

Subject: **Fwd: Potential EJ Areas 10 and 50 miles from Indian Point**

From: **Joan Matthews** <jlmatthe@gw.dec.state.ny.us>
Date: Fri, Apr 15, 2011 at 11:52 AM
To: manna jo@clearwater.org, stephenfiller@gmail.com

----- Forwarded message -----

From: "Douglas Morrison" <demorris@gw.dec.state.ny.us>
To: "Joan Matthews" <jlmatthe@gw.dec.state.ny.us>
Date: Fri, 15 Apr 2011 11:45:34 -0400
Subject: Potential EJ Areas 10 and 50 miles from Indian Point

Hi Joan,

I've finished the calculations of populations in Potential EJ Areas and in total in the 10-mile and 50-mile radii around Indian Point. Please forward this to Manna Jo Greene at Clearwater:

Please find attached the maps of Potential Environmental Justice Areas located within 10 and 50 miles of the Indian Point Nuclear Power Plant ("Indian Point") in the City of Peekskill, Westchester County, New York. The population statistics for these areas, based on the 2000 U.S. Census, are as follows:

New York State population within 10 miles of Indian Point: 258,477

New York State population in Potential EJ Areas within 10 miles of Indian Point: 42,536

New York State population within 50 miles of Indian Point: 11,789,781

New York State population in Potential EJ Areas within 50 miles of Indian Point: 6,120,124

I derived these statistics by the following method, using ESRI ArcMap 9.3:

1. The point feature for Units 1 and 2 of the Indian Point Nuclear Power Plant, which is a DEC-permitted facility, was selected from our Regulated Facilities GIS layer in DEC's geospatial data base. The location of the feature was confirmed by comparison with the NYSDOT 1:24,000 planimetric base map.
2. Separate buffers of 10-mile radius and 50-mile radius were created around the Indian Point feature.
3. The DEC data layer of Potential Environmental Justice Areas (PEJAs) is a data set of 2000 U.S. Census block groups with Census demographic data as attributes that includes a designation of block groups as either Potential Environmental Justice Areas or not, depending on whether the block group demographics meet or exceed the thresholds for PEJAs described in DEC Commissioner Policy 29 on Environmental Justice and Permitting, available on the DEC website at <http://www.dec.ny.gov/regulations/36951.html>. This data layer was clipped to the base map of New York State towns, villages and cities to remove block group areas that extended past the New York City shoreline. The areas of the clipped block groups, in square meters, were calculated and added as a new field in the PEJA layer's attribute table called SQ_METERS. I did this to provide a more accurate measure of block group areas for the following steps.
4. The clipped Potential EJ Area layer was clipped again to the 50-mile radius buffer to create a new layer of census block groups and PEJAs within 50 miles of Indian Point ("50 mile PEJAs").

5. Census block groups in the "50 mile PEJAs" layer that are located around the edge of the 50-mile buffer are bisected by the buffer edge, with a portion of the area of each block group lying inside the buffer and a portion lying outside. To account for this, a new field called RADIUS_AREA was added to the attribute table of the "50 mile PEJAs" layer and the areas of the census block groups, in square meters, recalculated in this new field. The area value of RADIUS_AREA is less than the value of SQ_METERS for block groups that are crossed by the edge of the 50-mile buffer, but the area values of the two fields are equal for block groups that lie entirely within the buffer.

6. A new field was added to the attribute table of "50 mile PEJAs" called AREA_RATIO. The value of this field was calculated for each block group by dividing the value of RADIUS_AREA by the value of SQ_METERS. The quotient, a number from 0 to 1, is the proportion of the area of the block group that lies inside the 50-mile buffer.

7. The population of each block group reported in the 2000 U.S. Census is shown in the PEJA data layer as a field called POP2000 that carried over to the "50 mile PEJAs" data layer. A new field was added to the "50 mile PEJAs" attribute table called RADIUS_POP to show the 2000 population located within the portion of each census block group that fell within the 50-mile buffer. The values for RADIUS_POP were calculated by multiplying POP2000 by AREA_RATIO for each block group. NOTE: This calculation is based on the assumption that the population of each block group was uniformly distributed across the area of the block group at the time of the 2000 Census. This assumption is clearly flawed, as populations within an area tend to be clustered in different ways for a variety of reasons. Because the income criteria that form the basis for PEJA designations are only available in the 2000 Census for full block groups, however, this assumption of uniform population distribution within block groups is the only way to apportion the population of block groups that only lie partially within the 50-mile buffer.

8. The total 2000 New York State population within the 50-mile buffer was calculated as the sum of all values in RADIUS_POP. To calculate the 2000 New York State population in PEJAs within the 50-mile buffer, the field EJ_CANBE, which has a value of '1' for a PEJA and '0' for a non-PEJA block group, was queried for all block groups with a value of '1', and the sum of RADIUS_POP was calculated for the the PEJA block groups selected by that query.

9. A map was generated showing the location of Indian Point, the 50-mile buffer, and the PEJAs within the buffer, using the DOT 1:250,000 Atlas Image as a basemap for reference. A PDF print of that map is attached.

10. Steps 4 through 9 were repeated using the 10-mile buffer around Indian Point.

Please let me know if you need any further information about these calculations and maps.

Doug Morrison
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From: **Manna Jo Greene** <mannajo@clearwater.org>
Date: Fri, Apr 15, 2011 at 12:09 PM
To: Joan Matthews <jlmatthe@gw.dec.state.ny.us>

Cc: stephenfiller@gmail.com

Doug and Joan,

Many thanks,

Manna

On Fri, Apr 15, 2011 at 11:52 AM, Joan Matthews <jlmatthe@gw.dec.state.ny.us> wrote:

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