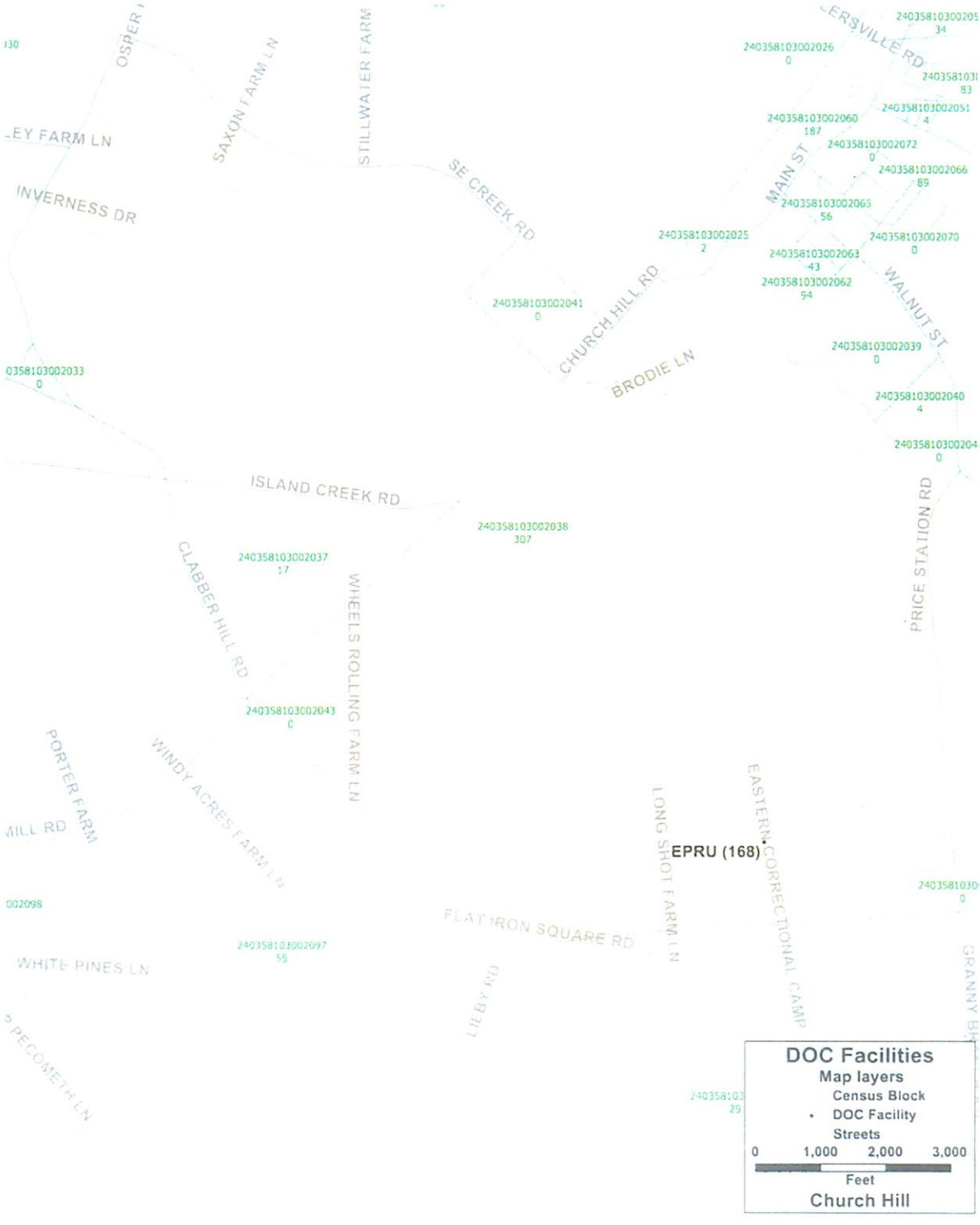


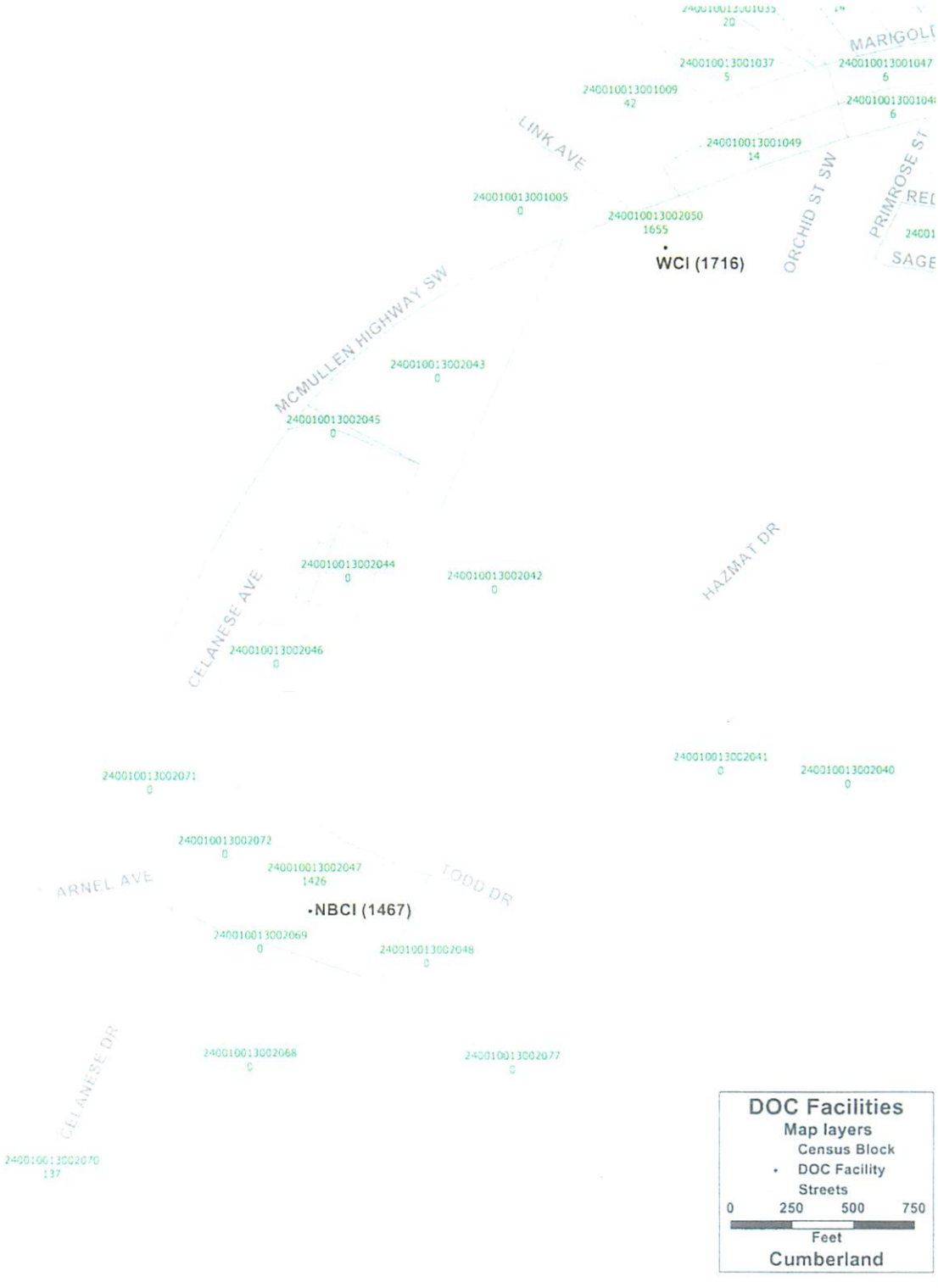
As described earlier, the prisoners assigned to HDU were ignored. The Census Block containing THRESH is a multi-use block with unrelated residential housing.

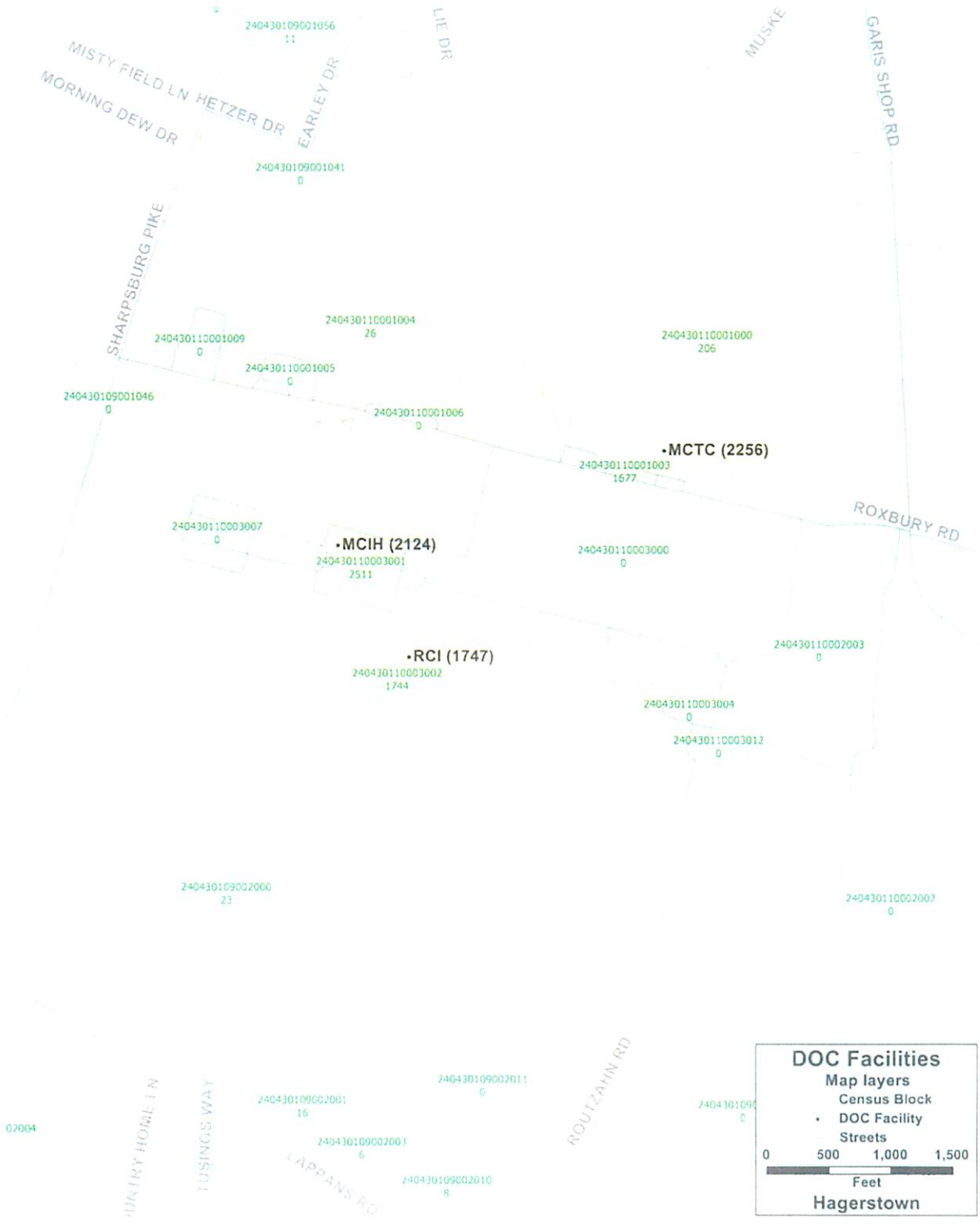


The Census Block with DOCHQ has zero population.

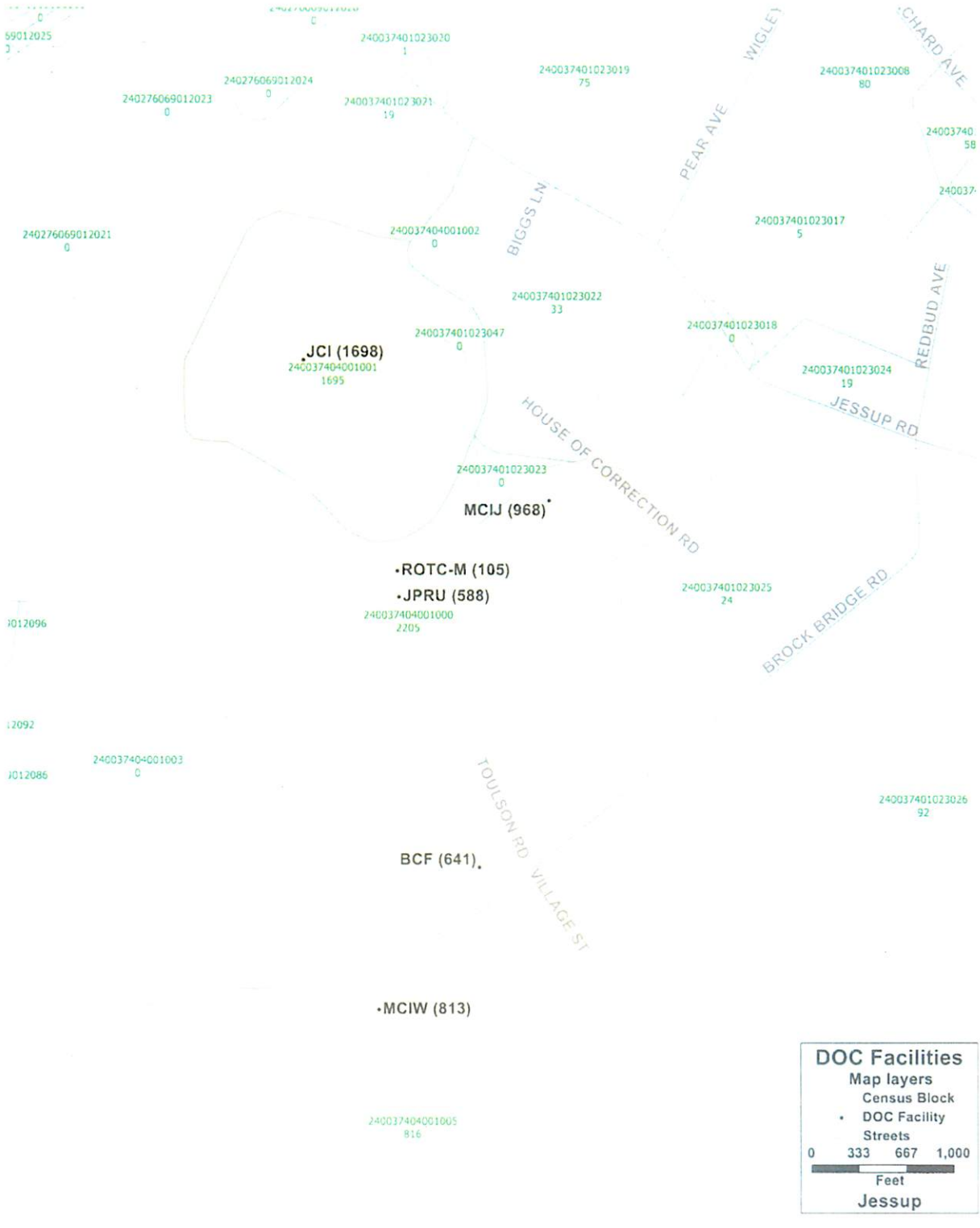

2451019030010050
BOYD ST
S MOUNT ST
2451019030010098
W LOMBARD ST
DHW (39)
S VINCENT ST
2451019030010139
2451019030010133
2451019030010153
2451019030010127
LEMMON ST
2451019030010117
2451019030010120
2451019030010156
W PRATT ST
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 33.3 66.7 100
Feet
Baltimore City


OSPER
SAXON FARM LN
STILLWATER FARM
SE CREEK RD
INVERNESS DR
MAIN ST
CHURCH HILL RD
WALNUT ST
BRODIE LN
ISLAND CREEK RD
PRICE STATION RD
CLABBER HILL RD
WHEELS ROLLING FARM LN
PORTER FARM
WINDY ACRES FARM LN
LONG SHOT FARM LN
EASTERN CORRECTIONAL CAMP
FLAT IRON SQUARE RD
WHITE PINES LN
EPRU (168)
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 1,000 2,000 3,000
Feet
Church Hill


240010013001035
20
MARIGOLD
240010013001037
5
240010013001047
6
240010013001009
42
240010013001048
6
LINK AVE
240010013001049
14
ORCHID ST SW
PRIMROSE ST
240010013001005
0
240010013002050
1655
WCI (1716)
SAGE
MCMULLEN HIGHWAY SW
240010013002043
0
240010013002045
0
240010013002044
0
240010013002042
0
HAZMAT DR
CELANESE AVE
240010013002046
0
240010013002041
0
240010013002040
0
240010013002071
0
240010013002072
0
240010013002047
1426
ARNEL AVE
TODD DR
NBCI (1467)
240010013002069
0
240010013002048
0
CELANESE DR
240010013002068
0
240010013002077
0
240010013002070
137
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 250 500 750
Feet
Cumberland



MCTC was assigned to three Census Blocks: 240430110001003, 240430110001000, and 240430110001004. The primary assignment was to 240430110001003, but this block had insufficient population and the two adjacent blocks also contain prisoners, since there are no housing units present. These three blocks are still insufficient to handle all the MCTC prisoners to be removed.



The location of MCIW was determined by using the 2000 Census SF1 data to check the gender of the population. BCF might be located in the same block physically, but needs to be assigned where it was sited across the street to match the block population. The exact location of ROTC-M and JPRU with regards to their sides of Toulson Road is unknown, but not important since either way they are in the same Census Block.

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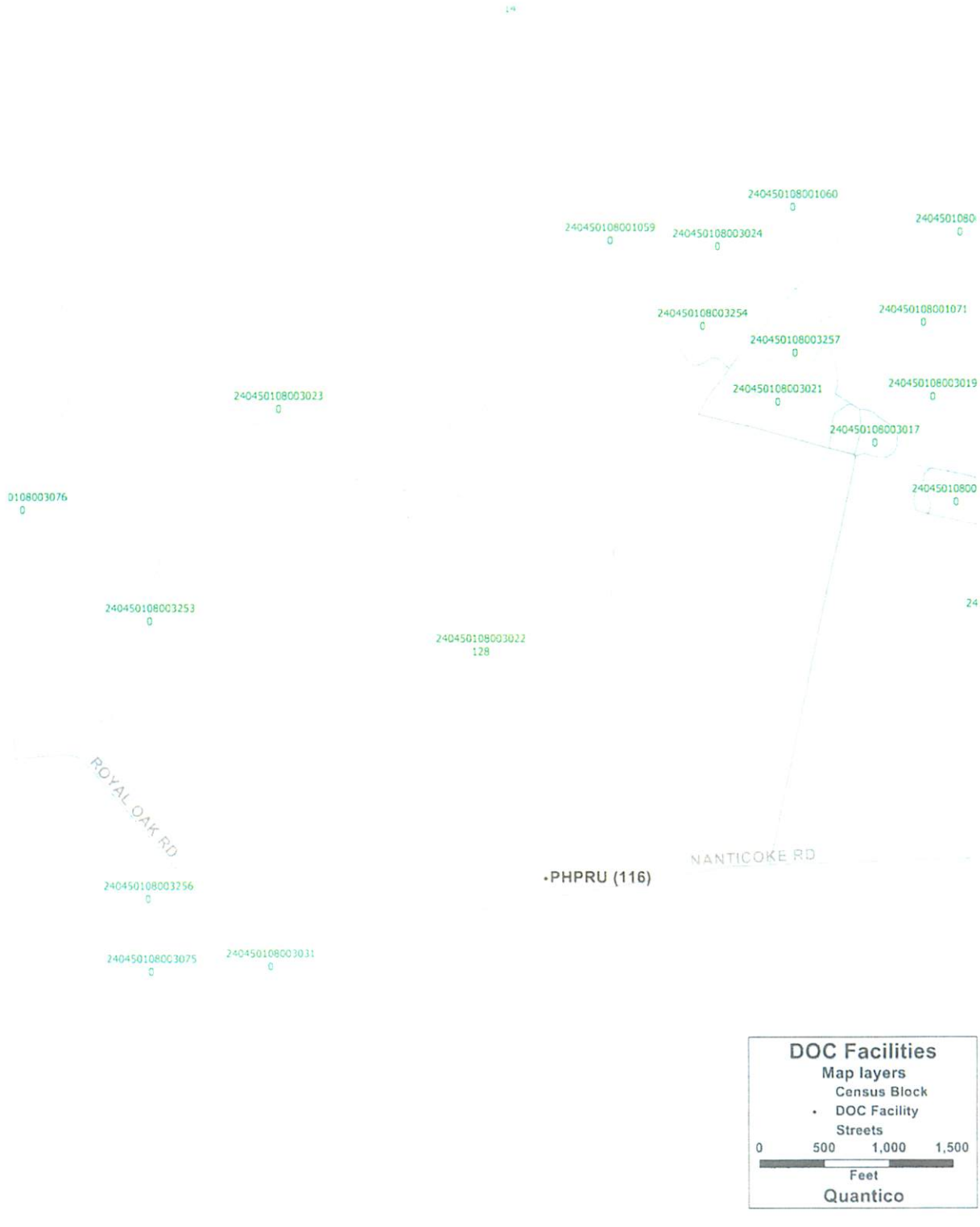
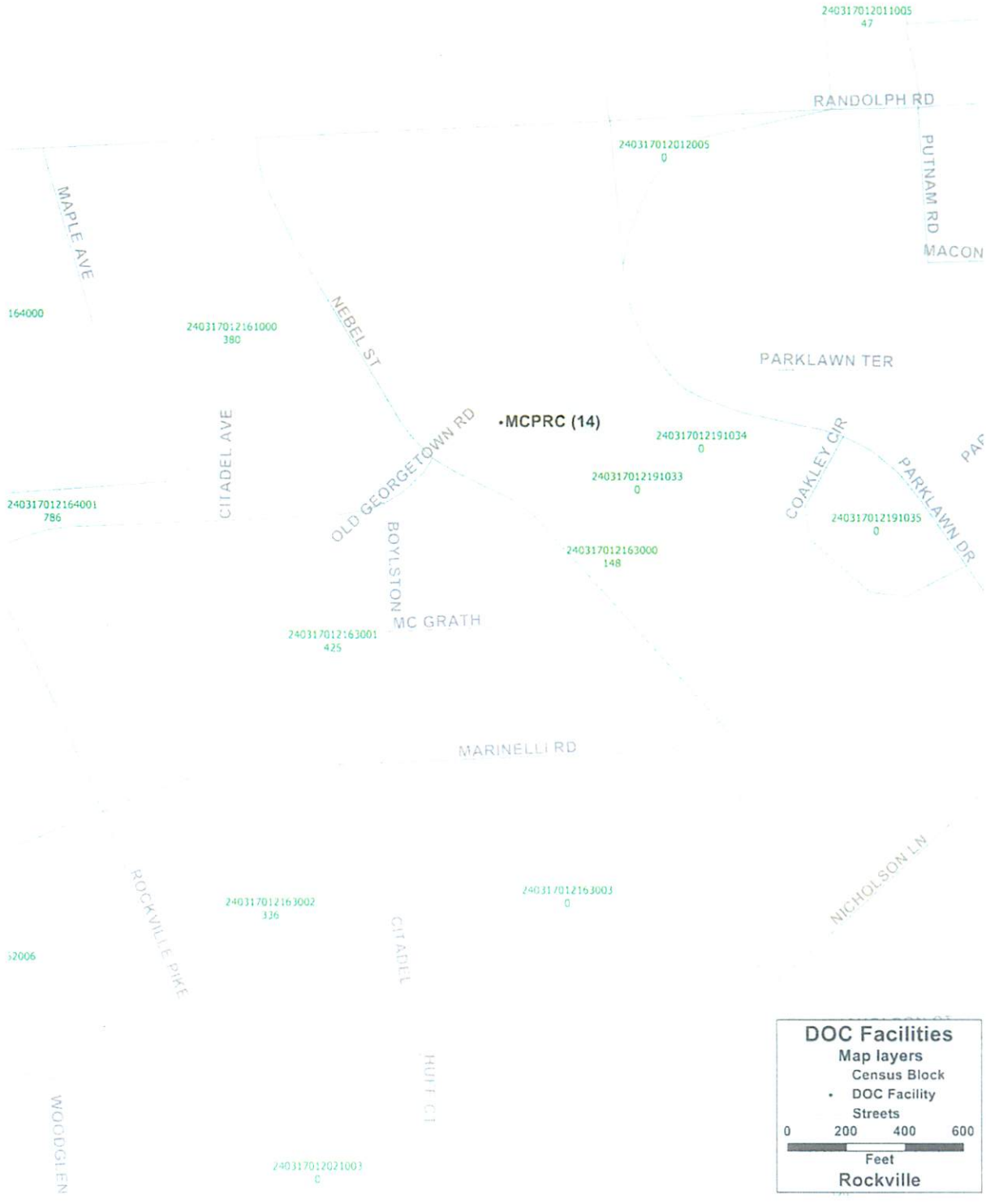
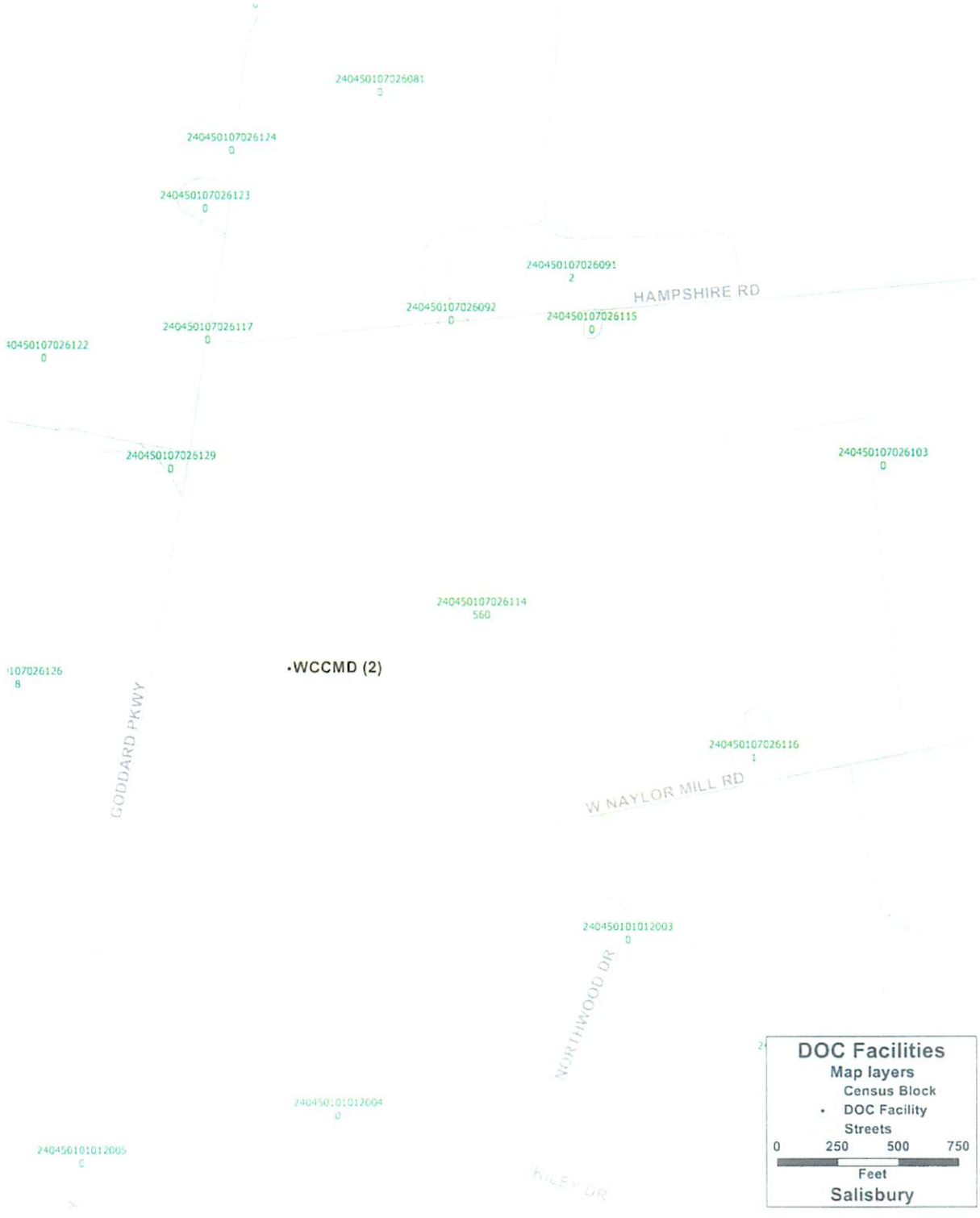
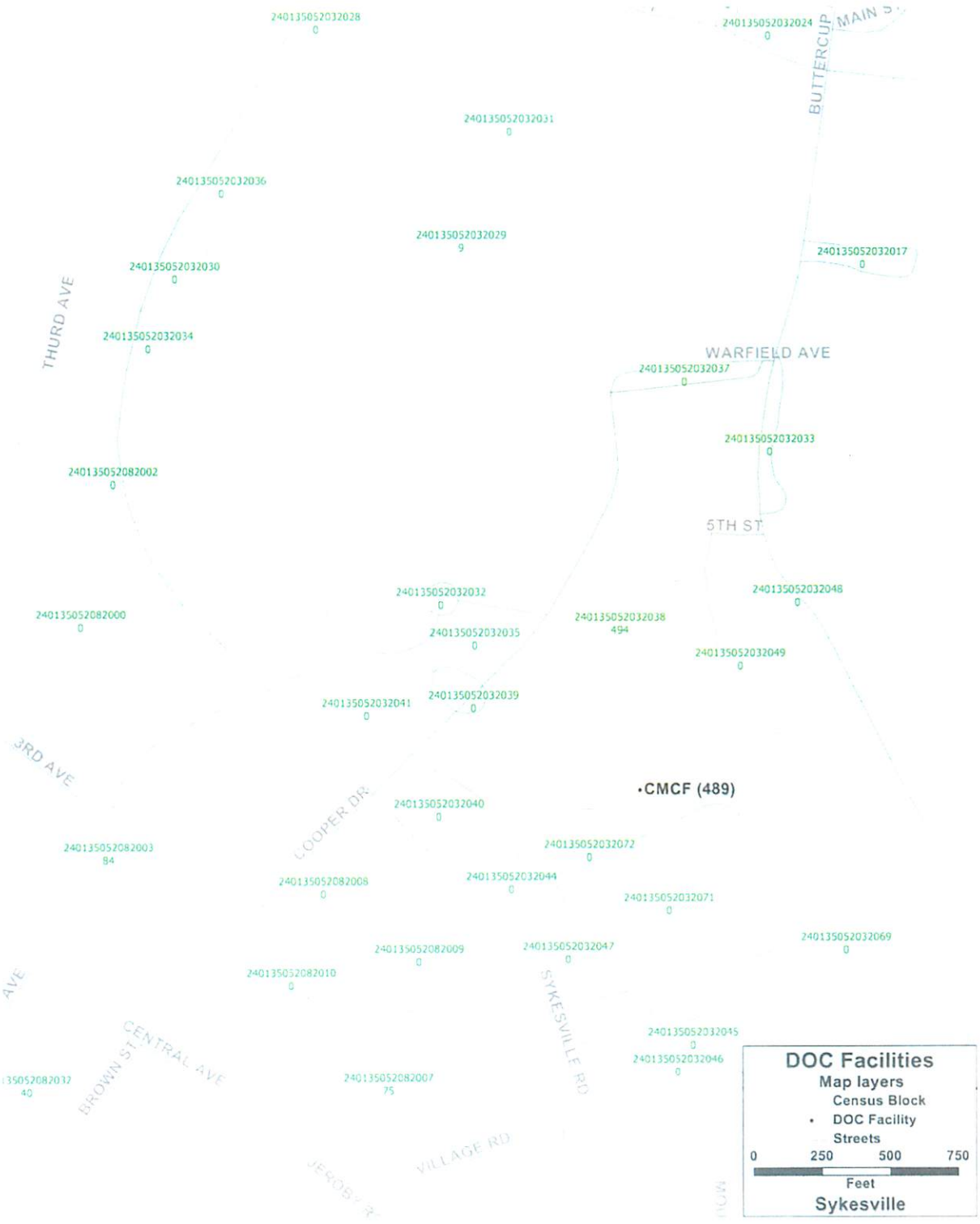
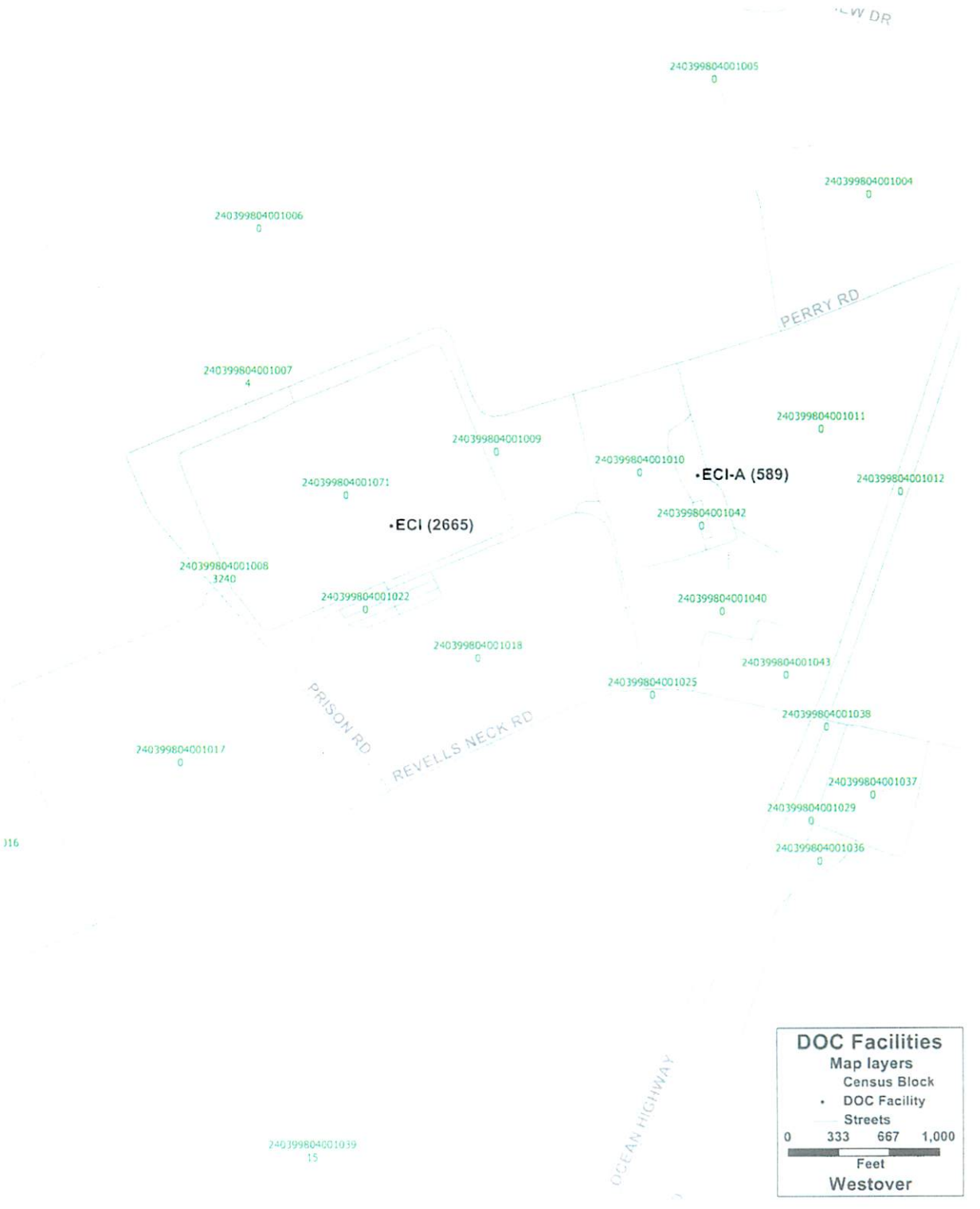

240450108001060
0
240450108001059
0
240450108003024
0
240450108003254
0
240450108001071
0
240450108003257
0
240450108003023
0
240450108003021
0
240450108003019
0
240450108003017
0
0108003076
0
240450108003253
0
240450108003022
128
ROYAL OAK RD
NANTICOKE RD
PHPRU (116)
240450108003256
0
240450108003075
0
240450108003031
0
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 500 1,000 1,500
Feet
Quantico


240317012011005
47
RANDOLPH RD
240317012012005
0
PUTNAM RD
MACON
MAPLE AVE
164000
240317012161000
380
NEBEL ST
PARKLAWN TER
MCPRC (14)
CITADEL AVE
OLD GEORGETOWN RD
240317012191034
0
COAKLEY CIR
PARKLAWN DR
240317012191033
0
240317012164001
786
240317012191035
0
240317012163000
148
BOYLSTON
MC GRATH
240317012163001
425
MARINELLI RD
NICHOLSON LN
ROCKVILLE PIKE
240317012163002
336
240317012163003
0
CITADEL
HUFF CT
WOODGLEN
240317012021003
0
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 200 400 600
Feet
Rockville


240450107026081
0
240450107026124
0
240450107026123
0
240450107026091
2
HAMPSHIRE RD
240450107026092
0
240450107026115
0
240450107026117
0
40450107026122
0
240450107026129
0
240450107026103
0
240450107026114
560
•WCCMD (2)
107026126
8
GODDARD PKWY
240450107026116
1
W NAYLOR MILL RD
240450101012003
0
NORTHWOOD DR
240450101012004
0
240450101012005
0
RILEY DR
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 250 500 750
Feet
Salisbury


240135052032028
0
240135052032024
0
MAIN ST
BUTTERCUP
240135052032031
0
240135052032036
0
240135052032029
9
240135052032017
0
240135052032030
0
THURD AVE
240135052032034
0
WARFIELD AVE
240135052032037
0
240135052032033
0
240135052082002
0
5TH ST
240135052032032
0
240135052032048
0
240135052082000
0
240135052032038
494
240135052032035
0
240135052032049
0
240135052032041
0
240135052032039
0
3RD AVE
•CMCF (489)
240135052032040
0
COOPER DR
240135052082003
84
240135052032072
0
240135052082008
0
240135052032044
0
240135052032071
0
240135052032069
0
240135052082009
0
240135052032047
0
240135052082010
0
SYKESVILLE RD
240135052032045
0
240135052032046
0
CENTRAL AVE
BROWN ST
135052082012
40
240135052082007
75
VILLAGE RD
DOC Facilities
Map layers
Census Block
DOC Facility
Streets
0 250 500 750
Feet
Sykesville



Census Block 240399804001008 contains the prisoners for ECI and ECI-A.

Adjusting the PL 94-171 Counts

The following procedure was used to adjust the 2010 PL 94-171 data. Only Tables P1: Race and P3: Race for the Population 18 Years and Older were adjusted for Maryland. No Hispanic origin information was provided by DOC, so it is impossible to update Tables P2 and P4. Table H1 only contains housing unit details and in not impacted by this project.

1. Tabulate the number of category 1 and 3 prisoners by race for each of the 21 Census Block associated with the active DOC facilities. These prisoners will be removed from the blocks listed.

Census Block	Population	White	Black	AmIndian	Asian	Other
240010013002047	1,151	195	950	1	3	2
240010013002050	1,511	380	1,122	0	1	8
240037404001000	2,025	484	1,521	1	7	12
240037404001001	1,433	280	1,142	0	2	9
240037404001005	628	244	379	2	0	3
240135052032038	440	103	333	0	2	2
240178513021001	146	20	124	0	0	2
240276012032039	588	139	444	0	1	4
240317012163000	11	4	6	0	0	1
240399804001008	2,824	705	2,109	0	2	8
240430110001003	2,037	560	1,474	0	1	2
240430110003001	1,813	569	1,230	1	5	8
240430110003002	1,518	374	1,136	1	2	5
240450107026114	2	0	2	0	0	0
240450108003022	88	29	56	0	0	3
245101003001000	688	152	531	0	1	4
245101003001001	1,070	196	870	0	1	3
245101003001007	248	41	207	0	0	0
245101205001017	26	1	25	0	0	0
245101903001013	33	5	28	0	0	0
245102801012000	29	6	23	0	0	0
Total	18,309	4,487	13,712	6	28	76

2. Tabulate the number of category 1 prisoners by race for each of the 10,310 Census Block associated with prisoner home addresses. The prisoners will be added to these Census Blocks.
3. MCTC in Hagerstown is associated with three Census Blocks. Combine the PL 94-171 counts from blocks 240430110001000 and 240430110001004 into that of block 240430110001003, zeroing out blocks 240430110001000 and 240430110001004.

4. Using the tabulation from step 2, add the additional population to the 10,310 Census Blocks. This adjusts the five racial components in each table along with any fields that depend on them, such as the overall population and the number of people identifying themselves as having a single race.
5. Using the tabulation from step 1, remove the population from the 21 Census Blocks. This adjusts the five racial components in each table along with any fields that depend on them.
6. For each block adjusted by steps 3-5, mark an indicator field (Adjusted) as follows:
   - B – Both F & H. This only occurs in the single mixed-use block with the Threshold facility.
   - C – All population combined into a nearby block the MCTC facility. This block has been zeroed. This only applies to two blocks in Hagerstown (step 3).
   - F – Prisoners moved from a DOC facility in the Census Block (step 5).
   - H – Prisoners added to their home address in the Census Block (step 4).
7. Add all the fields for the adjusted PL 94171 Tables P1 and P3 to the Maryland Census Block layer, prepending the adjusted fields with "Adj_".
8. Aggregated these new fields to all the higher levels of Census geography listed in the Outputs section.
9. Convert the data from the native Maptitude format to Esri File Geodatabase format.

Two Census Blocks ended up with a negative overall population and ten have one or more negative racial components in their adjusted data. They are listed in the following table.

	Overall Population				Voting Age Population			
Census Block	Population	AmIndian	Asian	Other	Population	AmIndian	Asian	Other
240010013002047	275	0	0	-2	274	0	0	-2
240037404001000	180	-1	0	8	175	-1	0	8
240037404001001	262	0	0	-9	262	0	0	-9
240037404001005	188	0	2	-3	186	0	2	-3
240135052032038	54	0	0	-2	54	0	0	-2
240178513021001	28	0	0	-1	28	0	0	-1
240276012032039	237	0	1	-3	226	0	1	-3
240399804001008	416	1	0	-6	414	1	0	-6
240430110001003	-128	1	0	-1	-152	1	0	-1
240450108003022	40	0	0	-3	39	0	0	-3
245101003001000	102	0	-1	-4	101	0	-1	-4
245102801012000	-29	0	0	0	-29	0	0	0

Census Block 245102801012000 is negative due to the category 1 prisoners removed from DOCHQ. Census Block 240430110001003 is negative because there is an insufficient population available in the three blocks assigned to MCTC in Hagerstown.

The negative racial components arise from the slightly different classifications of race. Since the 2000 Census, the US Census Bureau has allowed people to check one or more categories. DOC only

reports five categories and collects this information independently of the Census, so it is not surprising that they do not match perfectly.

After a discussion between MDP and MDLS, it was decided to keep these negative values since they only affect twelve Census Blocks and all Voting Districts will have positive populations. One Voting District (2403913-002) has a negative Other racial component of -5 for the overall population and -6 for the voting age population.

There is a precedent set by Kansas in 2000, where they adjusted their PL 94-171 to adjust for college students and military personnel, moving these populations back to their home addresses. They decided to keep and use negative values that were created for similar reasons, but on a much larger scale due to the greater number of college students than prisoners. Please see the *Kansas Official 2000 Readjustment Report* written by their Secretary of State for additional details. This approach has the merit of adjusting all the prisoners possible and keeping a total population equal to that reported by Census less the out of state prisoners.

Summary

Caliper adjusted the 2010 PL 94-171 Tables P1 and P3 for Maryland to account for the prisoner population as required by Maryland State Law. 10,313 Census Blocks were adjusted. The adjusted data are available in two formats: Esri File Geodatabase and in a format compatible with Maptitude for Redistricting.